Commonwealth of Kentucky
Cabinet for Health and Family Services

Kentucky Health Care Facility Capacity Study
Findings and Options for Consideration

December, 2013
Deloitte Consulting LLP
Facility Capacity Study

Executive Summary
Executive Summary: Background and Objectives

Background

- The establishment of the Kentucky Health Benefit Exchange (KHBE) may result in a majority of Kentucky’s 640,000 uninsured individuals using the Exchange to purchase health insurance coverage\(^1\).
- It is estimated that roughly half of these uninsured individuals may ultimately be covered under Medicaid expansion while an additional 276,000 may likely be eligible for some type of premium assistance\(^1\).
- Due to the increase in covered lives, the utilization of various healthcare services across the Commonwealth is expected to increase, raising questions of reasonable capacity and access.

Objectives

- Assess current access to and availability of Kentucky’s existing health care facilities.
- Identify shortage areas where an increase in health care facilities is required to meet current utilization demands and future circumstances of Kentuckians.
- Explore legislative and administrative policy changes such as Certificate of Need modifications that may be needed to increase the supply of health care facilities to improve population health.
- Identify high-level strategies and a proposed timeline to address facility gaps.

---

\(^1\) Source: Analysis of the Affordable Care Act (ACA), Medicaid Expansion in Kentucky, Cabinet for Health and Family Services ("Medicaid White Paper")
Executive Summary: Approach and Findings

Demand and supply projections were developed to identify health services with potential capacity constraints. Select health services were examined more closely for policy implications and next steps for consideration.

1. Project Demand for Health Services Through 2017

| Services from State Health Plan | Projections based on insurance expansion, utilization trends, and population growth |

2. Review Findings and Formulate Options for Consideration

<table>
<thead>
<tr>
<th>Topic / Health Service</th>
<th>Principle Finding</th>
<th>Options for Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Health Services Data</td>
<td>Data consistency and availability</td>
<td>→ Harmonize &amp; expand health data reporting</td>
</tr>
<tr>
<td>B. Acute Care Services</td>
<td>Excess capacity in acute care</td>
<td>→ Consolidate and / or redistribute acute capacity</td>
</tr>
<tr>
<td>C. Nursing Facilities</td>
<td>Potential shortages in nursing care</td>
<td>→ Strengthen home and community based services</td>
</tr>
<tr>
<td>D. Psychiatry Services</td>
<td>Disparities in psychiatric care</td>
<td>→ Develop comprehensive behavioral health plan</td>
</tr>
<tr>
<td>E. Imaging: MRI, PET</td>
<td>Deregulation in other states</td>
<td>→ Consider discontinuing CON for MRI and PET</td>
</tr>
<tr>
<td>F. Ambulatory Surgery</td>
<td>Potential shortages in ASC</td>
<td>→ Temporarily relax CON criteria for ASC</td>
</tr>
</tbody>
</table>
Facility Capacity Study

Projections
Methodology: Facilities & Services Included

The facilities and health services reviewed in this study were grouped into 2 tiers.

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Facility Description</th>
<th>Number of Facilities</th>
<th>Total Volume</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care</td>
<td>Inpatient hospital</td>
<td>118</td>
<td>521K</td>
<td>Discharges</td>
</tr>
<tr>
<td>Comp. Rehab</td>
<td>Inpatient rehab</td>
<td>17</td>
<td>12K</td>
<td>Discharges</td>
</tr>
<tr>
<td>Psych Hospital</td>
<td>Inpatient psychiatry</td>
<td>41</td>
<td>47K</td>
<td>Discharges</td>
</tr>
<tr>
<td>PRTF</td>
<td>Residential psychiatry</td>
<td>24</td>
<td>0.5K</td>
<td>Discharges</td>
</tr>
<tr>
<td>Nursing Facility</td>
<td>Nursing facilities</td>
<td>286</td>
<td>8.5M</td>
<td>Patient Days</td>
</tr>
<tr>
<td>Home Health</td>
<td>Home health agencies</td>
<td>100</td>
<td>121K</td>
<td>Patients Served</td>
</tr>
<tr>
<td>Hospice</td>
<td>Hospice services</td>
<td>24</td>
<td>17K</td>
<td>Admissions</td>
</tr>
<tr>
<td>Res. Hospice</td>
<td>Residential hospice services</td>
<td>7</td>
<td>3K</td>
<td>Admissions</td>
</tr>
<tr>
<td>Cardiac Cath</td>
<td>Cardiac Cath services</td>
<td>54</td>
<td>57K</td>
<td>Procedures</td>
</tr>
<tr>
<td>ASC</td>
<td>Ambulatory Surgery Centers</td>
<td>144</td>
<td>464K</td>
<td>Surgeries</td>
</tr>
<tr>
<td>CD</td>
<td>Chemical dependency</td>
<td>8</td>
<td>4K</td>
<td>Discharges</td>
</tr>
<tr>
<td>PDN</td>
<td>Private Duty Nursing</td>
<td>10</td>
<td>0.3K</td>
<td>Admissions</td>
</tr>
<tr>
<td>Neonatal</td>
<td>Neonatal Level II &amp; III</td>
<td>49</td>
<td>17K</td>
<td>Discharges</td>
</tr>
<tr>
<td>Open Heart</td>
<td>Open heart programs</td>
<td>92</td>
<td>6K</td>
<td>Surgeries</td>
</tr>
<tr>
<td>Transplant</td>
<td>Transplant programs</td>
<td>4</td>
<td>0.4K</td>
<td>Transplants</td>
</tr>
<tr>
<td>MRI</td>
<td>Magnetic Resonance Imaging</td>
<td>173</td>
<td>438K</td>
<td>Procedures</td>
</tr>
<tr>
<td>PET</td>
<td>Positron Emission Tomography</td>
<td>41</td>
<td>25K</td>
<td>Procedures</td>
</tr>
<tr>
<td>MRE</td>
<td>Megavoltage Radiation Equipment</td>
<td>53</td>
<td>235K</td>
<td>Procedures</td>
</tr>
</tbody>
</table>

1. Facilities correspond to types of services regulated by CON within the State Health Plan
2. Volume source for Acute Care, Cardiac Cath, ASC, and Neonatal: KY Administrative Claims Data Report refers to "Kentucky Annual Administrative Claims Data Report, Cabinet for Health and Family Services, Office of Health Policy"
3. Volume source for other facility types: KY Annual Survey Data Report: Refers to "Kentucky Annual Utilization and Services Reports, Cabinet for Health and Family Services, Office of Health Policy"

**Tier 1 facilities** are expected to experience continued shifts between inpatient and ambulatory site of care (‘continued momentum’). Tier 1 facilities are general inpatient and outpatient acute care services.

**Tier 2 facilities** are assumed to not experience major shifts from one site of care to another, but rather perpetuate the most recent utilization rates (‘steady state’). Tier 2 facilities are high acuity specialty care and imaging services.
Methodology: Medicaid Managed Care Region

Medicaid Manage Care Regions (MMCR) were selected as the primary unit of analysis representing independent care regions.

- **Region 1**: Ballard, Caldwell, Calloway, Carlisle, Crittenden, Fulton, Graves, Hickman, Livingston, Lyon, Marshall, McCracken
- **Region 2**: Christian, Daviess, Hancock, Henderson, Hopkins, McLean, Muhlenburg, Ohio, Trigg, Todd, Union, Webster
- **Region 3**: Breckinridge, Bullitt, Carroll, Grayson, Hardin, Henry, Jefferson, Larue, Marion, Meade, Nelson, Oldham, Shelby, Spencer, Trimble, Washington
- **Region 5**: Anderson, Bourbon, Boyle, Clark, Estill, Fayette, Franklin, Garrard, Harrison, Jackson, Jessamine, Lincoln, Madison, Mercer, Montgomery, Nichols, Owen, Powell, Rockcastle, Scott, Woodford
- **Region 6**: Boone, Campbell, Gallatin, Grant, Kenton, Pendleton
- **Region 7**: Bath, Boyd, Bracken, Carter, Elliott, Fleming, Greenup, Lawrence, Lewis, Mason, Menifee, Morgan, Robertson, Rowan
- **Region 8**: Bell, Breathitt, Clay, Floyd, Harlan, Johnson, Knott, Knox, Laurel, Lee, Leslie, Letcher, Magoffin, Martin, Owsley, Perry, Pike, Whitley, Wolfe
Methodology: Demand Projections

Distinct demand projection methodologies were applied for Tier 1 (continued momentum) and Tier 2 facilities (steady state), and results reported at the MMCR or State level.

**Tier 1 – Continued Momentum**
- Impact of Population Growth
- Ongoing Trends (Momentum) Impacting Use Rates
- Impact of Coverage Expansion

**Tier 2 – Steady State**
- Impact of Population Growth
- Most Recent Use Rate Assumed Constant
- Impact of Coverage Expansion

- General population growth estimated at the county level and aggregated to MMCR\(^1\).
- The Commonwealth’s 4-year historic utilization trends for each MMCR extrapolated through 2017 to account for ongoing shifts in site of care stemming from medical advances and refined case management.
- Historical utilization rate amplified by the impact of coverage expansion (estimated at the State level).

---

1. MMCR: Medicaid Managed Care Region
Methodology: Impact of Coverage Shifts

Through 2017, the insured population is projected to increase due to Medicaid program expansion and the advent of affordable insurance options on the Kentucky Health Benefits Exchange.

<table>
<thead>
<tr>
<th>Payor</th>
<th>2012</th>
<th>2017</th>
<th>2017 Methodology</th>
</tr>
</thead>
</table>
| Uninsured             | 704,293 | 249,946 | Projected baseline 2017 uninsured  
– Est. 2017 newly eligible enrollment  
– Est. 2017 “woodwork” enrollment  
– Est. transitions to Medicare or KHBE |
| Medicaid              | 792,329 | 1,057,235 | Projected 2013 Medicaid enrollees  
+ Est. 2017 newly eligible enrollment  
+ Est. 2017 “woodwork” enrollment |
| Medicare              | 616,256 | 673,752  | Projected 2017 Medicare population using KY Medicare-specific growth rate |
| KHBE – Individual and Small Group | 0 | 202,588  | Estimated 2017 enrollment in health benefit exchange |
| KHBE – Large Group    | 0     | 122,067  | Estimated 2017 enrollment in health benefit exchange |
| KHBE – Uninsured      | 0     | 123,437  | Estimated 2017 enrollment in health benefit exchange |
| Commercial            | 2,288,951 | 2,137,575 | All other payer types; Estimated as delta to total population |
| Total                 | 4,401,829 | 4,566,600 | Extrapolated based on 2020 population projections |

1. Sources: 2012 total population based on Census 2010 and July 1, 2012 Estimates from KY website; payor split based on Kaiser Family Foundation estimates
2. 2012 uninsured: 640,000; Source: Analysis of the Affordable Care Act: Medicaid Expansion in Kentucky, Kentucky Cabinet for Health and Family Services; also includes 44,000 “other” covered population; Source: Kaiser Family Foundation estimates
3. Newly eligible enrollment: 187,898; Woodwork enrollment: 21,711; Source: Analysis of the Affordable Care Act: Medicaid Expansion in Kentucky, Kentucky Cabinet for Health and Family Services
4. KY Department for Medicaid Services Enrollment numbers as of Jan. 2013 extrapolated by total population CAGR
5. CMS National Health Expenditure Data, pg. 24
6. Source: KHBE preliminary estimates
Methodology: Continued Momentum Trends

For Tier 1 Facilities, recent trends in utilization patterns are assumed to continue through 2017 (continued momentum), e.g. with shifts from inpatient to ambulatory care settings.

**Tier 1 Facilities – Annual Change in Use Rate (CAGR)**

Note: The continued momentum analysis assumes historical trends in use rates will perpetuate. Lagging indicators are however imperfect predictors of future trends. These estimates should therefore be considered plausible base case assumptions that are subject to a range of additional market uncertainties.

Data collection methodology changed during observation period; Analysis therefore uses most recent year’s utilization rate, i.e. flat trend.

<table>
<thead>
<tr>
<th>Use Rate per 10,000 population</th>
<th>Acute Care</th>
<th>Comp. Rehab</th>
<th>Psych Hospital</th>
<th>PRTF</th>
<th>Nursing Facility</th>
<th>Home Health All</th>
<th>Home Health 65+</th>
<th>Hospice</th>
<th>Res. Hospice</th>
<th>Cardiac Cath</th>
<th>ASC</th>
<th>CD</th>
<th>PDN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical</td>
<td>1,299</td>
<td>26</td>
<td>103</td>
<td>0.9</td>
<td>20,234</td>
<td>265</td>
<td>1,262</td>
<td>233</td>
<td>28</td>
<td>139</td>
<td>1,042</td>
<td>10</td>
<td>1.0</td>
</tr>
<tr>
<td>Current</td>
<td>1,184</td>
<td>27</td>
<td>107</td>
<td>1.1</td>
<td>19,375</td>
<td>275</td>
<td>1,276</td>
<td>272</td>
<td>43</td>
<td>130</td>
<td>1,055</td>
<td>9</td>
<td>0.8</td>
</tr>
<tr>
<td>Data Years</td>
<td>'09-'12 Admin Claims</td>
<td>'09-'12 Annual Survey</td>
<td>'07-'12 Annual Survey</td>
<td>'10-'12 Annual Survey</td>
<td>'09-'12 Annual Survey</td>
<td>'07-'12 Annual Survey</td>
<td>'10-'12 Annual Survey</td>
<td>'09-'12 Admin Claims</td>
<td>'09-'12 Annual Survey</td>
<td>'07-'12 Annual Survey</td>
<td>'09-'12 Admin Claims</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit</td>
<td>Discharges</td>
<td>Discharges</td>
<td>Discharges</td>
<td>Discharges</td>
<td>Pt. Days</td>
<td>Pts Served</td>
<td>Pts Served</td>
<td>Admission</td>
<td>Admissions</td>
<td>Procedures</td>
<td>Surgeries</td>
<td>Discharges</td>
<td>Admissions</td>
</tr>
</tbody>
</table>
Methodology: Acute Care Example

Changes in service volume are the result of the combined effects of population growth, coverage expansion, and trends in use rates.

**Total change in volume:**

2012 ➔ Acute Care ➔ 2017

- **Population Growth** +4%
- **Coverage Expansion** +6%
- **Continued Momentum**^3 (14%)

**Overall Change**^2 (5%)

**Projected Volume** 496K discharges

---

1. Acute care data is based on statewide 2012 KY Administrative Claims Data Report
2. Change corresponds to total change over the observation time horizon, not annual growth rate
3. Continued Momentum only applied to Tier 1 facilities

---

*Note: Given uncertainties around care delivery and health policy evolution, a range of potential outcomes is possible. The presented figures should therefore be viewed as plausible base case estimates that could fluctuate +/-25% or more. A sensitivity analysis presented in this document tests the robustness of the projections relative to specific planning assumptions.*
Results: Tier 1 – Estimated Statewide Change in Demand

Total change in demand across the Commonwealth is estimated by projecting the base year volume forward using the ‘continued momentum’ methodology.

Statewide Change in Demand Through 2017 by Service

<table>
<thead>
<tr>
<th>Service</th>
<th>Total Change %</th>
<th>Range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care</td>
<td>-4% to -6%</td>
<td>-4% to -6%</td>
<td>Discharges</td>
</tr>
<tr>
<td>Comp. Rehab</td>
<td>+14% to +24%</td>
<td>+14% to +24%</td>
<td>Discharges</td>
</tr>
<tr>
<td>Psych Hospital</td>
<td>+13% to +21%</td>
<td>+13% to +21%</td>
<td>Discharges</td>
</tr>
<tr>
<td>PRTF</td>
<td>+104% to +173%</td>
<td>+104% to +173%</td>
<td>Discharges</td>
</tr>
<tr>
<td>Nursing Facility</td>
<td>-1% to +18%</td>
<td>-1% to +18%</td>
<td>Discharges</td>
</tr>
<tr>
<td>Home Health All</td>
<td>+11% to +15%</td>
<td>+11% to +15%</td>
<td>Pt. Days</td>
</tr>
<tr>
<td>Home Health 65+</td>
<td>+15% to +25%</td>
<td>+15% to +25%</td>
<td>Pts Served</td>
</tr>
<tr>
<td>Hospice</td>
<td>+29% to +49%</td>
<td>+29% to +49%</td>
<td>Admissions</td>
</tr>
<tr>
<td>Res. Hospice</td>
<td>+13% to +21%</td>
<td>+13% to +21%</td>
<td>Procedures</td>
</tr>
<tr>
<td>Cardiac Cath</td>
<td>+5% to +9%</td>
<td>+5% to +9%</td>
<td>Surgeries</td>
</tr>
<tr>
<td>ASC</td>
<td>+8% to +14%</td>
<td>+8% to +14%</td>
<td>Discharges</td>
</tr>
<tr>
<td>CD</td>
<td>+24% to +40%</td>
<td>+24% to +40%</td>
<td>Admissions</td>
</tr>
<tr>
<td>PDN</td>
<td>+3% to +5%</td>
<td>+3% to +5%</td>
<td>Admissions</td>
</tr>
</tbody>
</table>

1. Commonwealth future demand projected by trending out change in utilization patterns (‘continued momentum’ methodology)
2. Coverage shifts not included for Nursing Facility, Home Health 65+, and Hospice, as services assumed to already be covered for population 65+
3. The continued momentum is an aggregate value that results out of the accumulation of individual counties or MMCRs
4. Range estimates are included to demonstrate that projections are subject to a range of market uncertainties and could vary +/- 25% or more
Results: Tier 2 – Estimated Statewide Change in Demand

For Tier 2 Facilities, no major shifts between health services is expected (steady state). The change in demand for these services is driven by population growth and coverage expansion.

*Statewide Total Change in Demand*¹,²

<table>
<thead>
<tr>
<th>Total Change %</th>
<th>Neonatal</th>
<th>Open Heart</th>
<th>Transplant</th>
<th>MRI</th>
<th>MRE</th>
<th>PET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range³</td>
<td>+3% to +5%</td>
<td>+8% to +13%</td>
<td>+8% to +13%</td>
<td>+6% to +10%</td>
<td>+5% to +9%</td>
<td>+6% to +10%</td>
</tr>
<tr>
<td>Unit</td>
<td>Discharges</td>
<td>Operations</td>
<td>Transplants</td>
<td>Procedures</td>
<td>Procedures</td>
<td>Procedures</td>
</tr>
</tbody>
</table>

¹ Commonwealth future demand projected by using most recent utilization rates (‘steady state’ methodology)
² Coverage shifts not included as services assumed to already be covered
³ Range estimates are included to demonstrate that projections are subject to a range of market uncertainties and could vary +/- 25% or more
Occupancy Projections: 2012 vs. 2017

The occupancy projections bring to light capacity surplus and potential shortages; these initial observations call for further exploration of certain health services.

Observations on Health Services that Call for Further Exploration

1. Excess capacity in **acute care**
2. Disparities in **psychiatric care**
3. Potential shortages in **nursing facility** (current and projected)
4. High **home health** growth from shift to extramural care
5. Potential shortages in **ambulatory surgery**
6. CON policies for **MRI, PET** relative to other states
7. Availability of **health services data**

---

1. Tier 1 Commonwealth future demand projected by trending out change in utilization patterns (‘continued momentum’ methodology); Tier 2 Commonwealth future demand projected by using most recent utilization rates (‘steady state’ methodology)
2. Occupancy data is not available for services that are conducted outside of a facility, i.e. home health, as well as select facility-based services (e.g., transplant)
3. Based on 2013 State Health Plan specifications
## Future State Scenarios

Occupancy projections were stress tested under 3 hypothetical scenarios.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
<th>Modeling Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Case</strong></td>
<td>Base assumptions including coverage expansion, utilization rate change momentum, and average length of stay (ALOS) or operating room time.</td>
<td>• Coverage expansion: +6% (inpatient) and +3% (ambulatory) &lt;br&gt; • Momentum: Varies by service &lt;br&gt; • ALOS: Assumed constant</td>
</tr>
<tr>
<td>1. Pent-up demand emerges</td>
<td>Coverage expansion results in an unanticipated spike in utilization of health services.</td>
<td>• Coverage expansion results in double the base case increase in demand for services.</td>
</tr>
<tr>
<td>2. Momentum accelerates</td>
<td>The historical rate of change in utilization doubles over the next 5 years due to further medical advancements and high-quality case management.</td>
<td>• Change in use rates (momentum) doubles.</td>
</tr>
<tr>
<td>3. Facilities care only for the sickest</td>
<td>Healthier individuals are cared for in the ambulatory setting, and only the ‘really sick’ patients are treated in hospitals; types of cases treated in ambulatory setting grow more complex.</td>
<td>• Average length of stay or operating room time increases by 25%.</td>
</tr>
</tbody>
</table>

---

1. Scenarios were chosen to illustrate why demand drivers help test potential future states (what might happen). Simple assumptions were selected for modeling purposes, i.e., double use rates or increase ALOS by one quarter.
Future State Scenarios – Acute Care
In each scenario, Acute Care facilities have significant excess capacity.

Base Case
Coverage: +6%; Utilization -14%; ALOS 4.6 days

2. Accelerated Momentum
Change in utilization doubles (-14% → -28%)

1. Pent-up demand emerges
Coverage impact doubles (+6% → +12%)

3. Hospitals care only for the sickest
ALOS increases 25% (4.6 → 5.8 days)

Scale indicates degree of projected occupancy – dark green is low, dark red is high occupancy, gray is intermediate

See description of scenarios on previous page
Future State Scenarios – Nursing Facility

In each scenario, Nursing Facilities are at or above capacity.

1. Pent-up demand emerges

2. Accelerated Momentum
   Change in utilization doubles (-4% → -8%)

3. Nursing Homes care only for the sickest
   ALOS increases 25% (367 → 459 days)

The impact of coverage expansion was not applied to nursing facility demand projections, as Medicaid already serves as ultimate guarantor for nursing care patients.

Scale indicates degree of projected occupancy – dark green is low, dark red is high occupancy, gray is intermediate.

See description of scenarios on previous page.
**Tier 1: Comparison vs. Benchmark Data**

Comparing the Commonwealth’s projected demand using continued momentum assumptions still results in significant gaps toward today’s national and South region benchmark.

### Comparison of Projected Volume in 2017

(Commonwealth demand normalized to 100%)

<table>
<thead>
<tr>
<th>Units</th>
<th>Discharges</th>
<th>Discharges</th>
<th>Discharges</th>
<th>Residents</th>
<th>Pts Served</th>
<th>Pts Served</th>
<th>Admissions</th>
<th>Admissions</th>
<th>Procedures</th>
<th>Surgeries</th>
<th>Discharges</th>
<th>Admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute Care</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KY 2017</td>
<td>495,834</td>
<td>13,992</td>
<td>55,042</td>
<td>1,190</td>
<td>23,228</td>
<td>138,283</td>
<td>78,438</td>
<td>23,172</td>
<td>3,110</td>
<td>60,934</td>
<td>513,521</td>
<td>5,418</td>
</tr>
<tr>
<td>Δ Vol. – National¹</td>
<td>68,280</td>
<td>(6,880)</td>
<td>(28,847)</td>
<td>N/A</td>
<td>(2,100)</td>
<td>N/A</td>
<td>(16,989)</td>
<td>(330)</td>
<td>N/A</td>
<td>(40,801)</td>
<td>285,508</td>
<td>2,173</td>
</tr>
<tr>
<td>Δ Vol. - South¹</td>
<td>97,161</td>
<td>(7,016)</td>
<td>(29,791)</td>
<td>N/A</td>
<td>(4,263)</td>
<td>N/A</td>
<td>(6,397)</td>
<td>3,053</td>
<td>N/A</td>
<td>(39,974)</td>
<td>291,458</td>
<td>(38)</td>
</tr>
</tbody>
</table>

1. KY and National demand projections calculated by trending out change in utilization patterns (‘continued momentum’ methodology); South calculated using most recent benchmark (‘steady state’ methodology).
2. Differential to benchmark for rehab, psych, cardiac cath may be a result of different data reporting between Commonwealth and benchmark data, e.g. cardiac cath benchmark data includes only diagnostic cath.
3. Nursing facility units reflect number of residents for benchmark comparison purposes.
4. Source: 2011 KY Administrative Claims Data Report, p. 35

KY’s utilization of DGR 885 (psychosis) alone is 1.5 times higher than national benchmark and was the third most frequent DRG overall in 2011.¹

Rehab benchmark includes only designated Inpatient Rehab Facilities, whereas KY data includes rehab discharges from all inpatient facilities.

Cardiac cath benchmark data includes only ICD 9 codes 37.21-37.23; The Commonwealth ‘cardiac cath’ dataset includes a broader range of inpatient and outpatient interventional cardiology procedures; this broader procedure set is more representative of cardiac procedure room use.
Tier 2: Comparison vs. Benchmark Data

The Commonwealth’s estimated changes in demand assuming ‘steady state’ utilization trends are relatively similar to national and regional benchmarks.

Comparison of Projected Volume in 2017
(Commonwealth demand normalized to 100%)

<table>
<thead>
<tr>
<th></th>
<th>Neonatal</th>
<th>Open Heart</th>
<th>Transplant</th>
<th>MRI</th>
<th>MRE</th>
<th>PET</th>
</tr>
</thead>
<tbody>
<tr>
<td>KY 2017¹</td>
<td>17,986</td>
<td>6,712</td>
<td>466</td>
<td>471,500</td>
<td>251,341</td>
<td>26,924</td>
</tr>
<tr>
<td>Δ Vol. – National¹</td>
<td>14</td>
<td>(1,496)</td>
<td>(15)</td>
<td>(14,759)</td>
<td>N/A</td>
<td>(4,030)</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>-22%</td>
<td>-3%</td>
<td>-3%</td>
<td>N/A</td>
<td>-15%</td>
</tr>
<tr>
<td>Δ Vol. – South¹</td>
<td>(450)</td>
<td>(1,497)</td>
<td>(25)</td>
<td>(107,588)</td>
<td>25,175</td>
<td>(4,507)</td>
</tr>
<tr>
<td></td>
<td>-2%</td>
<td>-22%</td>
<td>-5%</td>
<td>-23%</td>
<td>10%</td>
<td>-17%</td>
</tr>
</tbody>
</table>

1. KY, National and South demand projections calculated using a constant use rate (‘steady state’ methodology)
Facility Capacity Study

Options for Consideration
A. Health services data
A. Health Data Reporting: Summary

In order to provide more systematic and timely reporting, the Commonwealth should consider taking steps to improve data collection and processing in four principal areas.

1. Data Definition
   Recommendations to provide more information describing the health services reported in the annual survey reports

2. Data Organization
   Recommendations to group data by geographies and other general formatting suggestions for health services reports

3. Data Consistency
   Recommendations to improve uniformity of data and consistency of reporting year over year

4. Dataset Expansion
   Recommendations to collect and report additional data beyond current dataset, e.g. quality metrics, patient origin, etc.
B. Acute Care Services
B. Acute Care: Summary and Recommendations

Summary of Findings

- General trends in acute care delivery suggest that the demand for inpatient acute services in the Commonwealth will decline by as much as 5% through 2017 as care is transitioned to a less intensive, more cost-effective (often ambulatory) setting.

- The Commonwealth currently has high hospital bed capacity per population.

- Acute care facilities are distributed evenly across the state, though distribution of services varies considerably.

- While many are at low average occupancy levels, Critical Access Hospitals play an important role in increasing access by providing emergent and low acuity care where it is needed.

- Overall the question remains whether and how excess capacity should be addressed; one potential idea could be to repurpose acute beds as a near-term solution to address shortages in nursing and mental health facilities or to repurpose acute wards as ambulatory surgery space (along with financial incentives to support the conversion).

Recommendations (Options for Consideration)

1. Manage capacity and scale
2. Promote high-performing sites
3. Reshape focus of Critical Access Hospitals
Acute Care: Occupancy by MMCR

There is excess acute bed capacity across the Commonwealth today and anticipated shifts to ambulatory care are projected to free capacity through 2017.

Acute Care Occupancy by MMCR¹

Even on a staffed bed basis, the Commonwealth is unlikely to experience capacity constraints. Lower occupancy in 2017 due to transition to outpatient care.

1. Projections based on Deloitte facility capacity model; Source data: 2012 inpatient claims database
Acute Care: Occupancy by Provider

A minority of facilities account for the majority of discharges; some facilities appear to have consistently low occupancy which could potentially compromise quality of care.

Acute Care Occupancy by Provider

Larger hospitals in urban settings (with higher overall discharge volumes) tend to also display higher occupancy rates.

Critical Access Hospitals occupancy varies widely from facility to facility.

There is an increasing body of evidence that lower volumes translate into less desirable clinical outcomes. Some facilities may be below minimum effective scale level, suggesting a reexamination of the scope of services offered.²

---

1. Occupancy and discharges based on 2012 Annual Hospital Utilization and Services Report

Copyright © 2013 Deloitte Development LLC. All rights reserved
Acute Care: Impact of Pt. Satisfaction on Choice

An efficient care model aims to drive volume to providers that have efficiencies of scale, higher quality/outcomes, and higher patient satisfaction levels – while also maintaining the balance with access to common health services in geographic proximity.

Provider Scale & Occupancy

There appears to be large variation in occupancy for smaller facilities

Larger facilities seem to manage occupancy more effectively

Patient Satisfaction & Occupancy

On average, facilities with higher patient satisfaction have higher occupancy, which could be a reflection of patient preference

---

1. Occupancy based on 2012 Annual Hospital Utilization and Services Report
2. Bed stratification based on The Commonwealth’s Fund’s WhyNotTheBest.org quality reports
3. Patient satisfaction score based on The Commonwealth’s Fund’s WhyNotTheBest.org report on CMS’ HCAHPS scores; metric used is “Percent of Patients Highly Satisfied”
Acute Care: Handling Excess Capacity

Taking excess acute care capacity offline is an option that others have explored in the past, but finding the applicable capacity level and distribution can be challenging.

Objective of Berger Commission¹

- Facing similarly low occupancy rates (low 60%), the Berger Commission proposed taking capacity offline in the State of New York in 2006².
- The objective was to improve the quality and affordability of New York’s health care system and make it more responsive to current health care circumstances.

Challenges and Takeaways of Reducing Capacity

- Capacity and staffing should be considered together – An excess bed situation should not unequivocally be equated to an excess staff situation, as many facilities may actually be understaffed in their current configuration.
- Staff re-training is not a simple task – Displacement of nurses from general care to specialty care could exacerbate the nursing shortage. Many nurses will require new education, not just “retraining” to perform effectively in new specialty care settings.
- Emergency contingencies should be planned for – Geographical and other concerns should be taken into account when conducting this “rationalization”. For example, when Hurricane Sandy hit, there were insufficient beds to transfer patients between and out of Manhattan hospitals that were initially deemed as having “too many” beds in case of an emergency. The plans had assumed access to bridges and tunnels would be intact, which did not prove true.
- Lowering capacity has saving potential – The NYC state legislature forecasted annual Medicaid savings alone to be around $249M while improving the quality of health care³.

2. Statewide licensed bed occupancy fell from 83% to 65% from 1983 to 2004
Acute Care: Time Saved with Critical Access Hospitals

Some areas may face geographic barriers to access emergent care should Critical Access Hospitals be closed.

Heat map showing drive time savings when accessing the closest Critical Access Hospital instead of closest acute care hospital.¹²

Select Critical Access Hospitals that lead to declines in drive time of up to 60 minutes are highlighted.

Critical Access Hospitals appear to be strategically distributed and play an important role in providing proximate access to emergent care. There may be an opportunity to reconfigure the types of services offered, and shift toward more of an urgent care center model that might have less overhead and a lower overall cost structure.

In August 2013, OIG issued a report that concluded many CAH across the nation might not meet the Location Requirements if required to re-enroll³. This could result in loss of CAH designation, which might in turn threaten economic viability of certain facilities and thereby impair access to primary and secondary care.

---

¹ Maps use administrative claims data; includes acute care and critical access patient admissions from 2012
² Drive time was calculated as distance between facility zip codes using GoogleMaps®
³ Source: HHS, OIG, Report OEI-05-12-00080

Copyright © 2013 Deloitte Development LLC. All rights reserved
Facility Capacity Study

C. Nursing Facilities & Home Health
C. Nursing Facilities and Home Health: Summary  1/2

Summary of Findings

- Nursing care is a major component of state Medicaid budgets, second only to acute care.
- Nursing facility geographic distribution generally follows population, but shortage areas exist.
- Since 2008, the nursing care rebalancing programs and other waiver-based programs have started to alleviate the nursing facility shortage by shifting patients from institutions to community based programs.
- Given capacity constraints, there is potentially unmet demand for nursing care today; rebalancing efforts may not reduce total utilization in the short term, but rather make space for pent-up demand.
- Historic allocation of Medicaid spend still indicates a bias toward inpatient nursing care.

Recommendations (Options for Consideration)

1. Nursing Facilities

More explicitly evaluating the care continuum across acute inpatient, long-term facility-based, and home and community based services can offer avenues to rebalance locus of care and alleviate capacity constraints in nursing facilities:

a. Explore whether additional community based programs could help further reduce re-institutionalization rates of Kentucky Transitions and waiver participants (e.g., expand existing community based services to reflect services offered by other states).

b. Evaluate whether the Commonwealth’s expenditure on waiver programs on a per participant basis is commensurate to the health requirements of the elderly and disabled population.

c. Commission a study to determine whether nursing facility capacity constraints are delaying discharges of nursing patients from acute facilities.

d. Consider incorporating long-term care in Medicaid Managed Care, and provide financial incentives to health plans to expand home and community based services and public health programs.

e. Explore opportunities to coordinate care for dual eligible population, e.g. balance site of care between long-term care facilities (a cost to Medicaid) and acute care facilities (a cost to Medicare).

(recommendations continued on next page)
Recommendations (Options for Consideration)

2. Home Health

Strengthen home health and other community based services to facilitate transitions and reduce readmission to facility-based care, and consider avenues to encourage standardization of home health services:

a. Explore avenues to better match patients’ conditions with the suitable tier of medical care (home care, nursing facility care, acute care setting).

b. Create economic incentives through higher reimbursement for home and community based services.

c. Promote expansion of home health agencies into areas that have been identified as underserved, or consider suspending / discontinuing CON program for home health, similar to some contiguous states.

d. Develop mechanisms to improve leading practices for home health services to achieve higher consistency of care across the populations served.

e. Explore avenues to further deploy technology advances for home care (e.g., tele-health hub/spoke sites and remote monitoring).
Nursing Facilities: Occupancy by MMCR

Measures to constrain capacity have resulted in consistently high utilization across MMCRs; nursing facilities have operated at or close to capacity for the past decade.

Occupy Rates for Nursing and Acute Care by MMCR (2012)

2012 Occupancy

<table>
<thead>
<tr>
<th>MMCR</th>
<th>Nursing Facilities</th>
<th>Acute Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>85%</td>
<td>40%</td>
</tr>
<tr>
<td>2</td>
<td>90%</td>
<td>37%</td>
</tr>
<tr>
<td>3</td>
<td>90%</td>
<td>49%</td>
</tr>
<tr>
<td>4</td>
<td>93%</td>
<td>52%</td>
</tr>
<tr>
<td>5</td>
<td>90%</td>
<td>41%</td>
</tr>
<tr>
<td>6</td>
<td>93%</td>
<td>54%</td>
</tr>
<tr>
<td>7</td>
<td>92%</td>
<td>47%</td>
</tr>
<tr>
<td>8</td>
<td>90%</td>
<td>57%</td>
</tr>
</tbody>
</table>

Threshold Occupancy

High facility occupancy levels can be an indicator of unmet demand in the population (some patients are never admitted to a facility because there is no free bed).

1. Source: Nursing Facility: 2011 Annual LTC Survey; Acute Care: 2012 inpatient claims database
Nursing Facilities: Care Obtained Outside Service Area

Due to capacity constraints, it is not uncommon for patients to obtain care outside of their immediate geography.

Map showing occupancy of nursing facilities within their service area and volume of patients that left their geography to obtain care.¹,²

The large metro areas have more nursing facility capacity constraints than rural areas, as seen by high volumes of patients obtaining nursing care outside the service area (larger triangles).

¹. Nursing data derived from Annual Hospital Utilization and Service Report; includes nursing discharges from 2011
². Analysis based on 2012 LTC Need evaluation provided by the Cabinet of Health and Family Services
Nursing Facilities: Impact on State Medicaid Budget

Nursing care budget was the second largest budget item in SFY11 and has the potential to materially drive the total Medicaid budget.

Medicaid Budget Allocation

- Comprehensive physical rehab hospital
- Ambulatory Surgical Centers
- Ambulance services
- PRTF
- Hospice
- Home Health
- Adult Day Health Care
- Psych hospital beds
- ICF/MR-DD
- Nursing Facility
- Acute Hospital

Commonwealth Medicaid Budget for Select Institutional Services SFY11

- Nursing Facility
  - Nursing care budget accounts for 37% of Medicaid’s Institutional services budget (14% of total budget). Given the aging population, it has the potential to even exceed spending on acute care. Management of nursing care services directly impacts the Commonwealth’s Medicaid budget.

- Acute Hospital
  - Acute inpatient care is the largest health expenditure, totaling 45% of institutional budget in SFY11.

Note: The Commonwealth’s Medicaid budget in 2011 was $5.9B. The chart represents select institutional services only.

1. Source: Figures based on DMS’s routine reporting to legislature for SFY11 provided by KHBE team member
2. Acute care budget includes rehab hospitals
3. Home Health does not include waiver services
4. Hospice care includes both hospice and residential hospice
5. Comprehensive rehab data only includes Rehab District Parts

Copyright © 2013 Deloitte Development LLC. All rights reserved
Nursing Facilities: Rebalancing Program

The Commonwealth has embarked on a CMS-sponsored rebalancing program to alleviate capacity constraints / reduce reliance on institutional services.

Overview of Rebalancing Program

- The Commonwealth’s nursing facilities have operated at or close to capacity for the past decade (Statewide occupancy 89-92%).
- The Commonwealth embarked on a pilot program, Kentucky Transitions, in 2007 with the intent to shift institutionalized patients to community settings.
- Kentucky Transitions started as a demonstration program funded by CMS’ Money Follows the Person Demonstration grant with the objective of deinstitutionalizing long term care (ACA extended the program through 2016).
- The Commonwealth of KY has a range of additional programs and waivers in place.
- There is potentially unmet demand for nursing care today; rebalancing efforts may, therefore, not reduce total utilization in the short term, but rather create space to serve pent-up demand.

Other Waiver Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABI</td>
<td>Acquired Brain Injury Waiver</td>
</tr>
<tr>
<td>ABI/LTC</td>
<td>Acquired Brain Injury and Long-Term Care Waiver</td>
</tr>
<tr>
<td>HCB</td>
<td>Home and Community Based Waiver Services</td>
</tr>
<tr>
<td>MPW</td>
<td>Michelle P. Waiver Services</td>
</tr>
<tr>
<td>MIIW</td>
<td>Model II Waiver</td>
</tr>
<tr>
<td>SCL</td>
<td>Supports for Community Living Waiver Services</td>
</tr>
</tbody>
</table>

1. Source: Kentucky Annual Long-Term Care Services Report, 2011
3. Factors beyond the Kentucky Transitions program may also be contributing to high home health utilization
5. Reinstitutionalized is defined as “any admission to hospital, nursing home, intermediate care facility for the intellectually and developmentally disabled (ICF-IDD), or institution for mental disease, regardless of length of stay”
Home Health: Identified Need by County

The Cabinet’s analysis of home health services highlights counties in which there is a shortage of home health services.

Relative need of home health services by county (red indicates higher need)


However, there are delays in approving HHA: Only 2 HHA applications were approved in 2012, while several were deferred or disapproved, are pending decisions, or have been withdrawn again.

Home health services examples: intermittent skilled nursing, physical therapy, occupational therapy, speech therapy, medical social services, medical supplies, durable medical equipment, home aide services, etc. Some services are offered through Medicaid waiver programs.
# Home and Community Based Services

The Commonwealth has an opportunity to expand waiver programs for the elderly, both in regards to services offered and in regard to total investment in the programs.

<table>
<thead>
<tr>
<th>Home Health Services[^1-2]</th>
<th>KY</th>
<th>FL</th>
<th>OH</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Day Health Care</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Assessment/Reassessment</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Assisted Living</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Attendant Care</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Case Management</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Chore</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Emergency Response Services</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Financial Management Services</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Home Adaptations</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Home Support Services (non medical)</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Home Delivered Meals</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Home Medical Equipment and Supplies</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Homemaker</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Nutritional Consultation</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Personal Care</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Pest Control</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>PT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Respite Care Services</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Speech Therapy</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Transportation</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Expenditures on Waiver Programs for “Aged” and “Aged Disabled”[^9]</th>
<th>~$72M</th>
<th>~$309M</th>
<th>~$377M</th>
<th>~$85M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waiver Expenditures for “Aged” and “Aged Disabled” Individuals per Waiver Participant[^4,5]</td>
<td>$6,069</td>
<td>$8,483</td>
<td>$10,326</td>
<td>$8,862</td>
</tr>
</tbody>
</table>

[^1-2]: State waiver services sourced from Medicaid.gov [http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/Waivers.html]; Only waivers specific to individuals 65+ were sourced.

[^3]: Specific names of services may differ, however, service provided is comparable (i.e. “Personal care” vs “Personal Care Aide”). Names were standardized for grouping.

[^4]: 1915(c) Waiver Expenditure Data for “Aged” and “Aged and Disabled” taken from Kaiser Family Foundation, State Health Facts, 2009 Data.

[^5]: Waiver expenditure data was multiplied from per thousand dollar amount to total dollar amount.

[^6]: 1915(c) Waiver Participant Data for “Aged” and “Aged and Disabled” taken from Kaiser Family Foundation, State Health Facts.

[^7]: Ratios calculated based on 2009 State Home Health patient and Nursing Facility patient data sourced from: The American Health Planning Association’s 2011 National Directory of State CON Programs and Health Planning Agencies

[^8]: Additional cost was calculated using the difference of KY’s and FL’s 1915© waiver expenditure for “Aged” and “Aged and Disabled” services per “Aged” and “Aged and Disabled” 1915© waiver participant, then multiplying by the number of Kentucky’s 1915© “Aged” and “Aged and Disabled” participants to find the incremental cost of KY’s waiver program if operating similar to Florida. This incremental cost was then added to the incremental cost incurred by adjusting for differences in Medicaid enrollees. This adjustment was found by taking the difference in KY and FL 1915© waiver participants as a percent of total Medicaid enrollees, then multiplying by the number of Total KY Medicaid enrollees to find the number of additional participants needed to account for differences in Medicaid enrollment. This figure was multiplied by FL’s cost for “Aged” and “Aged and Disabled” services per “Aged” and “Aged and Disabled” 1915© waiver participant to get the incremental cost incurred as a result of Medicaid enrollment differences.

[^9]: Sources: KY waiver program expenditure for 2009 sourced from CMS 372(S) annual report, other States sourced from Kaiser Family Foundation, 2009 report.
Facility Capacity Study

D. Mental Health Services
D. Mental Health: Summary and Recommendations

Summary of Findings

- The Commonwealth has higher utilization rate than the national benchmark for many inpatient psychiatry services, as measured by DRGs; Kentucky also has among the highest prevalence of serious mental health conditions across states (5.4% of population vs. 4.6% national average).

- The reimbursement for inpatient psychiatry care is less favorable in the Commonwealth than in all contiguous states, which may incentivize early discharges and result in readmissions.

- Expansion of community based programs is critical to improve the transition of patients from facility-based acute care episodes to stable ambulatory management of chronic conditions.

- The 2013 Healthcare Workforce Capacity Study estimated a shortage of >1,600 mental health professionals across disciplines; an under-resourced ambulatory care system could be one driver of the high inpatient utilization.

- The cabinet has approved 132 additional Level II PRTF beds in 2011, in an effort to create capacity to repatriate children and adolescents that formerly obtained care outside of the Commonwealth.

Recommendations (Options for Consideration)

1. Develop programs to increase availability, improve staffing level, and optimize mix of providers for outpatient psychiatry care.

2. Improve infrastructure and coordination between care settings for ambulatory mental health services.

3. Examine use of economic levers to improve balance between inpatient and outpatient psychiatry care.

4. In addition to the recent expansion of PRTF capacity, consider promoting PRTF through greater economic incentives.
## Mental Health: Utilization of Inpatient Psychiatry Services

The Commonwealth has a higher utilization rate than the national benchmark for many mental health DRGs.

<table>
<thead>
<tr>
<th>DRG #</th>
<th>DRG Description</th>
<th>KY Use Rate</th>
<th>National Use Rate</th>
<th>Ratio KY to National</th>
</tr>
</thead>
<tbody>
<tr>
<td>56</td>
<td>Degenerative nervous system disorders w mcc</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9x</td>
</tr>
<tr>
<td>57</td>
<td>Degenerative nervous system disorders w/o mcc</td>
<td>4.3</td>
<td>3.4</td>
<td>1.3x</td>
</tr>
<tr>
<td>80</td>
<td>Non-traumatic stupor &amp; coma w mcc</td>
<td>0.1</td>
<td>0.1</td>
<td>1.0x</td>
</tr>
<tr>
<td>81</td>
<td>Non-traumatic stupor &amp; coma w/o mcc</td>
<td>0.5</td>
<td>0.5</td>
<td>1.0x</td>
</tr>
<tr>
<td>875</td>
<td>O.R. procedure w principal diagnoses of mental illness</td>
<td>0.1</td>
<td>0.1</td>
<td>1.0x</td>
</tr>
<tr>
<td>880</td>
<td>Acute adjustment reaction &amp; psychosocial dysfunction</td>
<td>1.9</td>
<td>1.5</td>
<td>1.3x</td>
</tr>
<tr>
<td>881</td>
<td>Depressive neuroses</td>
<td>10.6</td>
<td>4.4</td>
<td>2.4x</td>
</tr>
<tr>
<td>882</td>
<td>Neuroses except depressive</td>
<td>2.8</td>
<td>1.6</td>
<td>1.8x</td>
</tr>
<tr>
<td>883</td>
<td>Disorders of personality &amp; impulse control</td>
<td>1.1</td>
<td>0.5</td>
<td>2.2x</td>
</tr>
<tr>
<td>884</td>
<td>Organic disturbances &amp; mental retardation</td>
<td>2.9</td>
<td>2.2</td>
<td>1.3x</td>
</tr>
<tr>
<td>885</td>
<td>Psychoses</td>
<td>55.5</td>
<td>38.0</td>
<td>1.5x</td>
</tr>
<tr>
<td>886</td>
<td>Behavioral &amp; developmental disorders</td>
<td>2.8</td>
<td>0.9</td>
<td>3.1x</td>
</tr>
<tr>
<td>887</td>
<td>Other mental disorder diagnoses</td>
<td>0.2</td>
<td>0.1</td>
<td>2.0x</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>Discharges per 10,000</strong></td>
<td><strong>83</strong></td>
<td><strong>54</strong></td>
<td><strong>1.5x</strong></td>
</tr>
</tbody>
</table>

KY appears to have a higher utilization of inpatient psychiatric care than the national benchmark. The comparatively high inpatient use rate corresponds to a higher prevalence of serious mental health conditions in Kentucky (estimated 5.4% of population compared to 4.6% national average).

1. Source: 2012 KY Administrative Claims. Data Note: The utilization rate from admin claims data (83 per 10,000) is lower than that from Annual Hospital Survey report (107 per 10,000), among other reasons, because three state psychiatric hospitals received a waiver from reporting in 2012
2. Source: AHRQ’s Health Care Utilization Project (HCUP) 2010 data
3. Source: Findings from SAMHSA’s 2008 and 2009 National Surveys on Drug Use and Health (NSDUHs)
Mental Health: Facility Fee Economic Levers

Low reimbursement may incentivize quick discharges from inpatient psychiatry care; absent appropriate ambulatory follow-up, this may lead to re-hospitalizations.

**Actual Cost Allowed per Psychiatry Discharge\(^1,2,3\)**

(Commercial Reimbursement)

Kentucky has the lowest commercial cost allowance for Mental Health Hospital Inpatient Services compared to the contiguous states.

1. Sources: 2011 MarketScan Benchmark Data, Medical Commercial Claims Data; CMS’ Table 4A—Proposed Wage Index And Capital Geographic Adjustment Factor (GAF) For Urban Areas By CBSA And By State—Fy 2012
2. Actual Cost per Unit (surgery) Allowed, Wage Adjusted. Commercial reimbursement selected as proxy for overall reimbursement levels
3. Each state’s cost per unit was wage adjusted using a calculated state-level wage index (the weighted average of MSA wage indices and MSA population)
Mental Health: Community Based Psychiatric Treatments

Community based behavioral health initiatives could help shift the Commonwealth’s current psych patient load to a community setting.

Community Based Initiatives

<table>
<thead>
<tr>
<th>Improved integration of primary care with behavioral health services</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to a 2010 report by the American Hospital Association (AHA), improved integration of psychiatric and primary care has led to increased detection of co-morbidities, improved treatment outcomes, and cost savings in the long run.¹</td>
</tr>
</tbody>
</table>

Tele-psychiatry

<table>
<thead>
<tr>
<th>Tele-psychiatry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tele-psychiatry has led to an increase in service access and improved diagnosis, treatment, and management of mental health diseases, especially in rural communities.¹</td>
</tr>
<tr>
<td>• Alabama is creating community based collaborations to provide tele-psychiatry services to underserved communities.²</td>
</tr>
<tr>
<td>The Commonwealth’s Medicaid program offers reimbursement for a range of telemedicine services (Reg. 907 KRA 3:170)</td>
</tr>
</tbody>
</table>

Subsidized housing for psychiatric patients

<table>
<thead>
<tr>
<th>Subsidized housing for psychiatric patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>States are undergoing initiatives aimed at providing affordable, permanent housing for the mentally ill in the form of: ³</td>
</tr>
<tr>
<td>• Massachusetts Permanent Supportive Housing Program: provides permanent, supportive housing to individuals with mental illness at a cost of less than 30% of income.⁴</td>
</tr>
<tr>
<td>• California Mental Health Services Act: uses a 1% income tax on incomes of over $1 million to provide over $4 million towards the creation of housing for the mentally ill.⁵</td>
</tr>
</tbody>
</table>

¹. American Hospital Association, 2012 TrendWatch: Bringing Behavioral Health into the Care Continuum: Opportunities to Improve Quality, Costs, and Outcomes
³. National Alliance for Mental Illness
⁴. Massachusetts' Supportive Housing; http://www.massresources.org/permanent-supportive-housing.html
Mental Health: Workforce Considerations

Facilities in certain counties are experiencing high occupancy levels for Inpatient Psychiatry and PRTF; many of these counties (e.g., Christian, Laurel, Floyd/Pike) are also short-staffed for mental health providers.

There appears to be some relationship between counties that have high occupancy of their inpatient psychiatry facilities and surrounding counties that have a shortage of mental health providers (acknowledging a mental health facility draws patients from a service area that extends beyond just the county it is located in).

This could be a reflection of inefficient outpatient management of psychiatry patients who instead utilize the inpatient psych system more frequently.

A recent workforce capacity analysis for the Commonwealth of Kentucky estimated a shortage of 1,638 mental health providers across disciplines.2

The report suggested several mitigation strategies for mental health provider shortages, including.2,3

- Attracting international mental health providers
- Expanding Kentucky tele-health program for mental health services

---

1. Utilization data derived from 2012 Annual Hospital Utilization and Service Report; rate based on 2012 population
2. Map derived from The Commonwealth of Kentucky Health Care Workforce Capacity Report (March 2013); Health Providers (MHPs) include Psychologists, Licensed Clinical Social Workers (LCSWs), Licensed Professional Counselors (LPCs), Marriage and Family Therapists (MFTs), Alcohol and Drug Counselors (ADCs); note that the quality and accuracy of licensing databases were problematic and missing current practice locations
3. The Commonwealth is a recognized Health Professional Shortage Areas with 61 counties short a total of 154 mental health professionals in 2013 (Health Professional Shortage Area (HPSA), Health Resources Services Administration, Online tool accessed 07/20/2013)
Mental Health: Professional Fee Economic Levers

Low reimbursement for professional fees care may contribute to the Commonwealth’s shortage of mental health workforce.

Actual Cost Allowed per Visit\(^1,2,3\)
(Commercial Reimbursement)

Kentucky has the lowest commercial cost allowance for professional Mental Health Hospital Inpatient Services compared to the contiguous states.

1. Sources: 2011 MarketScan Benchmark Data, Medical Commercial Claims Data; CMS’ Table 4A.–Proposed Wage Index And Capital Geographic Adjustment Factor (GAF) For Urban Areas By CBSA And By State—FY 2012
2. Actual Cost per Unit (surgery) Allowed, Wage Adjusted. Commercial reimbursement selected as proxy for overall reimbursement levels
3. Each state’s cost per unit was wage adjusted using a calculated state-level wage index (the weighted average of MSA wage indices and MSA populations)
E. Imaging: MRI, PET
E. Imaging: Summary and Recommendations

Summary of Findings

- The Commonwealth *use rate for outpatient MRI and PET is comparable to national benchmarks*, suggesting appropriate usage.
- However, there are several indicators that *the CON program for MRI may no longer be serving its intended objective*.
- *Demand-side controls* such as pre-approvals and HMO models *may be more effective* than supply-side restrictions in managing MRI utilization.

Recommendations (Options for Consideration)

1. The Commonwealth might consider discontinuing CON regulation for MRI equipment and instead reinforce case management policies to manage demand (e.g. state-wide pre-approvals).
2. The Commonwealth may also consider de-regulating the PET market and instituting public health measures, such as case management, for PET instead.
Imaging: MRI and PET Projections

The Commonwealth’s use rate of MRI and PET services is comparable to national benchmark, but there is excess capacity across MMCRs.

<table>
<thead>
<tr>
<th>Procedure Volume of Existing MRI Facilities&lt;sup&gt;1,2&lt;/sup&gt;</th>
<th>Procedure Volume of Existing PET Facilities&lt;sup&gt;1,2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="MRI Facilities Chart" /></td>
<td><img src="image" alt="PET Facilities Chart" /></td>
</tr>
<tr>
<td>100% = SHP threshold</td>
<td>100% = SHP threshold</td>
</tr>
<tr>
<td>60% 64% 84% 76% 78% 85% 74%</td>
<td>37% 42% 86% 70% 82% 41% 55%</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 MMCR</td>
<td>1 2 3 4 5 6 7 8 MMCR</td>
</tr>
</tbody>
</table>

*The average procedure volume of existing MRI and PET facilities in 2017 would still be well below the minimum volume threshold set by the State Health Plan (SHP) for new applicants (100%)*

---

1. Capacity calculated according to standard annual number of procedures as per State Health Plan
2. KY, National and South demand projections calculated using a constant use rate (“steady state” methodology)
Imaging: Impact of CON on MRI and PET

Contiguous state data suggests that the impact of a CON program in restraining MRI and PET use may be limited.

Outpatient MRI Utilization per 10,000 ¹

Comparison of outpatient MRI use rates in contiguous states suggests that the presence of a CON program may not be the primary determinant of outpatient utilization.

CON and Non-CON states have comparable average utilization rate rates for outpatient MRI when normalized to the population.

Outpatient PET Utilization per 10,000 ²

CON states have a 50% higher utilization rate of PET than Non-CON states (9 vs. 6 per 10,000).

Outpatient use rates call the effectiveness of CON in managing PET utilization into question. Non-invasive imaging services could still be subject to over-prescribing.


² Source: 2012 Truven Outpatient Profiles for the following Procedure Groups: PET SCAN
## Imaging: Overview of Contiguous States’ CON Policies

Of the seven contiguous states, three do not have CON requirements for MRI or PET devices. Kentucky’s provision specify minimum thresholds for new applications.

### CON Decisions for MRI, PET and MRE

<table>
<thead>
<tr>
<th>State</th>
<th>New</th>
<th>Replace</th>
<th>Expand</th>
<th>Physician Owned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky¹</td>
<td>✓</td>
<td>N/A</td>
<td>—</td>
<td>N/A</td>
</tr>
<tr>
<td>Missouri²</td>
<td>✓</td>
<td>✓</td>
<td>—</td>
<td>✓</td>
</tr>
<tr>
<td>Tennessee³</td>
<td>✓</td>
<td>N/A</td>
<td>—</td>
<td>✓</td>
</tr>
<tr>
<td>Virginia⁴⁵</td>
<td>✓</td>
<td>N/A</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>West Virginia⁶</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>N/A</td>
</tr>
<tr>
<td>Illinois⁷</td>
<td></td>
<td></td>
<td></td>
<td>MRI CON was deregulated February 21, 2003</td>
</tr>
<tr>
<td>Indiana⁸</td>
<td></td>
<td></td>
<td></td>
<td>MRI has not been regulated under Indiana’s CON policy</td>
</tr>
<tr>
<td>Ohio⁹¹⁰</td>
<td></td>
<td></td>
<td></td>
<td>Many CON regulations, with the exception of Long Term-Care, were abolished in the late ’90’s</td>
</tr>
</tbody>
</table>

---

**Individual variances exist for equipment acquisition, capital thresholds, and minimum utilization determination.**

**CON requirements are similar for MRI and PET (refer to supporting materials for additional detail).**

---

5. Representative from the Virginia Department of Healthcare Services
8. Source: Representative from Indiana Department of Health
9. Source: Representative from Ohio Department of Health, Certificate of Need program
10. Evidence of CON approval for MRI exists until 1994
Imaging: Utilization Management Tools

A range of utilization management tools can help limit demand and may be more effective in controlling overall usage of imaging services than supply management through CON.

Case Study of MRI Utilization Before and After Pre-Approval Requirement

Utilization Management Tools

The following tools and mechanisms can help reduce excessive demand for MRI services:

- **Case management** – Individual review of appropriateness and pre-approval of imaging by third-party (payers or subcontracted case management firms).

- **Incentives for facilities** – Case rate payments to hospitals that include reimbursement for imaging services (removes fee-for-service volume inventive).

- **Penalties for prescribers** – Financial penalties for physicians over-prescribing imaging services.

- **Radiologist Consultation** – Requirement for consultation with radiologist prior to prescribing imaging.

- **Stark Laws** – Prohibition of referral to facilities in which referrer has financial interests.

- **Medical Guidelines** – Imaging guidelines and appropriateness criteria for prescription.

---

F. Ambulatory Surgery
ASC: Summary and Recommendations

Summary

- The 2012 occupancy rate for ambulatory surgery ORs is high as measured by the minimum volume threshold specified in the State Health Plan; the occupancy challenge is expected to intensify going forward.

- Access time to closest ASC facility appears reasonable, but the health services data does not allow for an analysis of potential backlog or wait times to obtain ambulatory surgery services.

- Kentucky is below the average of contiguous states in regards to commercial insurance cost allowance for ASC reimbursement which may skew incentives toward treating patients in the hospital instead of in an ambulatory setting.

- Of the 43 CON applications submitted since Jan 1, 2003, none were approved that had to meet the planning area surgical utilization requirements of the State Health Plan. 23 applications were granted under non-substantive review and 2 were approved under special circumstances (e.g., re-establishment of ORs after hospital closed).

Recommendations (Options for Consideration)

1. Temporarily relax CON criteria for ASC and allow more freestanding ASCs to be built in order to increase market competition and provide viable alternatives to hospital-based care.

2. Consider relaxing the proximity requirement stipulating 20-minute drive time to closest backup acute care hospital. The proximity requirement may not be medically relevant for smaller ambulatory surgery procedures. (In comparison, for cardiac cath, the State Health Plan does not set a proximity requirement but requires a 24x7 consultation service).

3. Use reimbursement for ambulatory surgeries as economic lever to encourage conducting surgical procedures in an outpatient setting rather than by admitting patients to hospitals.
ASC: Occupancy Rates of ORs by MMCR

In general, occupancy levels for ambulatory surgery ORs are high, and some facilities may currently face actual capacity constraints.

Occupancy Rates for ASCs by MMCR (2012)

- 2012 Occupancy
- 2017 Occupancy
- Utilization Rate

MMCR:
1. Louisville
2. Lexington

1. Source: 2012 outpatient claims database
2. This analysis examines OR utilization at Ambulatory Surgery Centers; it does not account for outpatient surgeries that might be performed at hospitals within the service area.
ASC: Access to Closest ASC (Drive Time)

The majority of Kentucky residents are less than one hour driving distance from an ASC.

Drive time to access closest ambulatory surgery center (hospital-based or freestanding) 1,2

Distribution of ambulatory surgery centers appears reasonable. The State Health Plan requires locating an ASC within 20 minutes of an acute care hospital with which a transfer agreement is in place. This can create a competitive disadvantage for free-standing centers which, due to proximity, now directly compete with the hospitals for volume. There are only 21 free-standing ambulatory surgery centers reporting as of 2012 (purple), indicating a potential lack of market competition.

1. ASC data derived from Annual Hospital Utilization and Service Report; includes ASC surgeries conducted in 2012
2. Drive time was calculated as distance between facility zip codes using GoogleMaps®
ASC: Economic Levers

Kentucky is just below the average of contiguous states in regards to commercial insurance cost allowance for ASC reimbursement; this intermediate level of reimbursement may skew incentives toward still treating patients in an inpatient setting.

Actual Cost Allowed per Surgery¹
(Commercial Insurance)

Four of the eight contiguous states feature on average higher reimbursement for ambulatory surgery services.

1. Sources: 2011 MarketScan Benchmark Data, Medical Commercial Claims Data; CMS Table 4A.—Proposed Wage Index And Capital Geographic Adjustment Factor (GAF) For Urban Areas By CBSA And By State, FY2012
2. Actual Cost per Unit (surgery) Allowed, Wage Adjusted. Commercial reimbursement selected as proxy for overall reimbursement levels
3. Each state’s cost per unit was wage adjusted using a calculated state-level wage index (the weighted average of MSA wage indices and MSA population)
ASC: Overview of CON History

Of the 43 ASC applications submitted since Jan 1, 2003, none were approved that had to meet the planning area surgical utilization requirements of the State Health Plan (SHP).1,2

Overview of ASC Applications and Decisions since 2003

- 2 applications were approved: 1 application was approved in 2013 for a limited surgical facility (dental) and 1 application was approved in 2006 to reestablish 4 ORs that were closed when a hospital closed. These applications did not have to meet the SHP criteria.

- 2 applications were denied.

- 1 Certificate of Need was revoked by the Cabinet.

- 15 applications were deferred or withdrawn by the applicant.

- 2 applications were approved in 2012 and 1 application was approved in 2013 which were granted non-substantive review (SHP criteria not applicable). One is a free clinic housed in an existing licensed ASC; one is an ASC created when a hospital is closing; and one is an ASC that is owned by physicians that met a statutory non-sub criterion.

- 20 applications for change of location or cost escalations were granted non-substantive review (SHP criteria not applicable) and were approved.

---

1. Source: Office of Health Policy. CON Search Application. Analysis and interpretation provided by OHP
2. Non-substantive review: KRS 216B.015(18) defines “nonsubstantive review” as meaning “an expedited review conducted by the cabinet of an application for a certificate of need as authorized under KRS 216B.095”. Examples: Change of location, replace or repair existing facility, for cost escalations.
G. Physical & Occupational Therapy

- What is the workforce situation for physical therapy and occupational therapy?
  - Workforce supply vs. benchmarks
  - Projections
  - General workforce trends
PT and OT: Summary and Recommendations

Summary

- The Commonwealth’s Total Physical Therapy workforce supply is comparable to national benchmarks and southern states (HHS Region 4).
- The demand for physical therapists in the Commonwealth is projected to continue to outpace supply according to a 2010 article in *The American Academy of Physical Medicine*.
- Similar to the situation with Physical Therapists, the Commonwealth’s current Occupational Therapist workforce appears sufficient when compared to national, regional, and contiguous state benchmarks.
- However, trends in occupational therapist supply might indicate a potential shortfall of occupational therapists in the future:
  - The number of accredited programs has decreased over the last 5 years despite 93% enrollment rates.
  - The Bureau of Labor Statistics predicts a 33% increase in demand for Occupational Therapists, which may accentuate the effects of current occupational therapy vacancies.

Recommendations (Options for Consideration)

- Advance planning is required to avoid a shortfall of PT and OT, particularly in light of increased demand stemming from an aging population that will require additional physical therapy and occupational therapy services,
- Specific workforce measures may include:
  - Increase reimbursement for PT and OT to attract more professionals and increase attractiveness of training.
  - Consider loan forgiveness programs for PT and OT graduates.
  - Develop advanced degree programs (e.g., Doctor in Physical Therapy, DPT) to increase the profession’s status.
  - Recruit international candidates to fill vacancies, potentially in a Health Professionals Shortage Area model.

Potential Challenges

- There is little ‘felt pain’ today relative to immediate shortages in physical therapists and occupational therapists today. Anticipatory measures for PT and OT may therefore be deprioritized relative to more urgent tasks.
- Some of the suggested measures to bolster the PT and OT workforce may be beyond the purview of the Cabinet (e.g., increasing commercial or Medicare reimbursement, developing academic programs, etc.)

The Commonwealth’s Total Physical Therapy workforce supply is comparable to national benchmarks and southern states (HHS Region 4)

Kentucky has a shortage of 175 in-state PT’s relative to the national benchmark

Key:
- PTs licensed and live in KY
- Contiguous states
- PTs licensed and live outside of KY
- HHS 4 Region

1. Kentucky residence was determined based on listed work and home addresses; Source: 2013 Kentucky Board of Physical Therapy’s licensure list
2. All Non-Kentucky benchmark data was sourced from Bureau of Labor Statistics (BLS), Healthcare Practitioner and Technical Occupations Profiles, 2012.
3. All state benchmarks were calculated using the total number of Physical Therapists and standardized to per 100,000 population rate
4. Contiguous state and HHS-Region 4 benchmarks were calculated using a weighted average of total Physical Therapists and respective state population for each region

The demand for physical therapists in the Commonwealth is projected to continue to outpace supply according to a 2010 article in The American Academy of Physical Medicine.

South Historic Surplus/Deficit Experience

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maryland</td>
<td>1,000</td>
<td>0</td>
</tr>
<tr>
<td>Missouri</td>
<td>600</td>
<td>400</td>
</tr>
<tr>
<td>Indiana</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Ohio</td>
<td>400</td>
<td>600</td>
</tr>
<tr>
<td>Florida</td>
<td>300</td>
<td>700</td>
</tr>
<tr>
<td>Tennessee</td>
<td>200</td>
<td>800</td>
</tr>
<tr>
<td>Illinois</td>
<td>100</td>
<td>900</td>
</tr>
<tr>
<td>W. Virginia</td>
<td>50</td>
<td>1,000</td>
</tr>
<tr>
<td>Miss.</td>
<td>-150</td>
<td>-50</td>
</tr>
<tr>
<td>Kentucky</td>
<td>-200</td>
<td>-200</td>
</tr>
<tr>
<td>Virginia</td>
<td>-300</td>
<td>-300</td>
</tr>
<tr>
<td>Alabama</td>
<td>-400</td>
<td>-400</td>
</tr>
<tr>
<td>W. Virginia</td>
<td>-500</td>
<td>-500</td>
</tr>
<tr>
<td>S. Carolina</td>
<td>-600</td>
<td>-600</td>
</tr>
<tr>
<td>Kentucky</td>
<td>-700</td>
<td>-700</td>
</tr>
<tr>
<td>Virginia</td>
<td>-800</td>
<td>-800</td>
</tr>
<tr>
<td>Alabama</td>
<td>-900</td>
<td>-900</td>
</tr>
<tr>
<td>W. Carolina</td>
<td>-1,000</td>
<td>-1,000</td>
</tr>
<tr>
<td>Georgia</td>
<td>-1,100</td>
<td>-1,100</td>
</tr>
</tbody>
</table>

Future Surplus/Deficit Outlook

The model assumes population growth and age are the principal drivers of demand. The study by Zimbelman projects physical therapist shortages are projected to grow significantly for the South Region.

1. Source: Figure 1, Zimbelman, J. (2010). Physical therapy health human resource ratios: A comparative analysis of the United States and Canada. The American Academy of Physical Medicine and Rehabilitation, pg. 1025; Figure 2, pg. 1026.
2. PT Shortage based on 2008 data and calculated using: [(PT Demand - PT Supply)/Population]*104. Refer to source for PT Supply and PT Demand methodology.
Occupational Therapy: Work Force Supply – 2013

The Commonwealth’s current Occupational Therapist workforce appears sufficient when compared to national, regional, and contiguous state benchmarks.

BLS data for KY indicates a shortage of 44 OT’s. BLS’ extrapolation methodology may contribute to this discrepancy.

Key:
- PTs licensed outside of KY
- Contiguous states
- HHS 4 Region

1. Kentucky residence was determined based on licensing state. Source: 2013 Kentucky Board of Occupational Therapists license list.
2. All Non-Kentucky benchmark data was sourced from Bureau of Labor Statistics (BLS), Healthcare Practitioner and Technical Occupations Profiles, 2012.
3. All state benchmarks were calculated using the total number of Occupational Therapists and standardized to per 100,000 population rate.
4. Contiguous state and HHS-Region 4 benchmarks were calculated using a weighted average of total Occupational Therapists and respective state population for each region.
5. Bureau of Labor Statistics (BLS) calculates benchmarks using a sample of data collected from a biannual survey data over a 3 year period.
Occupational Therapy: General Trends

Trends in occupational therapist supply might indicate a potential shortfall of occupational therapists in the future

<table>
<thead>
<tr>
<th>Region</th>
<th>Occupational Therapists</th>
<th>Occupational Therapy Assistants</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S Sample</td>
<td>8.9%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Northeast</td>
<td>6.5%</td>
<td>8.7%</td>
</tr>
<tr>
<td>South</td>
<td>8.3%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Midwest</td>
<td>8.7%</td>
<td>4.3%</td>
</tr>
<tr>
<td>West</td>
<td>11.9%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

A 2010 study by the American Occupational Therapy Association indicates current vacancies in occupational therapy positions that are predicted to remain in the long run.

Additional Trends:

- Based on a study by the American Occupational Therapy Association, a lack of occupational therapists to fill available positions is the primary cause of OT job vacancies.
- Despite high levels of enrollment around 93%, the number of accredited occupational therapy programs has steadily decreased over the last 5 years; this is likely to unfavorably impact the number of new graduates.
- The Bureau of Labor Statistics predicts a 33% increase in the Occupational Therapy market, which may multiply the effects of current vacancies and decrease supply of OT programs.

2. Vacancy= (# of FTE equivalent vacant positions/ #FTE budgeted positions)
3. Regions based on the US Census Bureau Regional Definitions
Conclusions
Prioritization of Initiatives

Certain recommendations in Acute Care, Nursing Facilities, and Psychiatry are expected to be more complex to implement, while Data and MRI/PET efforts could be considered “quick wins” in moving forward.¹
Facility Capacity Study

Appendix
## Occupancy Projections: Tier 1 (Continued Momentum)

Occupancy rates are projected assuming largely constant supply. There are few ‘new issues’; facilities that were close to capacity in 2012 will continue to experience potential constraints.

<table>
<thead>
<tr>
<th>MMCR</th>
<th>Acute Care (%)</th>
<th>Comp. Psych</th>
<th>Psych Hospital</th>
<th>Nursing Facility</th>
<th>ASC</th>
<th>PRTF</th>
<th>CD</th>
<th>Home Health (%)</th>
<th>Home Health 65+ (%)</th>
<th>Hospice (%)</th>
<th>Res. Hospice (%)</th>
<th>Cardiac Cath (%)</th>
<th>PDN (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40%</td>
<td>53%</td>
<td>36%</td>
<td>82%</td>
<td>123%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2</td>
<td>37%</td>
<td>45%</td>
<td>27%</td>
<td>89%</td>
<td>70%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>49%</td>
<td>50%</td>
<td>52%</td>
<td>87%</td>
<td>84%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>4</td>
<td>52%</td>
<td>70%</td>
<td>54%</td>
<td>93%</td>
<td>171%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>41%</td>
<td>64%</td>
<td>46%</td>
<td>89%</td>
<td>69%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>6</td>
<td>54%</td>
<td>79%</td>
<td>47%</td>
<td>93%</td>
<td>115%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>7</td>
<td>47%</td>
<td>53%</td>
<td>39%</td>
<td>92%</td>
<td>90%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td>57%</td>
<td>46%</td>
<td>76%</td>
<td>89%</td>
<td>95%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>KY</td>
<td>47%</td>
<td>58%</td>
<td>46%</td>
<td>89%</td>
<td>95%</td>
<td>84%</td>
<td>57%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

1. Utilization rate per 10,000 individuals in 2012, assumed to hold constant through 2017.
2. Demand for facilities with insufficient geographic footprint is projected using statewide data.
3. Capacity data is not available for services that are conducted outside of a facility, i.e. home health, as well as select facility-based services (e.g., residential psychiatry).
## Occupancy Projections: Tier 2 (Steady State)

Occupancy rates are projected assuming largely constant supply. For MRI, MRE and PET, utilization is compared against minimum use thresholds for new CON applications.

<table>
<thead>
<tr>
<th>MMCR</th>
<th>MRI¹</th>
<th>MRE¹</th>
<th>PET¹</th>
<th>Neonatal²</th>
<th>Open Heart²</th>
<th>Transplant³</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>68%</td>
<td>111%</td>
<td>35%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2</td>
<td>72%</td>
<td>60%</td>
<td>40%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>95%</td>
<td>70%</td>
<td>78%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>4</td>
<td>80%</td>
<td>91%</td>
<td>91%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>87%</td>
<td>81%</td>
<td>64%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>6</td>
<td>101%</td>
<td>41%</td>
<td>82%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>7</td>
<td>77%</td>
<td>81%</td>
<td>39%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td>83%</td>
<td>74%</td>
<td>63%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>KY</td>
<td>83%</td>
<td>74%</td>
<td>63%</td>
<td>79%</td>
<td>44%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

- **Utilization is, for the most part, below the minimum use threshold specified in the State Health Plan (Threshold would correspond to 100%)**

- **Occupancy calculated at the State level due to limited geographic distribution of services**

<table>
<thead>
<tr>
<th>Potential for Moderate Capacity Constraint (&gt;100% standard use rate)</th>
</tr>
</thead>
</table>

1. Capacity calculated according to standard annual number of procedures as per State Health Plan
2. Demand for facilities with insufficient geographic footprint is projected using statewide data
3. Capacity data is not available for selected facility-based services (e.g., transplant)

---

2012 capacity  | Projected 2017 capacity
---|---