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KENTUCKY HEALTH BENEFIT EXCHANGE

The Commonwealth of Kentucky Health Care Workforce Capacity Report

May 2013

Contents

1. Executive Summary

The establishment of the Kentucky Health Benefit Exchange (KHBE) may result in a majority of the Commonwealth's 640,000 uninsured individuals using the exchange, or traditional methods, to purchase health insurance coverage either through Medicaid expansion or some form of premium assistance. KHBE anticipates this pent-up demand will cause a strain on the Commonwealth's already challenged health care workforce and procured Deloitte Consulting to assist in a 10-week study to assess current access to and availability of Kentucky's existing health care workforce.

In addition to this final report, Deloitte Consulting developed a dynamic visualization tool to geo-map the underlying data analysis used to calculate the workforce capacity and identify gaps across the Commonwealth by provider type. The visualization tool includes the ability to model the output in current capacity (2012), Medicaid expansion scenarios, five-year projected need (2017), and numerous other views. Select output from that tool is contained within the report to visually highlight specific findings; however, it is recommended the reader view both the report and visualization tool in tandem.

A number of challenges were encountered when attempting to estimate the workforce of clinically active providers. These challenges should be taken into consideration when interpreting the results of this report, including:

- Some professionals may practice in more than one location or county and/or may have more than one professional degree or type of license for which clinical efforts vary.
- Kentucky state licensing databases record varying amounts of information, as do Medicaid and other Commonwealth bureaus and agencies, and fields crucial to this study were missing on some data sets (e.g., "county of practice," "practice address," "full-time equivalent (FTE)," "degree type," and "institution/date of graduation").
- Benchmarks for provider supply adequacy ratios are often imprecise, conflicting, and lack comprehensiveness for the entire workforce.
- Licensure data may not have been refreshed and validated at regular intervals which led some data sets to contain duplicative entries or inaccurate status information (e.g., death, retirement, and semiretirement).

While multiple challenges were encountered with professional licensure data quality, significant effort was taken to select and compare appropriate segmentations and benchmarks for this study, which yielded a number of findings, including:

- While many of the calculated ratios for the selected Kentucky health care workforce provider groups appear to be above the adequacy benchmark ratio, a more detailed look at the county level is needed to determine the true workforce capacity issues.
- Large gaps appear in the health care workforce, especially in rural and underserved areas, across the Commonwealth.
- Additional risks to the current supply of the workforce come from retention, recruitment, and retirement.

Additionally, the general findings by provider group in scope for this study are summarized in the table below (please reference Sections 3, 4, 5, and 6 for further detail, methodology, and footnotes):

Provider Group	Current Supply	Themes
Physicians	10,475	• Overall physician need in 2012, including both Primary Care physicians (PCPs) and specialists, across the Commonwealth is 3,790 FTEs (excluding surpluses). • 61% of unmet need is concentrated in rural counties. • PCP subset, is calculated from more defined benchmarks and modeling, indicates a need of 183 in 2012 to 284 FTEs in 2017 depending on the Medicaid expansion scenario. • Physician retirement and retention issues add to the challenges of growing the physician population through traditional measures. • Licensing database is fairly correct and includes county of practice; benchmarks for this group are also widely available.
Dentists	1,711	• Overall dentist need in the Commonwealth is high with 612 additional FTEs (excluding surpluses) or 36% of the current supply required to meet current demand. • Many counties in Kentucky need greater than 100% increases in the current dentist workforce, and three counties appear to have no dentists currently practicing. • Jefferson County has the most pronounced need of 150 dentists, which was unexpected given the urban designation. • Licensing database had duplicative and missing information in crucial fields; widely available benchmarks.
Advanced Practice Registered Nurses (APRNs)	3,057	• Overall APRN need in 2012 is relatively low compared to other groups with only 148 FTEs (excluding surpluses) needed across the Commonwealth. • Need is nearly evenly split between rural and urban counties. • Licensing database is one of the most accurate compared to other groups and includes county of practice; widely available benchmarks.
Physician Assistants (PAs)	985	• Overall PA need in 2012 is 296 FTEs (excluding surpluses), or 30% of current supply, which is relatively high as a percentage compared to other groups. • The need is nearly evenly split between rural and urban counties. • Licensing database is fairly correct, but does not include crucial county of practice; widely available benchmarks
Registered Nurses (RNs)	48,093	• The current need for additional RNs across the Commonwealth is 5,635 FTEs (excluding surpluses), representing a 12% increase in the total RN workforce. • The need is pronounced across the southern border and in the northeastern corner of the Commonwealth. • Licensing database is one of the most accurate compared to other groups and includes county of practice; widely available benchmarks.
Licensed Practical Nurses (LPNs)	11,770	• Overall LPN need in 2012 is low at only 6% growth or 688 FTEs (excluding surpluses) needed over the current workforce supply to meet demand. • Rural needs are evenly spread across the Commonwealth, and urban needs are concentrated around Warren, Woodford, Bullitt, and Boone counties. • Licensing database is one of the most accurate compared to other groups and includes county of practice; widely available benchmarks.
Nurse Aides (NAs)	43,619	• Benchmarking does not indicate unmet need in this provider group across the Commonwealth. • Licensing database is fairly correct, but does not include crucial county of practice; benchmarks available but limited.
Optometrists	568	• Overall optometrist need is high with an additional 269 FTEs (excluding surpluses) or 47% of supply required to meet current need. • Over 25% of the counties in Kentucky do not have a practicing optometrist represented in the licensing database, and only 10% of counties have enough optometrists to meet the current need. • Licensing database is fairly correct, but does not include crucial county of practice; benchmarks available but limited.

Provider Group	Current Supply	Themes
Mental Health Providers (MHPs) which includes: • Psychiatrists • Psychologists • Licensed Clinical Social Workers (LCSWs) • Licensed Professional Counselors (LPCs) • Marriage and Family Therapists (MFTs) • Alcohol and Drug Counselors (ADCs)	8,538: 462 1,330 4,067 1,516 436 727	• Overall need for MHPs is 1,638 FTEs (excluding surpluses) or 19% of supply to meet current Commonwealth demand. • Over 80% of the counties in Kentucky have a workforce supply gap for MHPs with 10% of counties needing at least 25 FTEs. • 70% of the current need (1,154 FTEs) is located in rural counties. • MHPs are a widely recognized need in the uninsured/Medicaid population. • Quality and accuracy of licensing databases were problematic and missing current practice locations. • Some professionals may practice in more than one location or county and/or may have more than one professional degree or type of license for which clinical efforts vary which makes careful headcount and benchmarking difficult. • Benchmarks are not as widely reported for many of these groups.

The overall finding of the study is that the issues uncovered through this report are, and will continue to be, present with or without Medicaid expansion, KHBE, or other programs across the Commonwealth. Intervention is needed to curb the trending decline of health care workforce capacity in relation to rising population demand, and no single approach will be the panacea. Recommendations include a combination of efforts such as:

- Improving professional licensure data quality and reporting across all workforce groups
- Promoting additional limited service clinics (LSCs) to expand access in rural/underserved areas
- Creating support programs for small practices in rural and underserved areas
- Increasing/expanding Medicaid reimbursement for rural areas and technology-driven care
- Expanding programs to engage international medical graduates in rural and underserved areas
- Addressing scope of practice limitations for mid-level practitioners
- Evaluating medical malpractice caps
- Expanding loan forgiveness programs to improve distribution in rural and underserved areas
- Enhancing programs that support recruiting for retention
- Expanding regional rural health tracks to improve rural pipeline and retention
- Increasing health care degree and residency capacity across the Commonwealth

2. Background

Establishment of KHBE may result in a majority of the Commonwealth's 640,000 uninsured individuals using the exchange, or traditional methods, to purchase health insurance coverage either through Medicaid expansion or some form of premium assistance. As these individuals increasingly access the Commonwealth's health care system for services, it is expected that potential workforce shortages that include primary care, chronic/long-term behavioral health, and oral health care will occur.[1]

Exacerbating this potential workforce shortage is the current health status of both insured and uninsured populations in Kentucky. United Health Foundation recently reported their 2012 health rankings by state, which placed Kentucky 44th in the United States in terms of overall health.[2] Additional statistics from the report include:

- Kentucky has the highest smoking rate of any state at 970,000 adult smokers (29% of the adult population).
- There are more than one million obese adults in Kentucky (30% of adult population).
- 332,000 adults in Kentucky have diabetes (11% of adult population).
- 38% of Kentuckians age 65 and over are edentulous (2011 estimate).
- Kentucky remains the state with the highest rate of preventable hospitalizations (102.8 discharges per 1,000 Medicare enrollees).
- Kentucky ranked 48th and 49th among states for the average number of days a person could not perform work or household tasks due to mental health and physical health issues, respectively.
- Select Kentucky rankings:
  - Smoking – 50th
  - Obesity – 40th
  - Diabetes – 41st
  - Cancer Deaths – 50th
  - Premature Death – 44th
  - Cardiovascular Deaths – 43rd
  - Uninsured – 30th
  - PCP Supply – 36th
  - All Outcomes – 45th

Based upon this information, KHBE recognized that an analysis of the Commonwealth's existing health care workforce capacity and identification of future needs were required to meet the needs of Kentuckians and commissioned the following report.

[1] Santoro, K. and Speedling, C. (July 2012). "Investing in the future of health care workforce." NIHCF.

[2] America's Health Rankings by United Health Foundation. 2012. 2012 Kentucky Health Statistics. [ONLINE] Available at: http://www.americashealthrankings.org/KY/2012. [Accessed March 18, 2013].

3. Scope and Assumptions

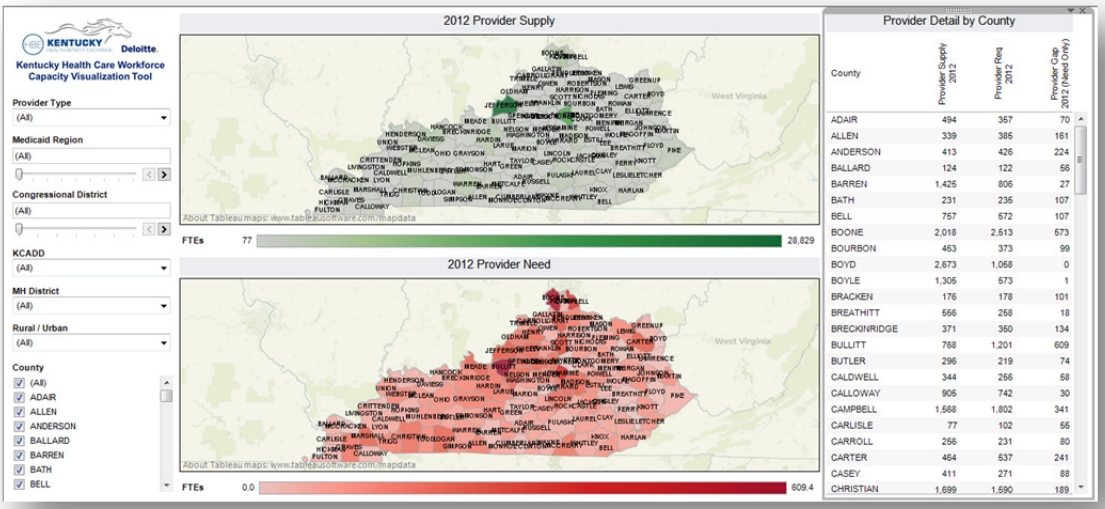
3.1 – Scope Overview

KHBE procured Deloitte Consulting to assist in a 10-week study to assess current access to and availability of Kentucky's existing health care workforce, including:

- Identification of shortage areas where an increase in the health care workforce is required to meet current and future needs of Kentuckians
- Identification and assessment of legislative and administrative policy changes that may be needed to increase the supply of health care providers to improve population health
- Development of a plan, including recommendations and strategies, for recruiting and maintaining an adequate and available health care workforce

In addition to this final report, Deloitte developed a dynamic visualization tool (see Figure 1) that geo-mapped the underlying data analysis used to calculate the workforce capacity and subsequent gaps across the Commonwealth by provider type.

Figure 1: Screenshot from Kentucky Capacity Study Visualization Tool (Tableau)[3]



The visualization tool includes the ability to model the output in current capacity (2012), Medicaid expansion scenarios, five-year projected need (2017)[4] based on U.S. Census Bureau anticipated population movement, and numerous other views. Select output from that tool is contained within the report to visually highlight specific findings; however, it is recommended the reader view both this report and visualization tool in tandem to maximize understanding.

[3] Screenshot from [KY Cap Study Visualization Tool.twbx] in Tableau.

[4] Based on U.S. Census Bureau anticipated population movement.

3.2 – Kentucky Sponsorship and Guidance

The following is a list of sponsorship and guidance Deloitte Consulting has relied on in performing the workforce capacity study and producing this report:

- Kentucky/KHBE provided the licensure data to support the study and related data analysis, including a roster of licensed physicians and other in-scope licensed providers who practice in the Commonwealth.
- Kentucky/KHBE had overall responsibility and authority for driving all project decisions, reviewing and approving all deliverables, facilitating discussion and communication among all parties as needed, and securing any required Kentucky or third-party resources.
- Kentucky/KHBE provided qualified and knowledgeable resources with the business and technical skills to support Deloitte Consulting's services and to accomplish the objectives of the study.

3.3 – Workforce Groups Included

The following clinician groups were determined to be essential to the study with licensing data and benchmarks to determine potential workforce shortages at the county and/or state level:

- Physicians with segmented assessment of specialists and primary care physicians (PCPs)[5]
- Dentists
- Advanced Practice Registered Nurses (APRNs)
- Physician Assistants (PAs)
- Registered Nurses (RNs)
- Licensed Practical Nurses (LPNs)
- Nurse Aides (NAs)
- Optometrists
- Mental Health Providers (MHPs) including[6]:
  - Psychologists
  - Licensed Clinical Social Workers (LCSWs)
  - Licensed Professional Counselors (LPCs)
  - Marriage and Family Therapists (MFTs)
  - Alcohol and Drug Counselors (ADCs)

[5] Definition of PCPs align with Health Resources and Services Administration (HRSA) criteria for primary medical care and refer specifically to doctors of allopathic or osteopathic medicine specializing in the fields of: Family Practice, General Practice, Pediatrics, Internal Medicine (outpatient based), and Obstetrics/Gynecology.

[6] During meeting with Community Mental Health Centers on February 27, 2013, a decision was made to combine psychologists, MFTs, LPCs, ADCs, LCSWs (and psychiatrists for benchmarking purposes) into one category called "Mental Health Providers" due to the overlapping roles and scope of service these providers offer to the population.

While this study focused on the select group providers above, it is important to note:

- More information on the services these providers render can be found on their respective association websites.
- There may be other types of providers (e.g., chiropractors, pharmacists, physical therapists, and those who may not require a state license) providing similar or complimentary services across the Commonwealth who were omitted.
- The data to analyze the facilities these providers render services at was not available or in scope for this particular study.

A further explanation of the professional licensure data quality and limitations encountered relative to these provider types is included in the next section of this report.

4. Professional Licensure Data Quality and Limitations

A number of challenges were encountered when attempting to estimate the workforce of clinically active providers and should be taken into consideration when interpreting the results of this report.

Given the 10-week timeframe to complete the study, assumptions were made based on largely nonvalidated licensure databases provided by the Commonwealth or combinations of sources (e.g., Medicaid paid claims for CY2011, discrete regional district maps). Furthermore, challenges were encountered similar to those Dr. William Robiner faced when analyzing workforce supply and demand of mental health professions, including[7]:

- Some professionals may practice in more than one location or county and/or may have more than one professional degree or type of license for which clinical efforts vary.
  - *Example:* A LCSW can also have a license to be a MFT, as well as an ADC, and appear as one FTE in each of these three licensing databases, thereby overstating the supply.
- Kentucky state licensing databases record varying amounts of information, as do Medicaid and other Commonwealth bureaus and agencies, and crucial to this study were missing on some data sets (e.g., "county of practice," "practice address," "FTE," "degree type," and "institution/date of graduation")
  - *Example:* Physicians and many nurses record the "county of practice" in the licensing database, which gives a more careful geographic view of both supply and demand (see Tableau visualization tool). However, other databases that do not require this field may contain home addresses or other outdated business addresses making it difficult to determine where the provider actually renders services without a broad validation effort.
- Benchmarks for provider supply adequacy ratios are often imprecise, conflicting, and lack comprehensiveness for full workforce.
  - *Example:* In one benchmarking exercise comparing regional and national benchmarks, annual median visits per physician ranged from 4,009 visits to 4,403 visits[8] and required PAs per 100,000 population ranged from 19 PAs to 27 PAs.[9]
- Data may not have been refreshed and validated at regular intervals which led some data sets to contain duplicative entries or inaccurate status info (e.g., death, retirement, and semiretirement)
  - *Example:* Figure 2, below, visually depicts the cleansing efforts carried out for each licensing database which was then vetted with the core KHBE team to determine appropriate exclusions. The "retained" column to the far right shows the percentage of original raw data (expressed as database rows that each represents a provider) that was retained from the raw file. In general, a provider was excluded if he or she could not be accessed by the general public (e.g. a military base practitioner).

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[7] Robiner, W. N. (2006). The mental health professions: Workforce Issues and challenges. Clinical Psychology Review, 26, 600-625.

[8] MGMA Physician Compensation and Production Survey: 2012 Report Based on 2011 Data, Majority Owner - All Owners, Practice Type - All Practices, Regions – All Regions, Total Encounters (NPP Excluded), Family Medicine (without OB).

[9] American Academy of Physician Assistants. 2010. Physician Assistant Census Report: Results from the 2010 AAPA Census. [ONLINE] Available at: http://www.aapa.org/uploadedFiles/content/Common/Files/2010_Census_Report_Final.pdf. [Accessed on March 18, 2013].

Figure 2: Overview of Licensing Data Segmentation and Cleansing [10, 11, 12]

Provider Group	Initial Count	Removed or Adjusted the following:	Final Count	% Retained
Physicians	25,013	• Duplicates • Retirees • Semi-retired (% of FTE) • Deceased • Out of state • Locum tenens • Inactive • Military • Provisional • Administration • Faculty (% of FTE) • Public health • Research • No status	10,475	**42%**
Dentists	3,933		1,711	**44%**
APRNs	4,343		3,057	**70%**
PAs	1,047		985	**94%**
RNs & LPNs	64,593		59,863	**93%**
Optometrists	782		568	**73%**
Psychologists	1,549		1,330	**86%**
LCSWs	4,536		4,067	**90%**
LPCs	2,878		1,516	**53%**
MFTs	505		436	**86%**
ADCs	814		727	**89%**

In summary, while multiple challenges were encountered with professional licensure data quality, significant effort was taken to select and compare appropriate segmentations and benchmarks for this study.

[10] Deloitte/KHBE internal analysis of licensing databases.

[11] Majority of exclusion from the raw licensing databases came from duplications, adjustments to faculty (0.52 clinical services FTE figure received from University of Louisville for the 2012 academic year and applied to general faculty population), semiretired (0.5 FTE assigned), and exclusions for those who practice out of state or with provisional permits / limited licenses or in the fields of administration, locum tenens, military (however, active duty military personnel was not excluded from population denominator), public health / government (nonpatient facing), research, and those with retired/deceased/inactive or no status on file who could not be validated through other efforts.

[12] Special thanks to Chris Workman, Branch Manager for the Health Care Access Branch and Director of the Primary Care Office (PCO) at the Kentucky Dept. for Public Health, and his staff for assisting in the meticulous validation efforts for the physician and dentist licensing data sets.

5. Methodology

5.1 – Tier System

After the workforce groups for inclusion were finalized (see 3.1 – Scope Overview), tiers were assigned to each group depending on the availability of comparable benchmarks and the accuracy of the corresponding groups' licensing database. While data segmentation, cleansing, and benchmarking took place for many providers, these tiers helped prioritize the efforts over the course of the 10-week study and served as a way to further group the data sets:

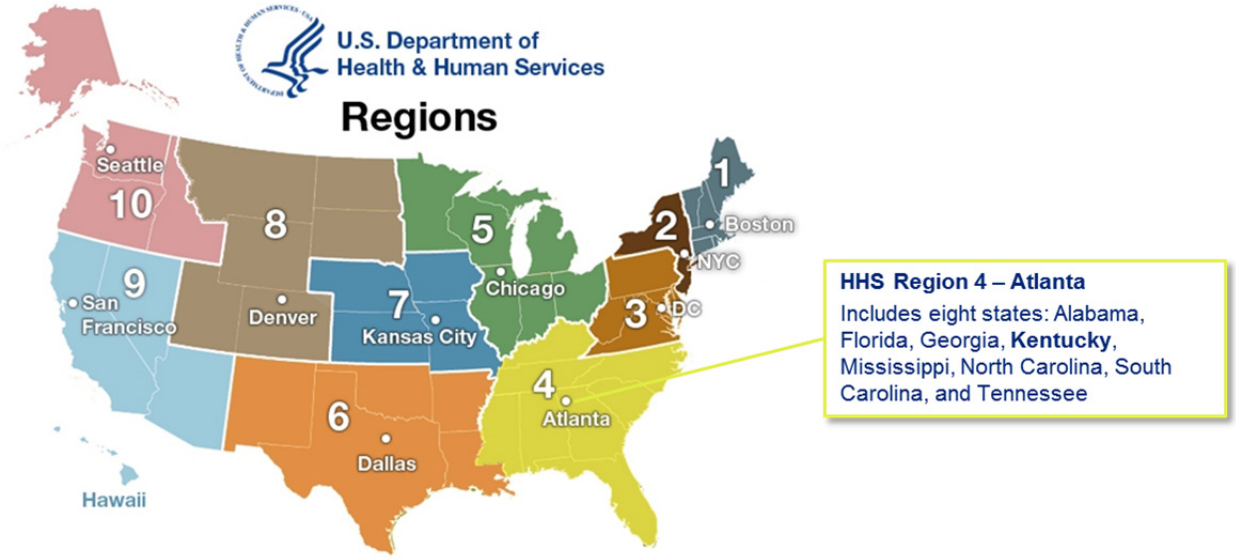
Tier	Provider(s)	Reasoning
I	Physicians	• PCPs play a vital role in providing services to the uninsured/Medicaid population. • Benchmarks are widely available down to the specialty level. • Licensing database has detail including specialty, updated county of practice, and graduation date/school.
II	Dentists, APRNs, PAs, RNs, LPNs, NAs	• Dentists, mid-levels, and nurses will be important in the discussion of expanding primary care access to an uninsured/Medicaid population. • Benchmarks are widely available and reported for many groups. • Licensing databases have detail including updated county of practice.[13]
III	Optometrists, psychologists, LCSWs, LPCs, MFTs, ADCs	• Vision care and behavioral health support primary care services are a widely recognized need in the uninsured/Medicaid population. • Benchmarks are not as widely reported for these groups. • Quality and accuracy of licensing databases were problematic and missing current practice locations.

[13] Except for NAs and PAs.

5.2 – Benchmarking "Adequacy"

After analyzing benchmarking data on a national, regional, and even custom level using the weighted median average of the seven states that share a border with Kentucky, it was determined that U.S. Department of Health & Human Services (HHS) Region Four median benchmarks could be used (see Figure 3). The "HHS-4" benchmarks, where available and statistically valid, were used as a measure of "adequacy" because the eight states included in Region Four have a population similar to Kentucky in terms of chronic disease and urban versus rural populations. Additionally, using a more widely recognized benchmark allows for easier outside report comparisons, versus generating a more customized peer group (e.g. Kentucky's seven neighboring states).

Figure 3: U.S. Department of Health & Human Services Regional Map[14]

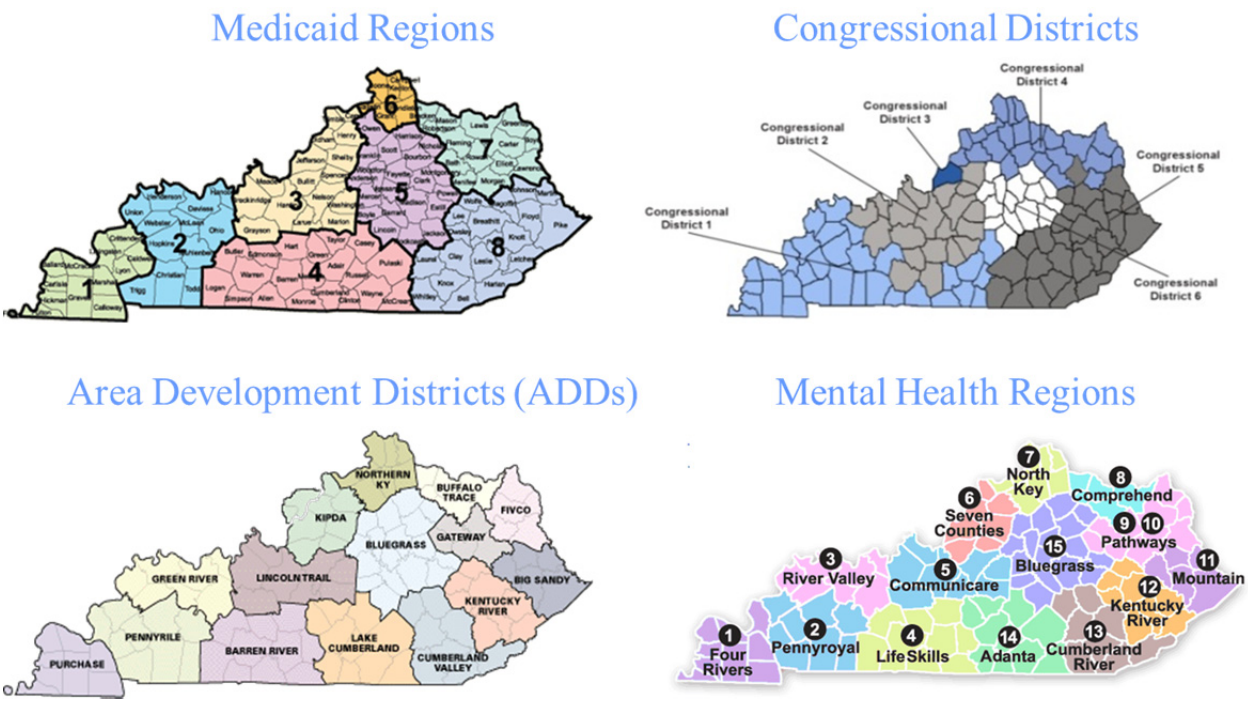


[14] U.S. Department of Health & Human Services. 2013. HHS Region Map. [ONLINE] Available at: http://www.hhs.gov/about/regionmap.html. [Accessed on March 18, 2013].

5.3 – Benchmarking Level

After determining what equated to "adequate" in terms provider supply based on benchmarking, it was decided county-level analysis could be conducted where licensing and benchmarking data supported; otherwise, state or national could be used. This approach allows multiple stakeholders to view the health care workforce supply and need by Medicaid Region[15], Congressional District[16], Area Development District[17], Mental Health District[18], and urban versus rural[19] – all of which are segmented by different groupings of the Commonwealth's 120 counties (see Figure 4).

Figure 4: Kentucky Regional Maps by County



[15] CoventryCares. 2013. Service Area - MCO Regions. [ONLINE] Available at: http://chcmedicaid-kentucky.coventryhealthcare.com/for-members/benefits-and-services/service-area/index.htm. [Accessed on March 18, 2013].

[16] Nationalatlas.gov. 2013. Kentucky Congressional Districts. [ONLINE] Available at: http://nationalatlas.gov/printable/images/pdf/congdist/pagecgd112_ky.pdf. [Accessed on March 18, 2013]. For those counties who fell into multiple Congressional Districts, they were allocated in their entirety to the 108th Congressional District specified to the U.S. Census Bureau by the state.

[17] Kentucky Transportation Cabinet. 2013. Regional Planning. [ONLINE] Available at: http://transportation.ky.gov/Planning/Pages/Regional-Planning.aspx. [Accessed on March 18, 2013].

[18] Kentucky Suicide Prevention Group. 2013. Kentucky Mental Health Regional Contacts. [ONLINE] Available at:. [Accessed on March 18, 2013].

[19] HRSA Urban and Rural definitions.

5.4 – Benchmarking Sources

After provider supply adequacy and desired level of analysis by provider tier were defined, a broad health care literature review was conducted to find benchmarks suitable for the purposes of the study. The following table shows the benchmarks that were selected, their source, and the calculated supply ratio for the Kentucky health care workforce provider groups in scope[20]:

Provider Type ("Tier I")	Provider FTEs[21]	KY Ratio per Population	Selected Benchmark	
			Ratio per Population	Source
Physicians	10,475	238.1/100K	258.7/100K	AAMC State Physician Workforce Data Book (2011)[22]
PCPs[23]	4,081 (39%)	See Appendix for overall PCPs and the subset of PCPs Accepting Medicaid benchmarking		
PCPs Accepting Medicaid	2,285 (22%)			
Specialists (Non-PCP)	6,394 (61%)	See Appendix for specialty specific benchmarking		

Provider Type ("Tier II")	Provider FTE[24]	KY Ratio per Population	Selected Benchmark	
			Ratio per Population	Source
Dentists	1,711	38.9/100K	49.0/100K	CDC, HHS Region Four (2010)[25]
APRNs	3,057	69.5/100K	39.6/100K	ANA & U of Washington, HHS Region Four (2012)[26]
PAs	985	22.4/100K	20.6/100K	AAPA Census Report, HHS Region Four (2010)[27]

[20] A red font in "KY Ratio per Population" column indicates ratio is below selected benchmark ratio while green indicates it is above.

[21] FTEs calculated using all unique and active KY physician licensees in the Kentucky Board of Medical Licensure database last updated December 2012 (see *4 - Professional Licensure Data Quality and Limitations* for further exclusions and adjustments).

[22] Association of American Medical Colleges. 2011. 2011 State Physician Workforce Data Book. [ONLINE] Available at: https://www.aamc.org/download/263512/data/statedata2011.pdf. [Accessed on March 18, 2013].

[23] Definition of PCPs align with HRSA criteria for Primary Medical Care and refer specifically to doctors of allopathic or osteopathic medicine specializing in the fields of: Family Practice, General Practice, Pediatrics, Internal Medicine (outpatient based), and Obstetrics/Gynecology.

[24] Assumes each license entry in licensing database = 1 FTE, except for dentists who were calculated using the aggregate percentage of time spent at each practice location and ranged from 0.05 FTE to 1 FTE (see *4 - Professional Licensure Data Quality and Limitations* for further exclusions and adjustments).

[25] Health, United States, 2010 (Table 109) Centers for Disease Control and Prevention, National Center for Health Statistics. Available at: http://www.cdc.gov/nchs/data/hus/hus10.pdf and calculated using weighted average (based on population) of HHS Region Four (includes: AL, FL, GA, KY, MS, NC, SC, and TN) and resulting figure multiplied by 10 to achieve per 100,000 population metric.

[26] University of Washington School of Medicine: Understanding Advanced Practice Registered Nurse Distribution in Urban and Rural Areas of the United States Using National Provider Identifier Data and calculated using weighted average (based on population) of HHS Region Four (includes: AL, FL, GA, KY, MS, NC, SC, and TN).

Provider Type ("Tier II")	Provider [illegible][24]	KY Ratio per [illegible]	Selected Benchmark	
RNs	48,093	1,093.1/100K	792.1/100K	BLS, HHS Region Four (2011)[28]
LPNs	11,770	267.5/100K	210.7/100K	
NAs	43,619	991.4/100K	411.7/100K	

Provider Type ("Tier III")	Provider FTE[29]	KY Ratio per Population	Selected Benchmark	
			Ratio per Population	Source
Optometrists	568	12.9/100K	18.4/100K	HIPAA Space, HHS Region Four (2012)[30]
MHPs which includes[31]:	8,538:	194.1/100K	182.0/100K	Clinical Psychology Review 26 sourcing information from Substance Abuse and Mental Health Services Administration/DHHS (2006)[33]
Psychiatrists[32]	462			
Psychologists	1,330			
LCSWs	4,067			
LPCs	1,516			
MFTs	436			
ADCs	727			

While many of the calculated ratios for the selected Kentucky health care workforce provider groups appear to be above the supply adequacy benchmark ratio, a more detailed look at the county level is needed to determine the true workforce capacity issues. The next section explores this need, especially in rural and underserved areas, across the Commonwealth.

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[27] Physician Assistant Census Report: Results from the 2010 AAPA Census, American Academy of Physician Assistants, 2010 (http://www.aapa.org/uploadedFiles/content/Common/Files/2010_Census_Report_Final.pdf), and 2010 U.S. Census, U.S. Census Bureau, available at http://2010.census.gov/2010census/data/ and calculated using weighted average (based on population) of HHS Region Four (includes: AL, FL, GA, KY, MS, NC, SC, and TN).

[28] Bureau of Labor Statistics, Occupational Employment Statistics Query System, May 2011, http://data.bls.gov/oes/search.jsp?data_tool=OES and calculated using weighted average (based on population) of HHS Region Four (includes: AL, FL, GA, KY, MS, NC, SC, and TN).

[29] Assumes each license entry row in licensing database = 1 FTE and MHPs are most likely overstated as some duplication was not cleansed in analysis file (see *4 - Professional Licensure Data Quality and Limitations* for further exclusions and adjustments).

[30] HIPAASpace benchmarks are available at http://www.hipaaspace.com/Medical.Statistics/ and calculated using weighted average (based on population) of HHS Region Four (includes: AL, FL, GA, KY, MS, NC, SC, and TN).

[31] MHPs do not include licensed APRNs who may have a behavioral health certification

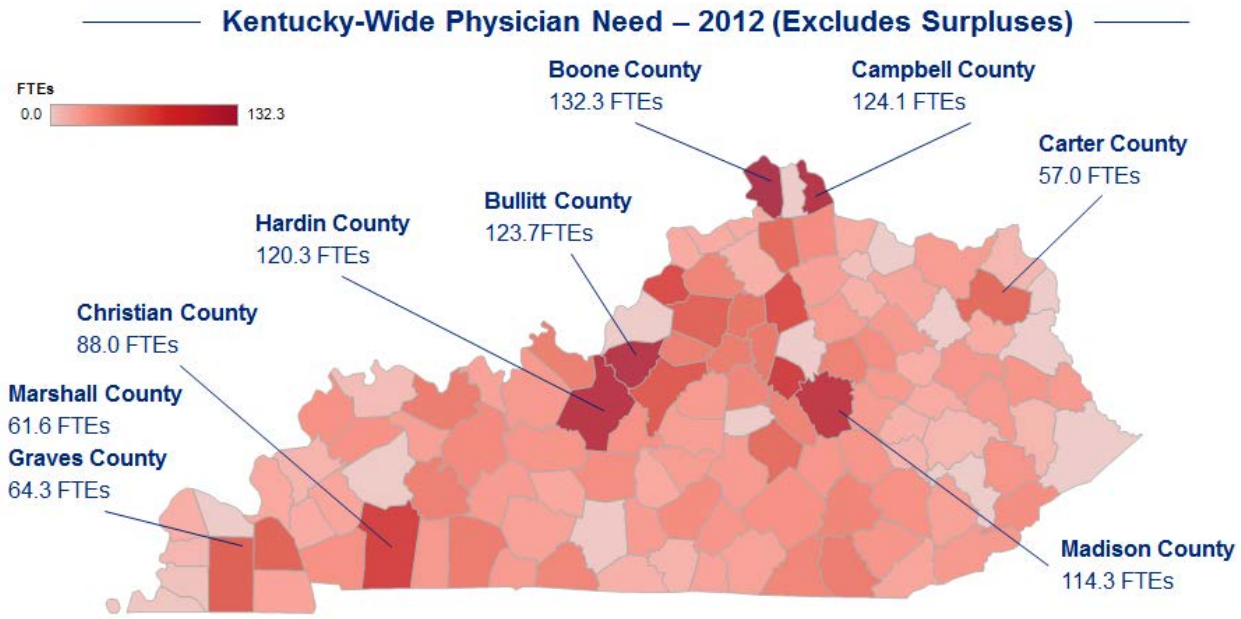
[32] Included in both physician group and in the MHP group for benchmarking comparison validity.

[33] Robiner, W. N. (2006). The mental health professions: Workforce Issues and challenges. Clinical Psychology Review, 26, 600-625.

6. Findings by Provider Type

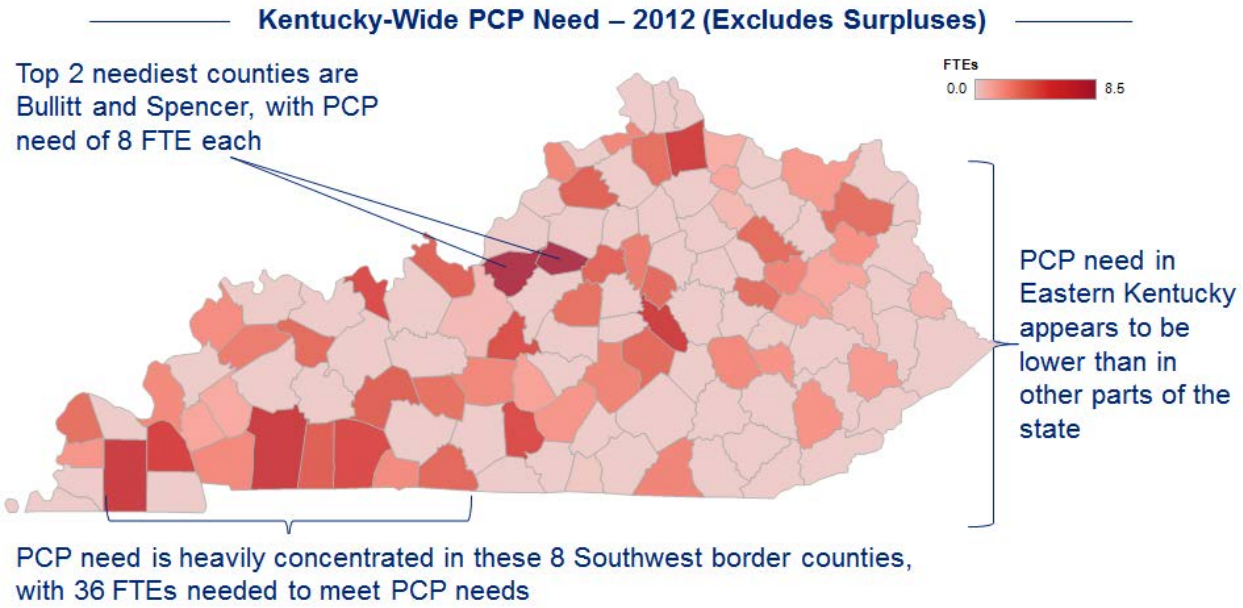
6.1 – Overall Physician Need

Overall physician need across all counties in 2012, including both PCPs and specialists, is 3,790 FTEs (excluding surpluses). Of those FTEs, 61% are needed in rural counties. Select specialties are benchmarked at the state level and are available in the Appendix of this report. Note: this need is benchmarked using the national median per 100,000 population from the Association of American Medical Colleges (AAMC) State Physician Workforce Data Book (2011) and differs from the more granular Truven model used in the following PCP sections. Additionally, this view excludes surpluses so it is likely a statewide overestimate. However, it is also sensitive to the difficulty that could be associated with efforts to encourage physicians to relocate from surplus to needy counties.



6.2 – PCP Need (Baseline Scenario)

Across the Commonwealth, PCP need in 2012 is 183 FTEs[34] (excluding surpluses), representing 5% of the current statewide supply. This gap is expected to widen to 205 FTEs by 2017 [35]. Overall, PCP need is concentrated towards the western half of the Commonwealth. Note: this is anticipated to be the baseline scenario for Medicaid PCP need (see *Calculating PCPs Who Accept Medicaid and the Corresponding PCP Population Need* in Appendix).

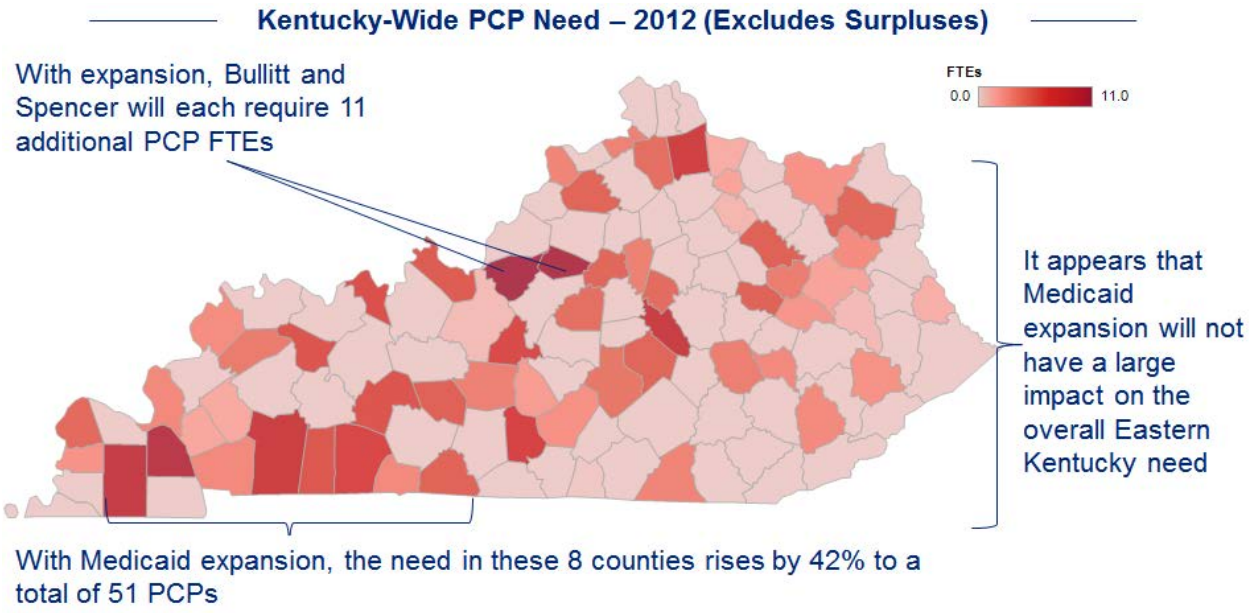


[34] PCPs benchmarked using different methodology than other provider groups (see *Calculating PCPs Who Accept Medicaid and the Corresponding PCP Population Need* in Appendix).

[35] Based on U.S. Census Bureau projections of population shifts across Kentucky.

6.3 – PCP Need (Worst Case Scenario)

If we incorporate all 640,000 currently uninsured individuals in the Commonwealth, including both Medicaid expansion and premium assistance individuals, PCP need across the Commonwealth increases to 256 FTEs (excluding surpluses).[36, 37] Of the 256 FTE need, 63% comes from rural counties. Note: this is anticipated to be the worst-case scenario for Medicaid PCP need (see *Calculating PCPs Who Accept Medicaid and the Corresponding PCP Population Need* in Appendix).

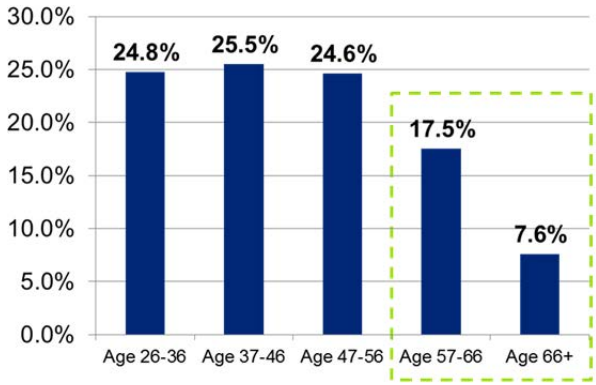


[36] PCPs benchmarked using different methodology than other provider groups (see *Calculating PCPs Who Accept Medicaid and the Corresponding PCP Population Need* in Appendix).

[37] This gap is expected to widen to 284 FTEs by 2017 using U.S. Census Bureau projections of population shifts across Kentucky.

6.4 – PCP Retirement Risk by Age Cohort

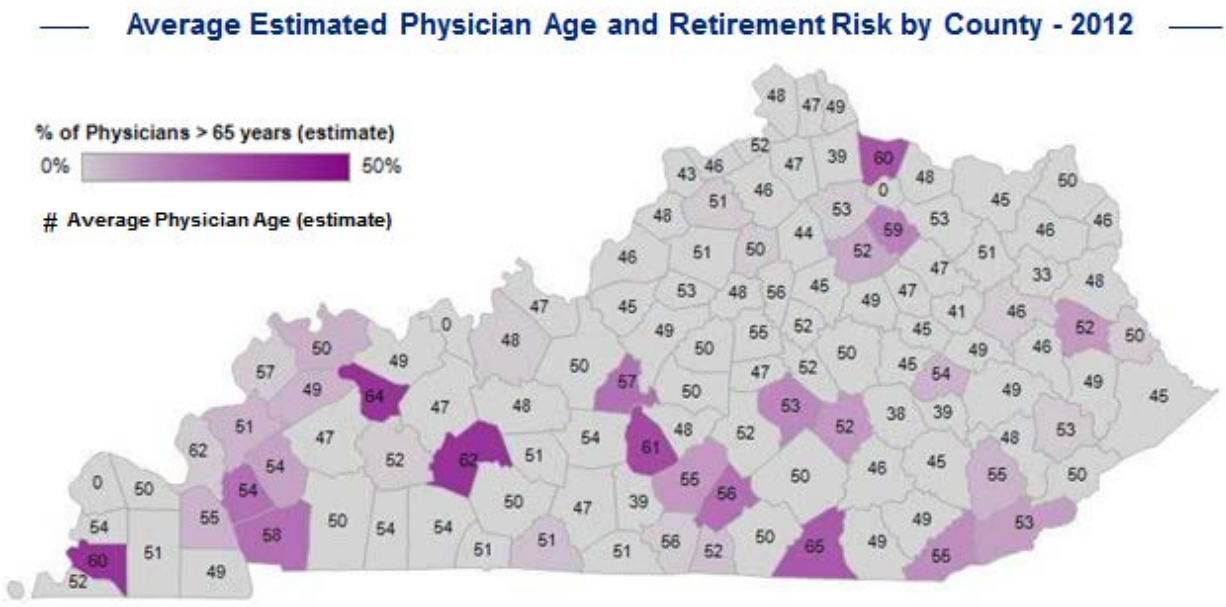
Using the data field “Graduation Year” to estimate physician age yields retirement risk by age grouping[38]:



25% of PCPs (~1,000) at risk for early or average retirement[1] in next five years

6.5 – Physician Retirement Risk by Geographic Distribution

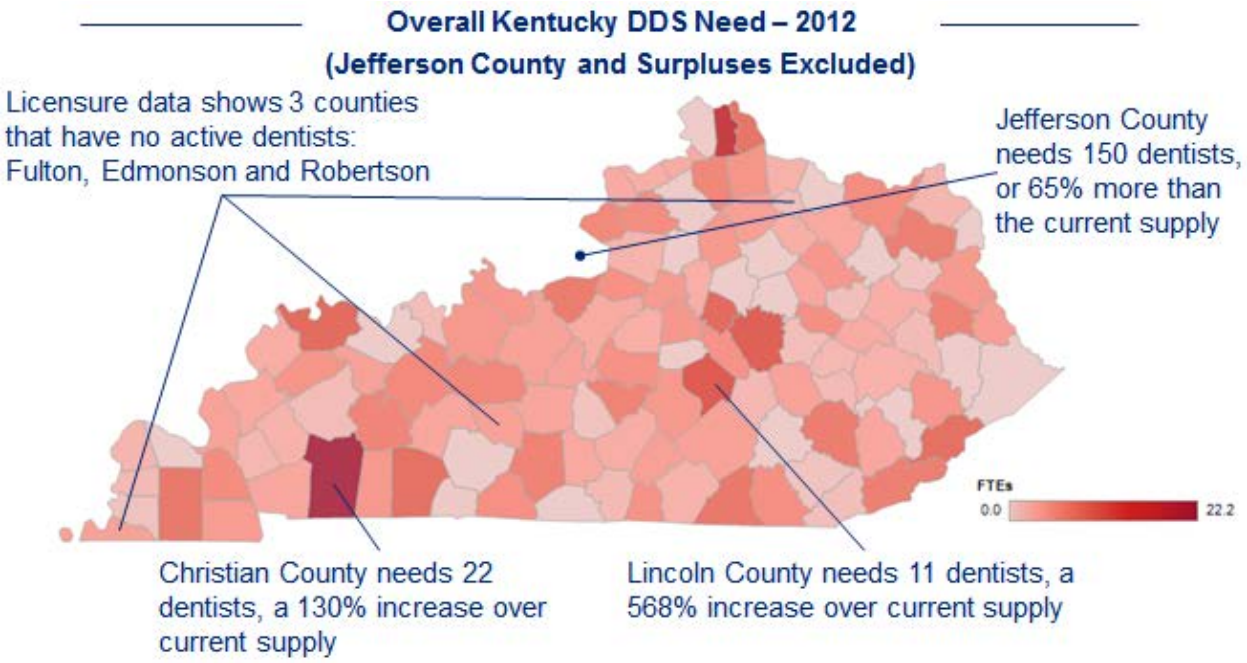
Using the same data field “Graduation Year” combined with practice location in the visualization modeling tool yielded the below view of potential PCP retirement risk by county across the Commonwealth:



[38] Assumes average model retirement age of 65 and graduation from medical school at age 26.

6.6 – Dentist Need

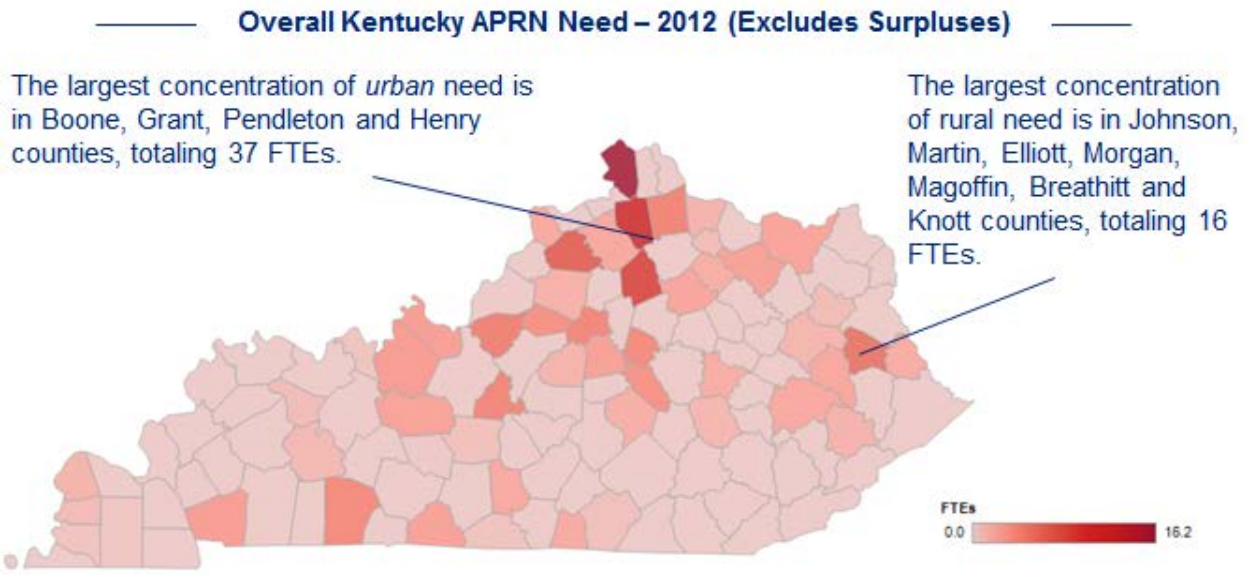
Overall dentist need in the Commonwealth is high with 612 additional FTEs (excluding surpluses) or 36% of the supply required to meet current demand. Many counties in Kentucky need greater than 100% increases in the current dentist workforce, and three counties appear to have no dentists currently practicing. Jefferson County has the most pronounced need of 150 dentists, which was unexpected given the urban designation[39].



[39] Jefferson County is excluded from the visual depiction as not to skew the color legend representing the need.

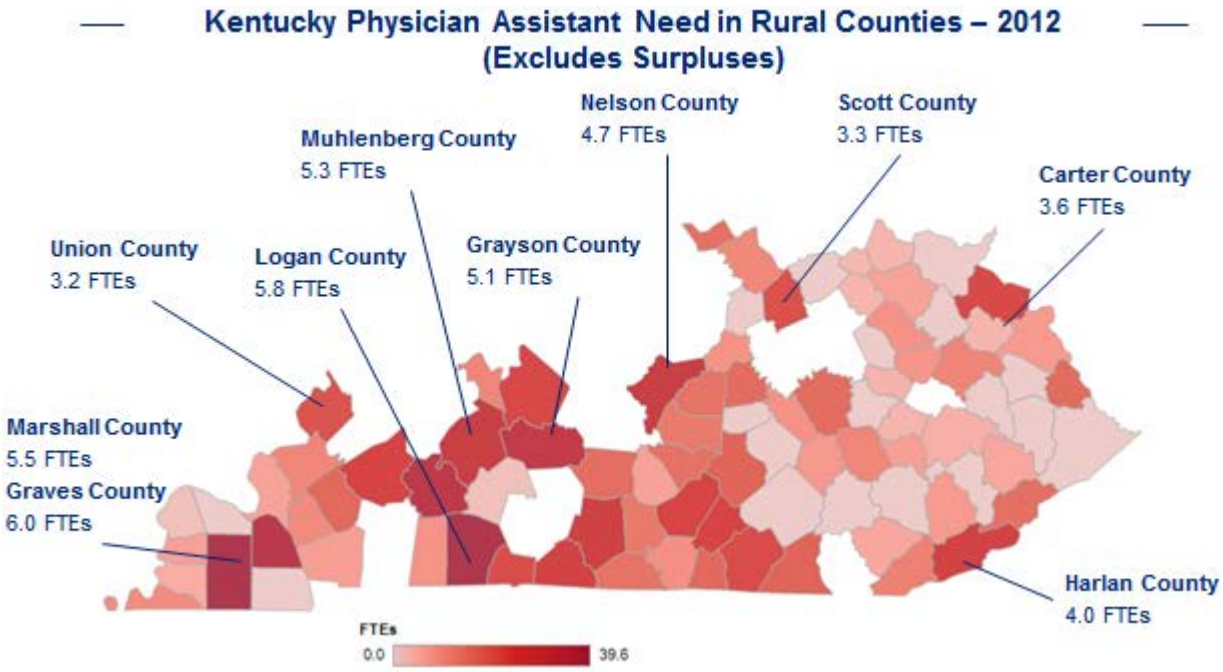
6.7 – Advanced Practice Registered Nurses (APRN) Need

Overall APRN need in 2012 is relatively low compared to many groups, with only 148 FTEs (excluding surpluses), or 5% of current supply, needed across the Commonwealth. This need is split near even between rural and urban counties. The neediest county is Boone County with a 2012 need of 16.2 FTEs.



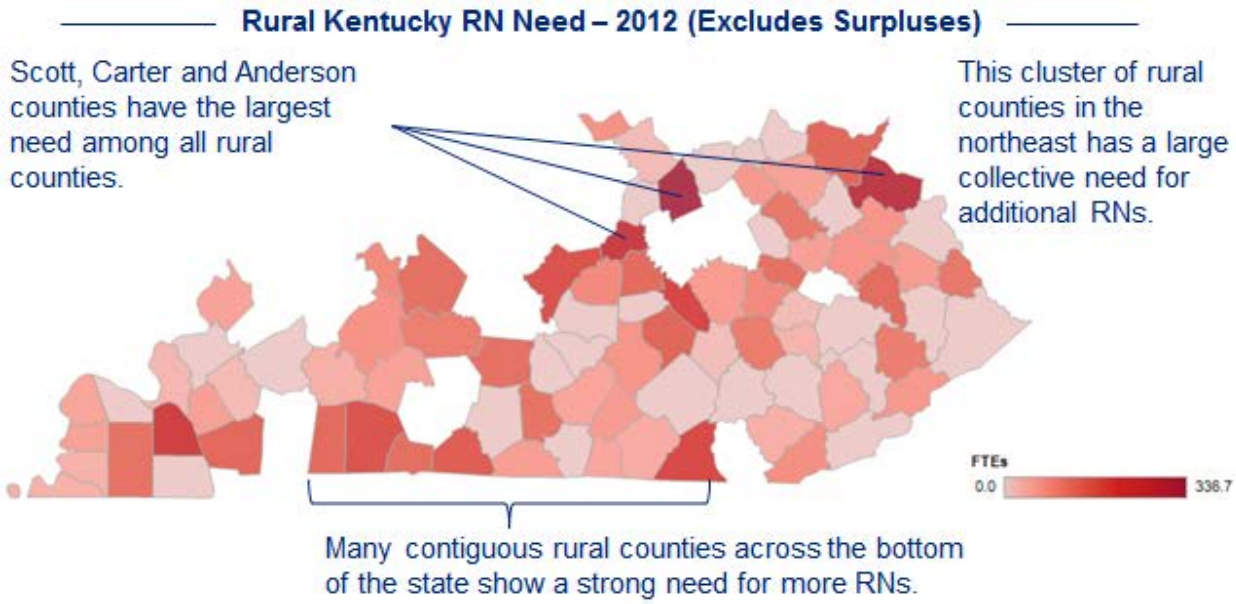
6.8 – Physician Assistant (PA) Need

Overall PA need in 2012 is 296 FTEs (excluding surpluses), or 30% of current supply, which is relatively high as a percentage compared to other groups. The need is split near even between rural and urban counties. The larger concentration of needy counties is in the rural areas in the center and western parts of the Commonwealth.



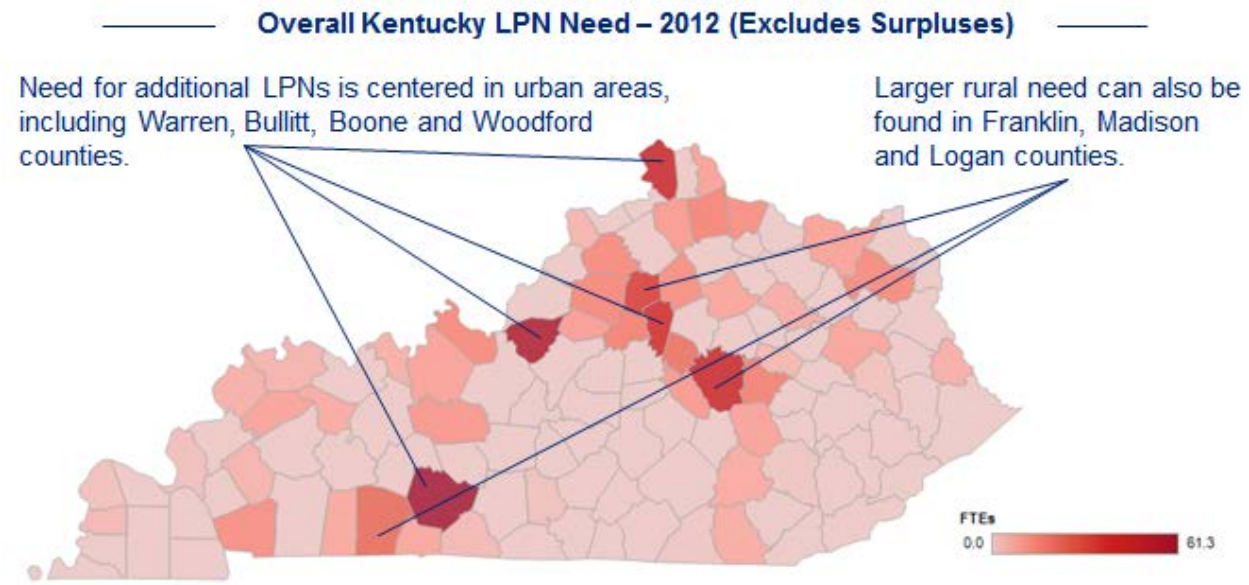
6.9 – Registered Nurses (RN) Need

The current need for additional RNs across the Commonwealth is 5,635 FTEs (excluding surpluses), representing a 12% increase in the total RN workforce. The need is pronounced across the southern border and in the northeastern corner of the Commonwealth.



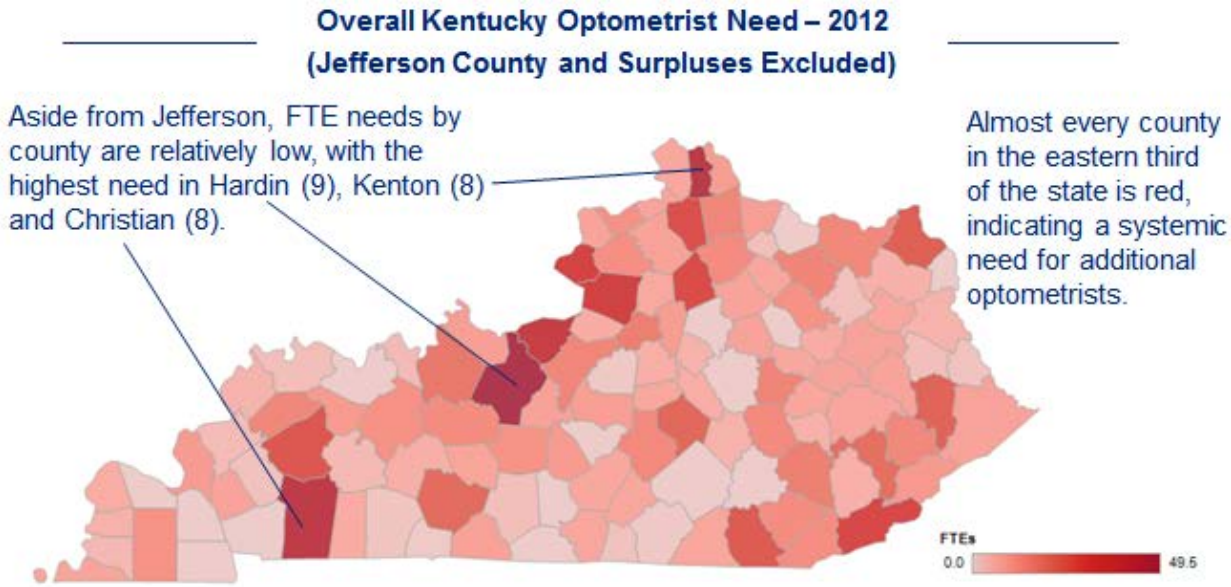
6.10 – Licensed Practical Nurses (LPN) Need

Overall LPN need in 2012 is low at only 6% growth or 688 FTEs (excluding surpluses) needed over the current workforce supply to meet demand. Rural needs are evenly spread across the Commonwealth, and urban needs are concentrated around Warren, Woodford, Bullitt, and Boone counties.



6.11 – Optometrist Need

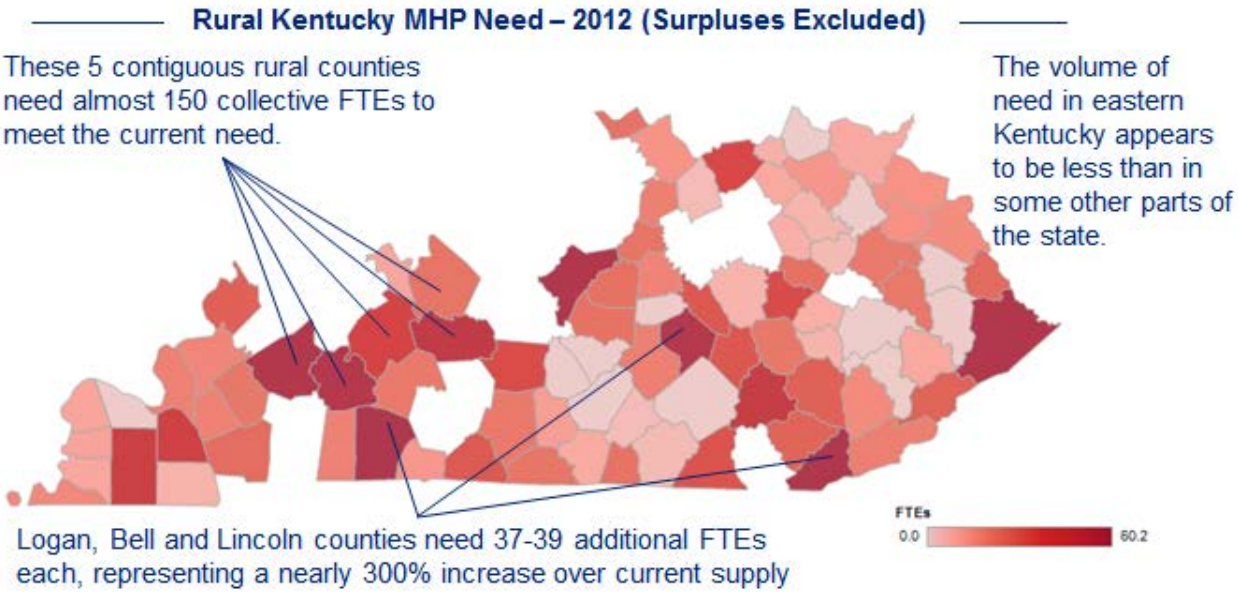
Overall optometrist need is high with an additional 269 FTEs (excluding surpluses) or 47% of supply required to meet current need. Over 25% of the counties in Kentucky do not have a practicing optometrist represented in the licensing database, and only 10% of counties have enough optometrists to meet the current need[40].



[40] Jefferson County is excluded from the visual depiction as not to skew the color legend representing the need.

6.12 – Mental Health Provider (MHP) Need

Overall need for MHPs is 1,638 FTEs (excluding surpluses) or 19% of supply to meet current Commonwealth demand. Over 80% of the counties in Kentucky have a workforce supply gap for MHPs with 10% of counties needing at least 25 FTEs. 70% of the current need (1,154 FTEs) is located in rural counties.[41, 42]



A catalyst for this widespread need may come from funding; the Commonwealth dedicated about $232 million in 2010 to mental health services, according to the research institute of the National Association of State Mental Health Program Directors. This investment equates to $54 per person, compared with a U.S. average of $122 in 2010, according to the foundation. That ranks Kentucky among the bottom 10 states, but officials note that the figure doesn't include individual mental health reimbursements for Medicaid.[43]

[41] Calculations do not include APRNs with behavioral health certification as this distinction was not available in the APRN licensing database (see *4 - Professional Licensure Data Quality and Limitations* for further explanation).

[42] MHPs are most likely overstated as some duplication was not cleansed in analysis file (see *4 - Professional Licensure Data Quality and Limitations* for further exclusions and adjustments).

[43] Courier-Journal. 2013. Kentucky gets low marks for mental health spending. [ONLINE] Available at: http://www.courier-journal.com/article/20130317/NEWS01/303170033/-1/extras34/Kentucky-gets-low-marks-for-mental-health-spending. [Accessed 18 March 13].

7. Recommendations

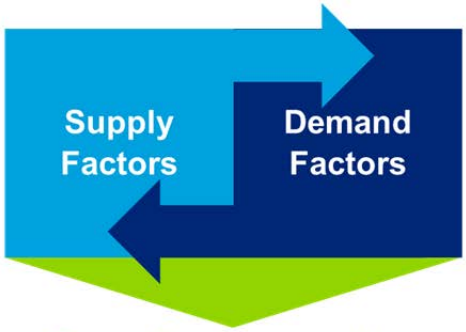
Overview

Recommendations will focus on both supply and demand of the health care workforce:

The healthcare workforce strategy recommendations will be focused on both enhancing the overall supply, as well as finding ways to diminish demand through more efficient use of productive workforce time.

Sample Supply Recommendation Types:

- *Legislation/Policy*: Address potential J-1 Visa shortages through State and/or Federal lobbying
- *Compensation/Benefits*: Provide additional reimbursement / salary benefits to encourage attraction and retention
- *Education*: Develop a business case for MD/OD class size expansions



Data-driven opportunities to reduce anticipated workforce gaps in specific regions and within specific workforce groups

Sample Demand Recommendation Types:

- *Process Efficiency*: Develop training programs that support more efficient sharing of responsibility between physicians and mid-levels
- *Technology*: Pilot new or enhanced uses of TeleHealth technologies in rural areas
- *Career Pathing*: Create learning opportunities for current workforce to transition into higher value roles

7.1 – Improve professional licensure data quality and reporting across all workforce groups

Overview

Over the course of this study, challenges with professional licensure data quality surfaced in the licensing databases of each workforce group. The extent of the challenges varied by group, but overall the challenges can be grouped into two primary categories:

- *Incorrect/Missing Data:* In multiple databases, Deloitte Consulting encountered data that was either incorrect (e.g., a deceased or retired provider still listed with an active license) or missing (e.g., only a small fraction of the dentists had a graduation year listed). In many databases, certain critical fields, such as "County of Practice," are not collected, leading to substantial challenges in correctly determining where the actual labor supply is located.
- *Duplicate Data:* Duplicate entries were encountered in multiple databases. Two databases in particular showcase the challenges of duplicate data. In the dentist database, a single practitioner was listed 24 times, and hundreds of others had duplicate entries, leading to a need to engage the Primary Care Office (PCO) at the Kentucky Department for Public Health in a campaign to call hundreds of dentists in order to correct the underlying data. In the MHP database, duplicates existed across multiple licensing types (e.g., one individual can have a LCSW, ADC, and MFT license), leading to challenges in estimating the true supply of a given behavioral health service.

The collection of accurate workforce data, and creating opportunities for diverse groups to access that data, is critical to accurate supply and demand forecasting for a health care workforce. Acknowledging the importance of health care workforce data to meeting the needs of the population, there are efforts currently underway at the state and federal level to define health care workforce requirements. The Commonwealth should seek to understand and proactively comply with potential federal requirements; however, it is important that Kentucky moves forward with initial steps in the near term, as opposed to waiting for potential federal regulations to dictate a need for change.

Case Study – Ohio Primary Care Workforce Plan[44]

- Like many states, Ohio does not have a single source for comprehensive data on health professionals in practice or in training.
- The lack of relevant and timely data is a barrier to effective health care workforce policies and limits the ability to achieve goals for an effective health care system.
- In response to this shortcoming, the "Draft Ohio Primary Care Workforce Plan" (available at http://1.usa.gov/ToY5iw) — a collaborative effort of the Ohio Department of Health and multiple stakeholders — recommends that Ohio develop a statewide health care workforce data system.

[44] Health Policy Institute of Ohio. 2012. The need for a statewide health care workforce data system. [ONLINE] Available at: http://a5e8c023c8899218225edfa4b02e4d9734e01a28.gripelements.com/pdf/publications/policybrief_workforcedatasystem.pdf. [Accessed on March 18, 2013].

Potential Next Steps

- *Encourage regulation to expand current licensure database collection requirements:* There is substantial variation among licensure databases in terms of required fields and required timing for updating personal data. In the near term, the Commonwealth should encourage each board to collect, at a minimum, the following fields:
  - County of Practice: This field is critical for accurately understanding the distribution of workforce supply within the Commonwealth.
  - School and Graduation Year: These fields support estimates of retirement risk, as well as a detailed understanding of in-state retention and identification of key feeder schools to the Commonwealth, both from the United States and abroad.
  - Capacity Information: This field, while difficult to obtain, is critical to understanding if a provider truly equals 1 FTE or are their efforts spread amongst multiple licenses and locations.
- *Plan for potential federal data requirements:* There are a number of different federal efforts underway that have the potential to impact regulations and requirements for health care workforce data collection. These include the National Health Care Workforce Commission and the National Center for Health Workforce Analysis, among others.[45] Proactively building awareness of potential future requirements, and encouraging these groups to begin taking steps in these directions now, could not only better position the Commonwealth once federal regulations arrive, but also show near-term positive impacts on current planning and forecasting efforts.
- *Evaluate the development of a central workforce data repository:* Bringing Kentucky's health care workforce data into a single repository would not only support future studies like this one, it would also bring additional benefits. One challenge that could be addressed through better data centralization is that of tracking progress. By having all of the necessary data in a single place, it may be possible to automate some reporting and tracking of Key Performance Indicators (KPIs) and to develop a consistent cadence for analyzing changes in supply and demand. Another challenge that could be addressed through centralization is lower cost to maintain and update data. By bringing all licensure data into a single location, fewer total resources would be required to actively maintain the data and to support requests to utilize the data.

Potential Challenges

Compared to many of the recommendations contained in this report, the challenges associated with this topic are perhaps the most readily addressed. In general, there are two primary challenges:

- *Funding:* A recent effort to add the County of Practice field to the nursing licensure database, and to collect the data from current practitioners, required third-party support of approximately $17,000.[46] Additional funding will be required to pay for both technology changes and updating of data from practitioners.

[45] Bipartisan Policy Center & The Deloitte Center for Health Solutions, "The Complexities of National Health Care Workforce Planning: A review of current data and methodologies and recommendations for future studies." February 2013.

[46] Conversation with Chris Workman, Branch Manager of the Health Care Access Branch and Director of the PCO at the Department of Public Health, on March 13, 2013.

- *Changes to Data Collection Requirements:* Each licensure board currently controls the list of mandatory and optional fields that practitioners must fill out when updating license information. Each board will have to agree to make additional fields mandatory, which may require a one-at-a-time approach when it comes to making changes across all workforce groups. Furthermore, if the licensure boards do not fully appreciate the value of making these changes, there may be push back to enacting new data collection requirements. This could be further remediated in the future by organizing an advisory council that would promote understanding of common issues, facilitate the development of cooperative data collection programs, and help coordinate data collection and analysis.[47]

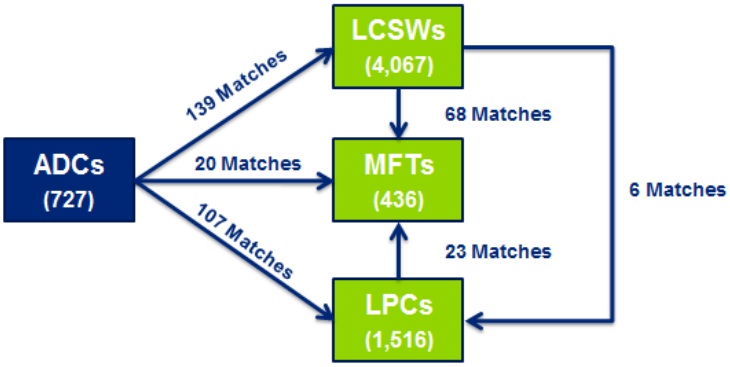
Unique Workforce Group Challenges and Observations

Some professional licensure data quality issues were unique to specific workforce groups.

- *Nursing:* In general, the nursing database was one of the cleanest and represented many leading practices. The recent addition of County of Practice as well as few duplicates meant that this data could be used with little manual manipulation and with a high degree of confidence in the accuracy of location.
- *MHPs:* There is a unique challenge in the use of MHP licensing data, in that there are many practitioners who have multiple active licenses at one time. See Figure 5 below for a detailed look at how much overlap was identified across these databases. As the MHP boards look to enhance data collection and professional licensure data quality, a unique identifier that is shared across all licensing groups will be an important step towards accurate reporting. Furthermore, a field requiring each practitioner to estimate what percentage of their time on average is spent providing services relevant to that license type (e.g., addiction counseling for an ADC) will enable much more accurate estimates of true supply.
- *Dentists:* This licensing database had the highest prevalence of duplicate entries, perhaps partially as a result of individual dentists having multiple practice sites. Similar to MHPs described above, a more unique identifier could be a good way to address this challenge if there is not a way to minimize duplicate entries in the database. Furthermore, if at the time of license renewal the dentists were required to estimate the percent of time spent at each location listed in the database, it would be possible to develop a much clearer picture of where dentist supply is actually located.

[47] Bureau of Health Professions National Center for Health Workforce Information and Analysis, "HRSA State Health Workforce Data Resource Guide," accessed on November 16, 2012 at http://www.skillsource.org/health care/Resource Library/pdf/040-HRSAGuideToWorkforceProfile.pdf.

Figure 5: Detail of duplicate licenses across all MHP licensing databases



7.2 – Promote additional limited service clinics to expand access in rural/underserved areas

Overview

As of March 2013, Kentucky had 49 registered limited service clinics (LSCs).[48] These clinics, also referred to as retail clinics, are typically found within a retailer such as Kroger or Wal-Mart and provide basic health services to the local population. The available services include options such as various vaccinations, treatment for the flu, common colds, sprains and burns, general physicals, health screenings, and tobacco cessation support.[49] In Kentucky, these clinics are staffed by APRNs and PAs and can provide services to all people, except for those who are pregnant and those who are under two years of age. Additional age restrictions apply to some vaccinations. According to a recent RAND study, "approximately one in five visits to a primary care physician and one in ten visits to an emergency department are for a problem that can be treated at a retail LSC."[50]

Reimbursement for services at LSCs varies by state, but in Kentucky, services are covered by many private plans and by Medicare. For example, the list of accepted plans at Kentucky's The Little Clinics includes over 30 commercial insurers and Medicare.[51] The notable detail in Kentucky's reimbursement for LSC services is that Medicaid currently does not provide reimbursement. While an individual can potentially purchase services a la carte, the lack of Medicaid reimbursement may limit the effectiveness and reach of these clinics. Given that Medicaid-covered individuals are near or below the poverty line, purchasing services directly from an LSC may not be an option for many Medicaid recipients.

Kentucky's retail clinics are spread across the central and western parts of the Commonwealth, with some clusters in urban areas. However, when mapped against current PCP need (the most closely matched demand for services that can be rendered in an LSC), an opportunity exists for increased expansion in the eastern part of the Commonwealth. See Figure 6 for a detailed look at the distribution of current LSCs in comparison to PCP needs.

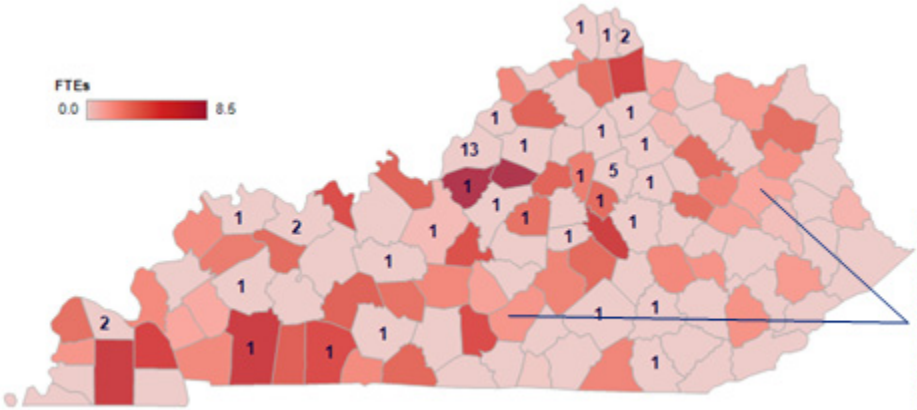
[48] Website of the Kentucky Office of the Inspector General, accessed on March 17, 2013. http://chfs.ky.gov/NR/rdonlyres/B18B4766-D692-4054-AF53-D149D028868B/0/MiscellaneousDirectory.pdf.

[49] Website of The Little Clinic, accessed on March 17, 2013. http://www.thelittleclinic.com/Dot_TreatmentPricingA.asp?category=103&st=KY.

[50] Adamson, David, "Health Care on Aisle 7: The Growing Phenomenon of Retail Clinics". RAND Health, 2010. http://www.rand.org/content/dam/rand/pubs/research_briefs/2010/RAND_RB9491-1.pdf.

[51] Website of The Little Clinic, accessed on March 18, 2013. http://www.thelittleclinic.com/Dot_insuranceaccepted.asp?idcategory=128&category=127.

Figure 6: Number of registered LSCs and Estimated PCP Need by County



Potential Next Steps

- *Develop Private Sector Incentives:* Convene a discussion with operators of Kentucky LSCs to understand why growth has been limited in the eastern and south central areas of the Commonwealth. Explore potential incentives (e.g., tax breaks, additional Medicare reimbursement) that could encourage the private sector to expand LSCs into counties with high PCP need.
- *Begin Medicaid Reimbursement:* Consider expansion of Medicaid reimbursement policies to cover services provided at LSCs. Coordinate with Department of Medicaid to understand current concerns that may be leading to a decision not to include LSCs within the policies. Work with LSCs to proactively determine potential commercial barriers to future Medicaid acceptance at LSCs (e.g., reimbursement rates below cost).
- *Encourage Private Sector Partnerships:* There is a precedent of private sector sponsorship of free services at LSCs, such as free health screenings for a day. These types of partnerships could not only help create better access to basic services for underprivileged individuals (especially without Medicaid reimbursement options), but also help to establish LSCs as a core element of the health care infrastructure.
- *Address Continuity of Care:* One of the concerns that is often raised, and is now starting to be studied directly,[52] is the difficulty in maintaining continuity of care for patients receiving services at LSCs. If LSCs are going to expand in the Commonwealth and play a larger role in the provision of basic health services, it may be necessary to find new mechanisms to support improved continuity of care. Our recommendation is to use the influence of the Health Benefit Exchange to bring together the owners and operators of LSCs, hospitals, and primary care providers to discuss the key barriers hindering continuity of care and to start building a picture of the potential path forward. LSCs will not replace the

[52] Rohrer, James et. al. "Family Medicine Patients Who Use Retail Clinics Have Lower Continuity of Care (Abstract)". Journal of Primary Care & Community Health, published online January 15, 2013. Last accessed on March 18, 2013. http://jpc.sagepub.com/content/4/2/150.

medical home, but it will be important to understand how these two modalities of care can operate effectively in tandem with one another.

Potential Challenges

Challenges related to expanding LSCs can be grouped into the following categories:

- *Physician Concerns*: While multiple studies have shown that quality of care from LSCs can be comparable to other options, some physician groups have still raised concerns related to continuity of care. Further expansions of LSCs may require a concerted effort to address physician concerns by showing a path to progress on continuity of care challenges.
- *Growth Controlled by Private Sector:* The creation of new LSCs is primarily controlled by the private sector, with companies like The Little Clinic (now owned by The Kroger Co.) developing and operating clinics. While the Commonwealth can encourage expansion, both through sharing of information related to need and the development of specific incentives, ultimately the rate of expansion will be determined by private sector decisions.
- *Medicaid Reimbursement Limitations*: The lack of Medicaid reimbursement could limit the expansion of clinics into certain areas, especially where there are large percentages of Medicaid-covered individuals. The potential for Medicaid expansion may further complicate the ability of LSC operators to expand into markets where a large percentage of the population is not able to seek covered services from LSCs.

Unique Workforce Group Challenges and Observations

The expansion of LSCs has some interesting ramifications for specific workforce groups:

- *Mid-Level Practitioners (APRNs, PAs):* These two groups represent the main care providers at LSCs. As scope of practice limitations potentially change for these groups, it could be possible for LSCs to provide additional services. This extension of services could also require the Commonwealth to revisit current regulations defining LSC scope.
- *Primary Care Physicians:* As continuity of care challenges are addressed, there may be an opportunity for PCPs or medical homes to generate more structured relationships with LSCs, coordinating medical records and referrals. Drawing PCPs into the fabric of LSCs could help to address some concerns.
- *MHPs:* APRNs provide a large amount of mental health services in the Commonwealth. Given that LSCs are commonly staffed by APRNs, there could be the potential to expand LSC services to include a larger number of mental health services, especially since there is little required physical infrastructure. As mentioned above, any change to the services that can be legally provided at an LSC may require the Commonwealth to revisit current regulation governing LSCs.

7.3 – Create support programs for small practices in rural and underserved areas

Overview

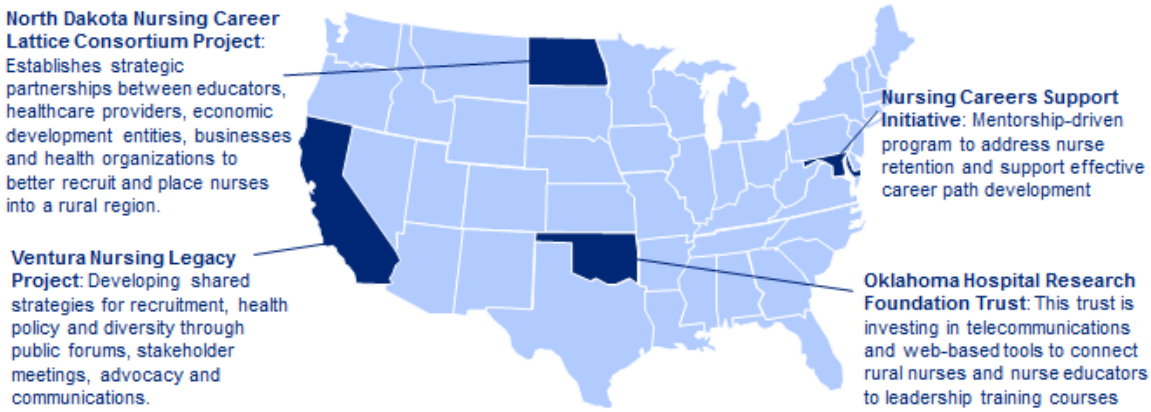
The successful operation of a small medical practice in rural and underserved areas carries with it some unique challenges. In many ways, there is additional exposure to risk. For example, with Medicaid reimbursement rates generally lower than those for Medicare and commercial insurance, a rural practitioner may be exposed to generally lower profitability than peers doing the same procedures in more urban or more affluent areas. These risks can be enhanced for mid-level practitioners who seek to operate their own businesses. With scope of practice limitations and the need to contract with physicians and pharmacists for some referral and prescribing rights, a clinic being operated by a mid-level practitioner can be essentially unable to operate if an overseeing physician or pharmacist terminates the contract. In rural areas, there may not be another qualified practitioner who can take on the oversight role.

These risks can create a barrier to both the expansion of current practices and the development of new practices in areas that have substantial unmet demand for health care services. One way to address these barriers is to create programs that specifically support these important but high-risk businesses. These programs can span the development of a shared toolkit to help rural practitioners understand key challenges and access available support to the longer term approach of developing central business offices that enable providers to reduce practice overhead by centralizing back office functions, such as appointment scheduling and billing. Additional support could be provided through rent relief (e.g., creative real estate solutions, purchasing consortia, and shared services) as the next biggest overhead item after payroll spend is often the cost of leasing office space.

There is some existing precedent for developing collaborative support programs for health care practitioners. One organization that has supported many unique programs is Partners Investing in Nursing's Future. While their solutions focus specifically on the nursing population, the types of collaborations that they are fostering may have wide-reaching application to many workforce groups. Some examples are in Figure 7 and described below in further detail:[53]

[53] All examples from the Partners Investing in Nursing's Future website, last accessed on March 18, 2013. http://www.partnersinnursing.org/partners/.

Figure 7: Sample Support Programs from Partners Investing in Nursing's Future



- *Ventura Nursing Legacy Project*: This program sought to address Ventura County's nursing workforce shortages by using a two-pronged approach. First, a group of nurse leaders would be convened to determine what the top priority issues were facing the nursing workforce group. Once these top issues were determined, a collaborative nursing summit would be convened that included representation from "health field workers, health institutions, nonprofit organizations, government and civic leaders, the educational community, and the community at large to assist in developing strategies to address the priority nursing issues."[54] This approach of convening practitioners to identify the critical challenges and then organizing the broader community to address solution development could be brought to bear on supporting a broad range of practitioners in rural and underserved practice areas.
- *Oklahoma Hospital Research Foundation Trust*: This program used online technologies, such as Web-based training modules and distance learning software, to deliver leadership courses and other curriculum to nurses in rural and diverse communities across Oklahoma. This same approach could be used in Kentucky to provide learning opportunities that support the development and operation of health care practices in rural and underserved areas.
- *North Dakota Nursing Career Lattice Consortium Project*: This program created a strategic partnership between "educational institutions, health care providers, workforce and economic development entities, business partners, and health organizations" to "Expand the production of and placement of highly qualified nurses and nursing faculty in a rural-frontier region."[55] The program focused on creating opportunities for current nurses to receive advanced degrees without being taken out of their current geographic location. This type of collaboration between educational institutions and health organizations could serve as a blueprint for providing additional clinical support to rural and underserved clinics, or even as a way of providing improved access to sponsoring physicians for mid-level practitioners.
- *Nursing Careers Support Initiative*: This program sought to address three critical nursing challenges through the implementation of a one-on-one mentorship program: "retention of new nurses, creation of

[54] Ibid. http://www.partnersinnursing.org/ventura-county-community-foundation-california/.

[55] Ibid. http://www.partnersinnursing.org/north-dakota-nursing-career-lattice-consortium-project-north-dakota/.

a nursing leadership framework, and the development of a career path to increase the number of nurse faculty."[56] This type of mentorship program could be utilized in rural and underserved areas within Kentucky to help address retention of rural practitioners.

While the above examples may not be the right fit programs for the Commonwealth, they illustrate the types of collaborative approaches that could be effectively used to support Kentucky's health care providers in rural and underserved areas.

Potential Next Steps

- *Convene Working Group:* Convene a working group made up of diverse practitioners who are currently operating health care practices in rural and underserved areas. This group should include not only those individuals providing primary care type services, but also behavioral health services. Bringing together representatives from a broad range of groups will be important to identifying the common challenges that all practitioner types face, which will help the Commonwealth to more effectively prioritize which challenges to address first.
- *Evaluate Neighboring Programs:* Conduct a more detailed study of support programs that have been effectively utilized in other states. Looking closely at neighboring states, where specific challenges may more accurately reflect those currently experienced in Kentucky, may provide good context for where the Commonwealth could begin to invest. Furthermore, identifying programs in neighboring states may reveal opportunities for cross-border partnerships that could accelerate the time to implement an initial portfolio of support activities.
- *Develop Pilot Programs*: One way to minimize the required investment would be to begin with one or more pilot programs. Testing the efficacy of specific efforts, whether it is a mentorship program, a distance learning program, or a set of business tools and templates, will help the Commonwealth to better tailor the programs before making a full-scale investment. Outcomes from pilot programs could also be used as a proof of concept to seek grant funding to defray costs for specific programs.

Potential Challenges

Challenges related to developing support programs are primarily related to funding, customization, and participation:

- *Funding*: All new programs will require funding, either through the Commonwealth or through outside granting parties. It is possible that public/private partnerships may be able to fund certain types of programs. Overall, funding will also be an important consideration when it comes to program sustainability; long-term programs will require consistent funding sources.
- *Customization*: Different regions within Kentucky may present unique business, operational, and clinical challenges. These differences may be further compounded by different challenges experienced by different workforce groups. It will be important to find a balance between programs that provide widely applicable support and those programs that provide targeted support for the highest risk areas.

[56] Ibid. http://www.partnersinnursing.org/community-foundation-of-the-eastern-shore-inc-maryland/.

- *Participation*: These programs will only be effective if they receive strong participation. A focus on outreach to potential participants, as well as a focus on designing programs that are easy to access, will be important to getting the full benefit out of any investment in support programs.

Unique Workforce Group Challenges and Observations

- *Mid-Level Practitioners (APRNs, PAs):* These two groups play an increasingly large role in the delivery of primary care services in rural and underserved areas. They also experience very specific challenges related to scope of practice limitations that generate unique risks. Support programs for these practitioners may need to be unique, or in addition, to programs that support primary care physician practices.
- *Mental Health Practitioners:* While all in-scope mental health practitioners were combined into a single workforce group for the purpose of this study, there may be unique practice challenges for different types of mental health practitioners who operate in rural and underserved areas. For example, Medicaid reimbursement policies are different for visits by psychiatrists as opposed to psychologists, which could introduce different types of financial challenges for these two specific mental health groups.

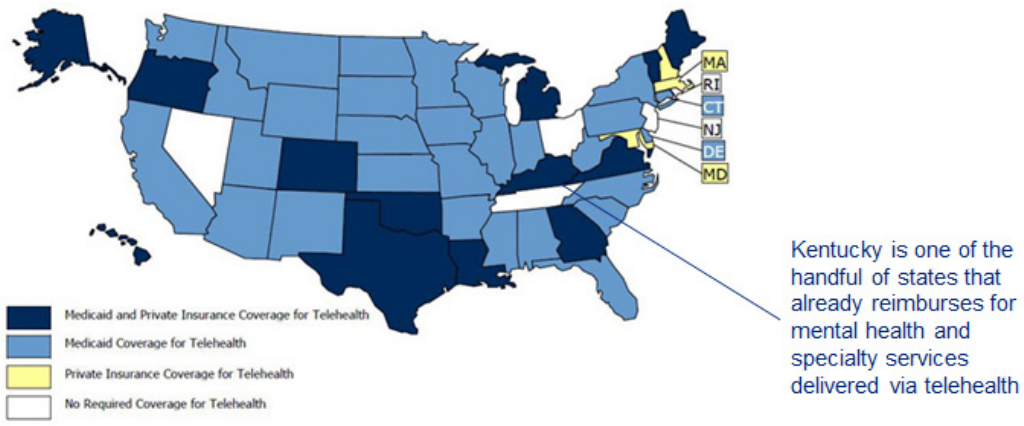
7.4 – Increase/Expand Medicaid reimbursement for rural areas and technology-driven care

Overview

The implementation of new technology can often lead to greater efficiencies in the provision of health care services.[57] Payers play an important role in laying the groundwork for new technologies. As health care providers of all sizes look to invest in new technologies, one important factor in their decision-making process is likely to be the reimbursement potential. For example, if a rural mental health practitioner in Kentucky is considering an investment in additional telehealth technology, he or she would likely consider the fact that Medicaid will reimburse that practitioner for telehealth visits. Given the prevalence of Medicaid-covered patients in many rural counties, the ability to bill Medicaid would provide access to a larger potential patient population. With reimbursement policies already in place related to that technology, the overall risk of investment is lower for that practitioner.

Kentucky has made substantial investments in telehealth technologies, with over 200 telehealth facilities located across the Commonwealth as of February 2012.[58] Furthermore, Kentucky has been among the leading states for driving reimbursement of telehealth services, as one of the 13 states as of July 2012 that requires some level of private sector insurance company coverage of telehealth.[59] Looking more broadly across payer types, Kentucky is one of only 15 states that require both Medicaid and private insurers to cover telehealth services (see Figure 8 below).

Figure 8: Medicaid and Private Insurance Reimbursement Policies by State[60]



[57] See for example Linda V. Green, Sergei Savin and Yina Lu, "Primary Care Physician Shortages Could Be Eliminated Through Use Of Teams, Nonphysicians, And Electronic Communication". *Health Affairs*, 32, no. 1 (2013):11-19.

[58] Kentucky Health Information Exchange, "Kentucky TeleHealth Update". February 2012.

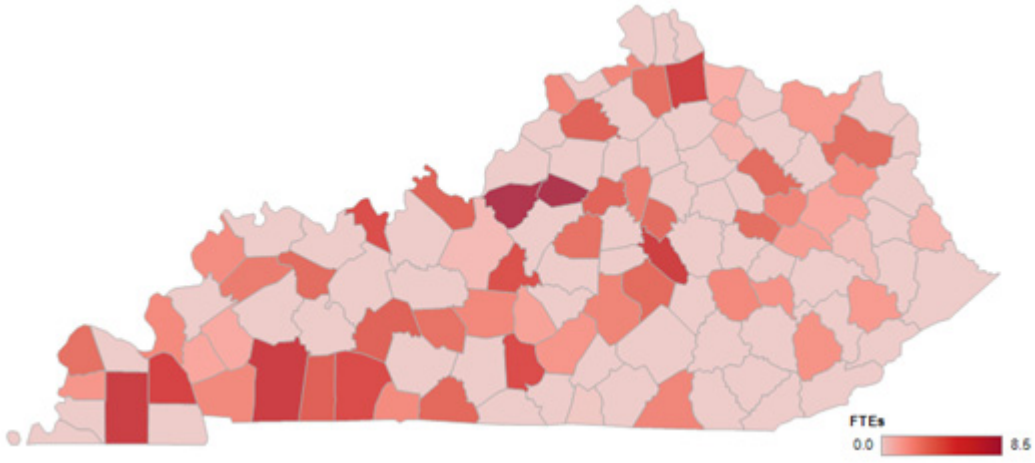
[59] APA Monitor on Psychology, "More states reimburse for telehealth", July 2012, Vol. 43, No. 7, page 11. Last accessed on March 19, 2013. http://www.apa.org/monitor/2012/07-08/telehealth.aspx.

[60] National Conference of State Legislators Website. Last accessed on March 19, 2013. http://www.ncsl.org/issues-research/health/state-coverage-for-telehealth-services.aspx.

However, even with reimbursement policies in place, challenges continue for fully utilizing the existing technology infrastructure in some states. For example, in Maryland, where private insurers were recently required to pay for telehealth services, the law defines telemedicine as "interactive audio, video or other telecommunications or electronic technology… to deliver a health care service."[61] This definition, while it does open up the opportunity to use some advanced technologies, also inherently does not apply to phone conversations, email visits, or fax visits.[62] Given the prevalence of email especially as a common mode of communication, it is possible that this definition may limit the rise of novel uses of email as a means of extending care.

The primary challenge seen within the Commonwealth is the lack of Medicaid reimbursement for primary care services delivered via telehealth. Currently, Kentucky Medicaid reimburses for mental health visits and some specialty visits, but primary care is not included. According to this study, current PCP need is concentrated in rural areas (62% of total need) (see Figure 9 below). Given the potential benefits of using technologies such as telehealth to reach rural areas, where Medicaid populations can be large, the lack of Medicaid reimbursement for primary care could be a barrier to the overall effectiveness of Kentucky's current and future investments in telehealth.

Figure 9: Distribution of 2012 PCP Need by County



Additional technologies beyond classic telehealth are starting to emerge, leveraging mobile technologies in new and innovative ways.[63] Proactively identifying emerging technologies, and exploring whether and how Medicaid reimbursement could be structured, will signal to providers across workforce groups that incentives for investment in learning and deploying new technology will be in place to minimize risk. For one example of how emerging technologies beyond telehealth have been deployed, please see the below case study.

[61] APA Monitor on Psychology. http://www.apa.org/monitor/2012/07-08/telehealth.aspx.

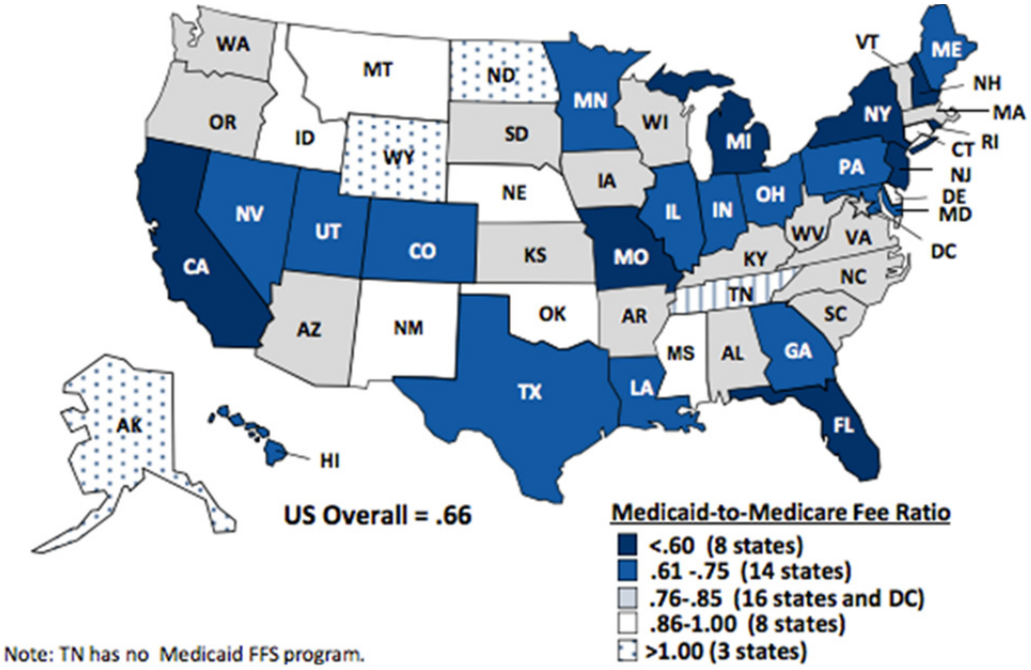
[62] *Ibid.*

[63] Greenspun, Harry, MD and Sheryl Coughlin, PhD, MHA, "mHealth in an mWorld: How mobile technology is transforming health care". Deloitte Center for Health Solutions, 2012.

Case Study – Using Mobile Technology to Support Chronically ill Patients at a Low Cost:
Wenatchee Valley Medical Center and Wenatchee Valley Hospital make up a large rural health network in Wenatchee, WA. The network was looking for a way to improve quality while addressing high costs when serving chronically ill patients (e.g., COPD, CHF, and diabetes). These patients received an in-home monitoring technology called Health Buddy, which asks patients specific questions and then transmits answers to a Web-based application that triages the information and assigns case managers for follow-up based on predicted risk. This program kept chronically ill patients out of the hospital, lowered deaths, and enabled nonphysician practitioners to manage a larger percentage of each patient's care. The estimated monthly cost to deploy this program averaged only $128 per patient.[64]

Additionally, Kentucky's Medicaid-to-Medicare fee ratio is in the middle of the national range, indicating the potential for additional reimbursement premiums as a means of boosting provider participation in rural areas (see Figure 10 below).

Figure 10: Medicaid-to-Medicare Physician Fee Ratios by State (All Services, 2012)[65]



Additional Case Study – See Project ECHO® / University of New Mexico School of Medicine
The mission of Project ECHO® (Extension for Community Healthcare Outcomes) is to develop the capacity to safely and effectively treat chronic, common, and complex diseases in rural and underserved areas, and to monitor outcomes of this treatment.

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[64] Case Managers Remotely Monitor Chronically Ill Medicare Beneficiaries Each Day, Reducing Mortality and Costs. AHRQ Health Care Innovations Exchange – Service Delivery Profile.

[65] Kaiser Family Foundation. 2012. How Much Will Medicaid Physician Fees for Primary Care Rise in 2013?. [ONLINE] Available at: http://www.kff.org/medicaid/upload/8398.pdf. [Accessed on March 18, 2013].

Potential Next Steps

- *Expand Medicaid Billing Acceptance Policies:* Begin by establishing reimbursement for primary care visits completed through telehealth. Furthermore, at least as of 2011, Kentucky Medicaid did not cover tele-home or remote monitoring services as a reimbursable telehealth service.66 As a next step, the Commonwealth should revisit that limitation to determine if the reimbursement policies could be extended to cover these services.
- *Plan for Future Innovation:* Beyond telehealth, it is important the payers within the Commonwealth understand what innovations are potentially coming and to begin planning for whether and how to reimburse for services provided utilizing these technologies. As a next step, the Commonwealth should convene an innovation working group that includes payers, providers, and commercial technology experts to discuss the current and future environment for technology-driven care within Kentucky.
- *In-state Medicaid Rate Study:* The Commonwealth needs to determine how closely increasing Medicaid fee ratios are correlated with greater acceptance of new Medicaid patients in rural areas. It is recommended that a sampling of providers be surveyed in the neediest areas identified by this report, and depending on the results, a pilot study in those same counties be conducted to determine feasibility of statewide roll-out.

Potential Challenges

Potential challenges related to Medicaid expansion of reimbursement for new and existing technologies include:

- *Funding:* Any expansion of Medicaid reimbursement policies is likely to require additional funding to cover additional program costs. Lower reimbursement rates for telehealth versus face-to-face visits could potentially limit the overall cost, but may meet with additional resistance from practitioners and could limit overall utilization of technologies.
- *Education and Awareness:* Growing utilization of new technologies requires more than incentives. It also requires training and general awareness building among practitioners. Facilitating access to information, training, and general support may be required in parallel with Medicaid reimbursement policy changes.
- *Increasing Reimbursement:* According to 2011 National Ambulatory Medical Care Survey, 31% doctors said they would not accept new Medicaid patients67, additionally:
  - Although 96% of physicians accepted new patients in 2011, rates varied by payment source:
    - 31% of physicians were unwilling to accept any new Medicaid patients.
    - 17% would not accept new Medicare patients.
    - 18% of physicians would not accept new privately insured patients.

[66] Center for Telehealth & e-Health Law, “50 State Medicaid Statute Survey: Part II”. February 2011. Last accessed on March 19, 2013. http://ctel.org/wp-content/uploads/2011/06/CTeL-50-State-Medicaid-Statute-Survey-Part-II.pdf.

[67] HealthAffairs. 2012. In 2011 Nearly One-Third Of Physicians Said They Would Not Accept New Medicaid Patients, But Rising Fees May Help. [ONLINE] Available at: http://content.healthaffairs.org/content/31/8/1673.abstract. [Accessed on March 18, 2013].

- Physicians in smaller practices and those in metropolitan areas were less likely than others to accept new Medicaid patients.
- Higher state Medicaid-to-Medicare fee ratios were correlated with greater acceptance of new Medicaid patients.

Unique Workforce Group Challenges and Observations

- *MHPs:* The use of telehealth for mental health visits in Kentucky is well supported from a Medicaid reimbursement perspective, in comparison to some other practitioner groups. Additional studies should be considered to understand the specific barriers to expansion facing behavioral health, as well as to identify any leading practices that have been implemented by this group that could be shared readily with other workforce groups looking to expand.
- *APRNs:* Medicaid reimbursement to APRNs, as defined in "907 KAR 3:170. Telehealth consultation coverage and reimbursement," is still governed by "907 KAR 1:104. Reimbursement for advanced registered nurse practitioner services."[68] As a result, APRNs are only eligible to receive a maximum reimbursement of 75% of the payment that a participating physician would receive for the same service.[69] Further study is recommended on whether increasing this reimbursement in rural areas would increase the supply of PCP access provided by APRNs.

[68] "907 KAR 3:170. Telehealth consultation coverage and reimbursement." Last accessed on March 19, 2013. http://www.lrc.ky.gov/kar/907/003/170.htm.

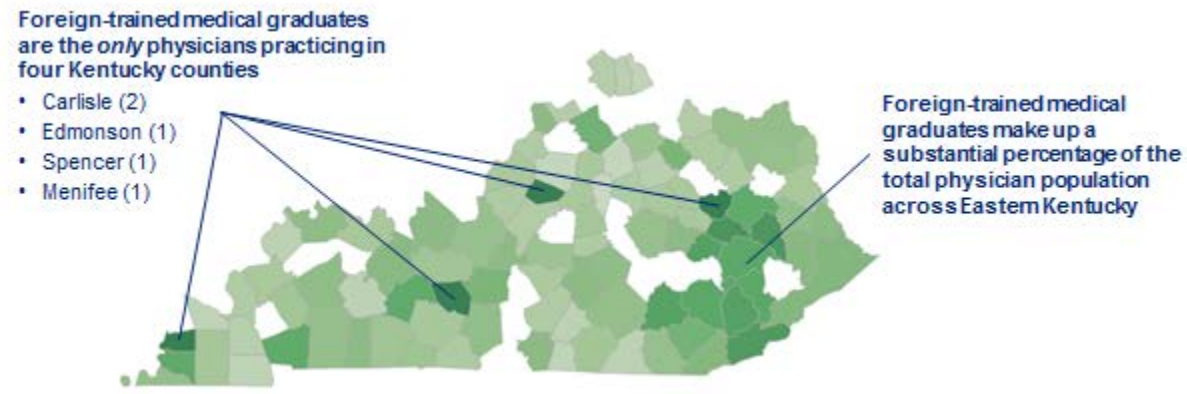
[69] "907 KAR 1:104. Reimbursement for advanced registered nurse practitioner services." Last accessed on March 19, 2013. http://www.lrc.state.ky.us/kar/907/001/104.htm.

7.5 – Expand programs to engage international medical graduates in rural and underserved areas

Overview

Internationally trained medical graduates (IMGs) make up an important element of Kentucky's health care workforce. According to this study, 21% of the current physician supply (including current residents) was educated outside of the United States. Narrowing the lens to include MDs and DOs with mental health specialties listed in the licensing database, the percentage rises to 29%. Furthermore, a 2012 study on IMGs in Kentucky found that graduates from international medical schools who practice in Kentucky are more likely than others to practice in rural areas.[70] See Figure 11 below for the data that seems to validate this observation. However, Kentucky still lags behind the national average for total IMG physicians, which is 25%.[71] Another potential benefit to expanding IMGs is increased retention in rural areas. Some studies have shown that IMGs have a higher likelihood of continuing to practice in the areas where they complete their J-1 requirements,[72] which are by definition rural and underserved areas that are designated as Health Professional Shortage Areas (HPSAs).

Figure 11 – 2012 Supply of IMGs by county across Kentucky (rural counties only)



[70] Faulkner, Amanda, Emery A. Wilson, MD; Elmer T. Whitler, MA, MPA; Linda M. Asher. "Role of International Medical Graduates in Kentucky Medicine: Implications For Workforce Planning and Medical Education". Center for Excellence in Rural Health, 10-1-2012. http://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1002&context=ruralhealth_facpub.

[71] *Ibid.*

[72] American Medical Association – International Medical Graduate Section Governing Council, "International Medical Graduates in American Medicine: Contemporary Challenges and Opportunities". AMA, January 2010. http://www.ama-assn.org/resources/doc/img/img-workforce-paper.pdf.

IMGs come to Kentucky from a diverse set of countries. Based on an initial analysis of the licensing database information, the countries providing the highest numbers of physicians to the Commonwealth are India, the Philippines, and Syria. Overall, the top 10 foreign schools where the current physician population has been trained are as follows:

Foreign Medical School	Location	Number of Current Active Graduates in Kentucky
Dow Medical College, University of Karachi	Pakistan	71
University of Santo Tomas	Philippines	68
St. George's University	West Indies	67
University of Damascus	Syria	66
Osmania Medical College, Osmania University	India	35
King Edward Medical University	Pakistan	33
Maulana Azad Medical College	India	30
Medical College of Baroda, Maharaja Sayajirao University of Baroda	India	30
University of Aleppo	Syria	28
University of the Philippines Manila	Philippines	28

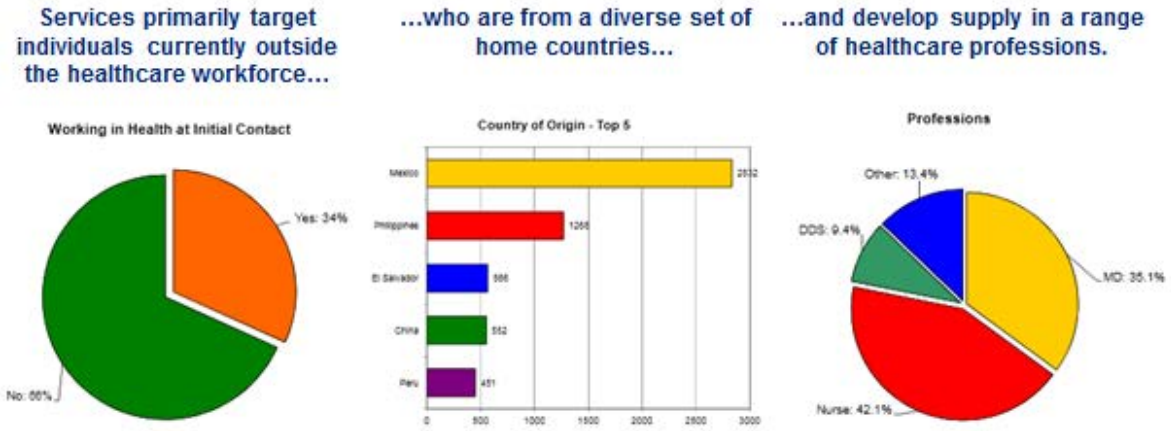
The Commonwealth currently operates four different J-1 Visa programs designed to bring IMGs into rural and underserved counties. Of these four programs, two are limited in terms of the number of IMGs that can be sponsored through the program (State 30 Program and HHS Exchange Visitor Program) and two are not limited (Appalachian Regional Commission J-1 Visa Waiver Program and the Delta Regional Authority).

The J-1 programs essentially target physician workforce supply challenges. However, there are foreign medical graduates in other workforce groups as well. The licensing data that forms the backbone of this study did not enable a detailed review of foreign-trained clinical workforce for most other groups, such as dentists or other MHPs beyond psychiatrists. However, an initial analysis of the RN and LPN licensing database showed only 334 providers listed with foreign schools, which is less than 1% of the total pool. Of those 334 practitioners, schools from 35 different countries were represented, which could indicate the potential to attract additional providers from multiple countries. A deeper exploration should be done for different groups to determine the extent to which foreign-trained graduates play a role in specific workforce groups (e.g., psychiatrists are a large need across the Commonwealth according to the specialty benchmarking in the Appendix; supplementing this need through foreign-trained psychiatrists may be a way to begin to bridge the gap).

Another potentially important factor of internationally trained health care workforce is finding those individuals who were trained abroad, but have not completed the necessary certifications to practice within the United States. The ability to locate and support these individuals within the Commonwealth is another possible lever that Kentucky could look to use in addressing workforce supply gaps. See the case study below for an example of one organization that is helping to address this challenge of dormant health care workforce in a handful of states.

Case Study: The Welcome Back Initiative[73]

This organization, which began in 2001, operates a series of support centers in eight states, focused on helping individuals who were educated in health care careers in other countries overcome the barriers to practicing in the United States. The centers provide a range of services, aimed at providing assistance in completing the credentialing and licensing process, career development, and accessing additional education as needed. As a nonprofit organization, Welcome Back is able to provide these services free of charge. As of 2012, the centers had supported the validation of almost 3,500 credentials, over 2,000 passed licensing exams and helped to launch over 1,750 individuals into employment in the health care sector for the first time. These licenses and credentials cover a broad range of health care professions, including nurses, dentists, and doctors.



Potential Next Steps

- *Understand Kentucky IMG Challenges:* Through surveys and other mechanisms, collaborate with current IMG groups to understand the specific challenges that this group faces. Consider developing support programs that address the top challenges, whether this includes the implementation of mentorship programs, facilitating communities of IMGs with similar interests and background (e.g., social forum for IMGs to interact and increase sense of belonging), supporting IMG partners to find employment or volunteer opportunities, and more. Creating strong communities of IMGs within the Commonwealth may make Kentucky a more attractive place for future IMGs to establish roots and develop long-term practices.
- *Expand the IMG Pipeline*: With a focus on the international medical programs that provide the largest number of IMGs to the Commonwealth, partner with the Area Health Education Centers (AHECs) for Kentucky's medical schools to explore the development of programs that attract IMGs earlier in their education. For example, create opportunities for international students to complete clinical rotations in Kentucky and then to make a transition directly into an in-state residency. Another option might be to formalize partnerships between Kentucky and international schools to raise the level of awareness of

[73] All case study data and graphics from The Welcome Back Initiative website, last accessed on March 20, 2013. http://welcomebackinitiative.org/.

the opportunities for IMGs in the Commonwealth and to help differentiate Kentucky from its peers as IMGs make decisions regarding placement.

- *Engage Dormant Health Care Supply within the Commonwealth*: Explore programs, such as the Welcome Back Initiative, to support individuals currently within the Commonwealth who have health care backgrounds but are not currently licensed to practice. These programs could be state-run or could be separate nonprofit organizations that the Commonwealth encourages to operate within Kentucky. An immediate next step would be to examine surrounding states for similar programs to see if any of them would be candidates for an accelerated expansion into the Commonwealth.

Potential Challenges

Potential challenges related to the expansion of IMGs within the Commonwealth include:

- *J-1 Availability:* While two of the four J-1 visa programs do not have limits on expansion, those programs aim to place IMGs into some of the most rural and underserved areas. Finding an increased number of IMGs to step into these roles, both for the three-year J-1 period as well as longer term, could be a challenge and, as a result, could slow potential IMG expansion.
- *Retention:* While the J-1 programs require three years of practice in the designated underserved area, there is no additional incentive or requirement for the participating IMG to stay in that area past the completion of the requirement. While some studies show that there is a higher likelihood of an IMG continuing to practice in these areas versus a U.S. medical graduate, there is no guarantee that IMGs will not leave either the underserved area or the Commonwealth altogether once they are finished with their service requirement.
- *Participation:* Expanding programs to develop a deeper IMG pipeline, attract more J-1 participants, or to encourage licensure and certification of those educated abroad but living in Kentucky all require participation of the targeted populations in order to be successful. Utilizing small-scale pilots may be a helpful way to test program design prior to large-scale implementation.

Unique Workforce Group Challenges and Observations

- *Nurses (RNs, LPNs, APRNs)*: With the call for more advanced degree nurses in the US,[74] support centers that not only help foreign-trained nurses reach minimum certifications, but also helping to upgrade nurses to Baccalaureate Degrees in Nursing (BSNs) and APRNs may have a longer term impact on the Commonwealth.
- *MHPs:* Physician licensing data shows strong representation of Kentucky IMGs licensed as psychiatrists. Continuing to target top schools and countries providing this supply could yield additional practitioners. For other mental health practitioner groups, exploring the efficacy of alternate visa programs (H-1B, H-2B, J-1 training visas, F-1 student visas, etc.) may be a more effective approach to attracting international workforce supply. Furthermore, while the Welcome Back Initiative case study above does not directly call out MHPs as a target group, these groups should also be prioritized if support programs are implemented.

[74] Institute of Medicine, “The Future of Nursing: Leading Change, Advancing Health”. October 5, 2012.

- *Dentists:* The dentist licensing database does not provide enough data on which schools Kentucky's dentists have attended, so it was not possible to evaluate this group for the participation of IMGs. Further studies are recommended for this group, perhaps through a survey or more detailed exploration of historical J-1 data, to understand the extent to which improved attraction of IMGs could address the dentist supply gap.

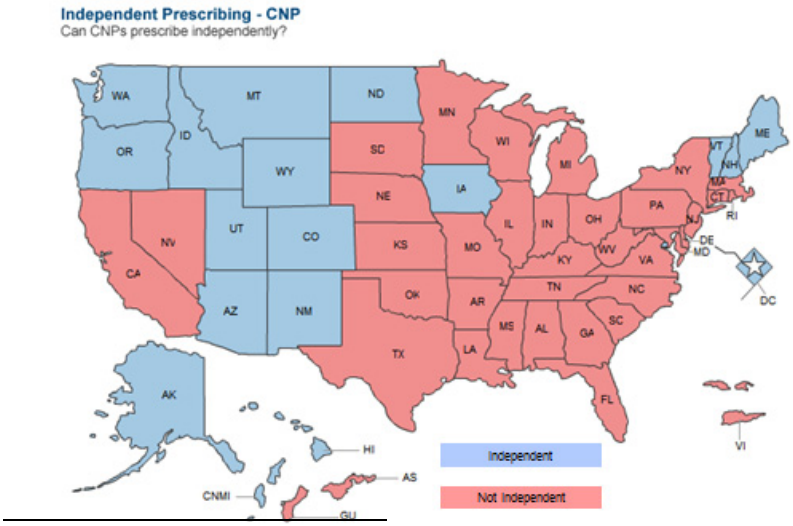
7.6 – Address scope of practice limitations for mid-level practitioners

Overview

Opinions over the role of mid-level practitioners (APRNs and PAs) in the delivery of care are widely varied and, in many cases, lead to heated argument.[75] This has been the case even recently in Kentucky, where the Kentucky Medical Association (KMA) recently opposing Senate Bill 43 (SB43), which proposed removing the scope of practice limitation dictating that APRNs must have a collaborative agreement with a physician in order to prescribe nonnarcotic drugs.[76] In the end, while SB43 did not pass, a related limitation was lifted for PAs through the passage of House Bill 104. This bill will remove the current requirement that PAs have on-site supervision from a licensed physician. Once the bill goes into effect, a PA will only have to have a physician available by phone.[77] This story is indicative of the broader conversation that is currently underway in many states across the United States.[78]

Seventeen states and D.C. allow full prescribing authority for nonscheduled medications to nurse practitioners (see Figure 12 below) — in other words, they do *not* require a signed agreement with a physician. This is also true for nurse practitioners working in the military. With SB43, Kentucky was positioned to make a progressive impact in the surrounding seven-state region and overall South by removing the collaborative agreement requirements for prescriptions for APRNs.

Figure 12: APRN scope of practice limitations on prescribing rights by state[79]



[75] Beck, Melinda "Battles erupt over filling doctors' shoes". The Wall Street Journal, February 3, 2013.

[76] Burchett, Molly and Al Cross, "Legislature eases physician assistant rules, holds off on similar measure for nurse practitioners". The Lane Report, March 19, 2013. http://www.lanereport.com/19663/2013/03/legislature-eases-physician-assistant-rules-holds-off-on-similar-measure-for-nurse-practitioners/.

[77] *Ibid.*

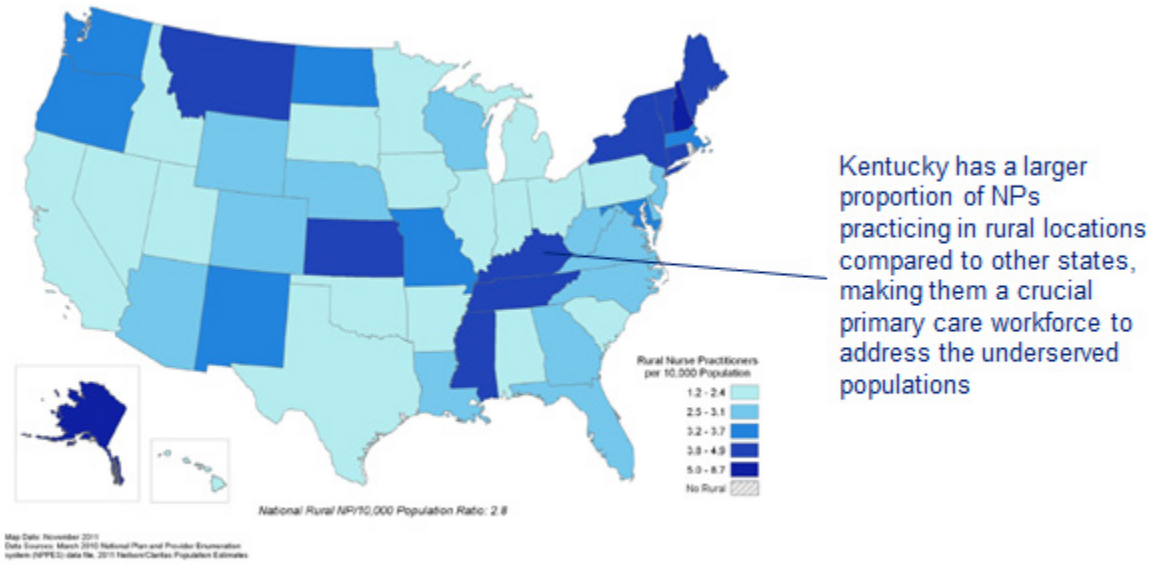
[78] Kenen, Joanne "'Scope of practice' stories vary according to state laws". Association of Health Care Journalists, December 19, 2012.

[79] University of Washington School of Medicine, "Understanding Advanced Practice Registered Nurse Distribution in Urban and Rural Areas of the United States Using National Provider Identifier Data". Rural Health Research Center, February 2012.

From a workforce supply perspective, however, enabling mid-level practitioners to effectively address unmet health care supply, especially in relation to primary care, represents a compelling opportunity. To put this opportunity into context, according to the data compiled for this report, if 6% of the current APRN population were added to the current PCP supply, the entire PCP gap could be addressed. While this is a somewhat simplistic statistic, it helps to illustrate the latent potential in better utilizing nonphysician workforce to address certain types of physician workforce gaps.

Another commonly discussed benefit of utilizing APRN and PA workforce supply to address primary care gaps is that these groups may be more likely to practice in rural areas. In one interesting study, certified RN anesthetists were found to be more likely to practice in rural areas in states that provided greater practice autonomy.[80] Compared to most states, Kentucky has a larger percentage of rural nurse practitioners than other states (see Figure 13 below). As the Commonwealth continues to address large rural health care workforce gaps, especially in primary care, further analysis of the impact of scope of practice limitations on the distribution of mid-level workforce in rural areas could yield additional insights on whether and how to ease restrictions.

Figure 13: Rural NPs per 10,000 state population (based on 2010 National Provider Identifier data)[81]



[80] Skillman, Susan et. al. "Understanding Advanced Practice Registered Nurse Distribution in Urban and Rural Areas of the United States Using National Provider Identifier Data". WWAMI Rural Health Research Center, February 2012.

[81] *Ibid.*

However, scope of practice limitations create specific challenges for APRNs and NPs who wish to practice autonomously. These challenges can include:

- Dependence on a Physician: If an NP or APRN cannot secure a collaborative agreement, they will be essentially unable to practice. If an agreement is terminated for any reason, that can leave the NP's or APRN's patients without access to medical care.
- Reluctance to Take on Risk: Because the mid-level practitioner cannot fully control the status of the agreement, some practitioners may choose not to take on the financial risk to open a practice, which limits the capacity of mid-levels to address primary care gaps.
- Additional Costs: Some doctors charge mid-levels monthly fees for maintaining the collaborative agreement, which adds additional financial risk.

At the same time, the rules governing the collaborative agreement for prescribing do not require the overseeing physician to physically see the patient, review the patient's chart, or take on legal risk for the outcomes of the prescribing decision.[82]

One area of concern that is often raised in relation to mid-level practitioners operating as primary care providers is quality. A mounting body of evidence appears to show that, in different settings, the outcomes provided by mid-levels are equal in quality, and occasionally improved. For example, a study published in Journal of the American Medical Association in 2000 compared outcomes of patients randomly assigned to nurse practitioners and physicians who had the same degree of independence. This study found no significant differences in health patients' health status, but some improved outcomes for patients with hypertension.[83]

Potential Next Steps

- *Continue to Support APRN Scope of Practice Expansion:* The recent passage of House Bill 104 removed some of the prescribing limitations for new PAs, specifically the requirement that a physician be on site to support prescribing for the first 18 months. Unfortunately, the APRN language, which was included only in SB43, did not pass. Given the potential for APRNs, like PAs, to provide critical primary care services in rural and underserved areas, it will be beneficial for the Commonwealth to continue to seek ways to provide similar scope of practice expansions for APRNs.
- *Develop Flexible Language for Laws Governing Scope of Practice:* Beyond prescribing rights, limitations on mid-levels include the inability to engage in certain activities that are technically within their training, such as signing a death certificate.[84] One avenue to addressing these challenges is to explore the language governing who has the rights to do specific clinical activities. In some cases, this legal language likely specifies a physician must complete the task, which limits the ability of mid-levels to practice. Finding opportunities to change the language to read "qualified practitioner" in certain cases may enable not only adjustments in the current scope of practice limitations, but also a more long-term flexibility as modalities of care continue to evolve over time.

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[82] SB 51 Talking Points from Kentucky Coalition of Nurse Practitioners and Nurse Midwives.

[83] Mundinger, M.O. et. al. "Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial [ABSTRACT]". Journal of the American Medical Association, January 2000. Last accessed on March 21, 2013 at http://www.ncbi.nlm.nih.gov/pubmed/10632281.

[84] Report authors discussion with solo-practice Kentucky APRNs on February 18, 2013.

Potential Challenges

Potential challenges related to the expansion of mid-level scope of practice include:

- *Some Physician Groups are Opposed to Changes:* As evidenced by the recent discussions related to SB43, KMA is opposed to removing the requirement that APRNs have a collaborative agreement with a physician in order to prescribe nonnarcotic drugs.[85]
- *Requires Legislative Action:* Changes to scope of practice limitations for most or all workforce groups will require legislative changes, which can be challenging to accomplish.

Unique Workforce Group Challenges and Observations

- *Optometrists*: Scope of practice challenges have emerged between optometrists and ophthalmologists. In 2011, Kentucky passed a bill allowing optometrists to perform laser eye surgeries.
- *APRNs*: As mentioned above, the recent effort to remove scope of practice limitations related to prescribing rights for APRNs (SB43) did not pass. APRNs have additional limitations beyond prescribing rights that could impact the ability of an individual APRN to operate as a primary care provider, especially in rural areas where there may be fewer potential collaborating physicians.
- *MHPs*: Limitations on MHPs appear to be primarily related to reimbursement, not necessarily as a result of limitations on ability to prescribe or perform certain procedures. Additional research should be done in this area to better understand if there is potential to further utilize practitioners to the full extent of their training through legislative or other actions.

- *Dentists*: There are many services that can be performed by dental assistants in Kentucky, though the requirements vary and include different levels of supervision depending on job title and/or level of training.[86] There is also variation in other states, including the 35 states that allow dental hygienists to provide some preventive services, often without direct dentist supervision.[87, 88] These findings indicate that a more comprehensive analysis should be completed to better understand the opportunities that might be available to use lower level workforce supply to help ease dentist gaps.

[85] Burchett, Molly and Al Cross, "Legislature eases physician assistant rules, holds off on similar measure for nurse practitioners". The Lane Report, March 19, 2013. http://www.lanereport.com/19663/2013/03/legislature-eases-physician-assistant-rules-holds-off-on-similar-measure-for-nurse-practitioners/.

[86] The DALE Foundation website, last accessed on March 20, 2013. http://www.dalefoundation.org/~/media/www/Files/State-Dental-Assistant-Requirement-PDFs/Kentucky.ashx.

[87] See American Dental Assistants Association website for links to scope of practice definitions for all states. Last accessed on March 20, 2013. http://dentalassistant.org/Content/Details/Legislation-Information.

[88] Jennifer Breshears Wheeler and Austin Rueschhoff. National Conference of State Legislatures, LEGISBRIEF. Oral Health Workforce. Volume 21, Number 9.

7.7 – Evaluate medical malpractice caps

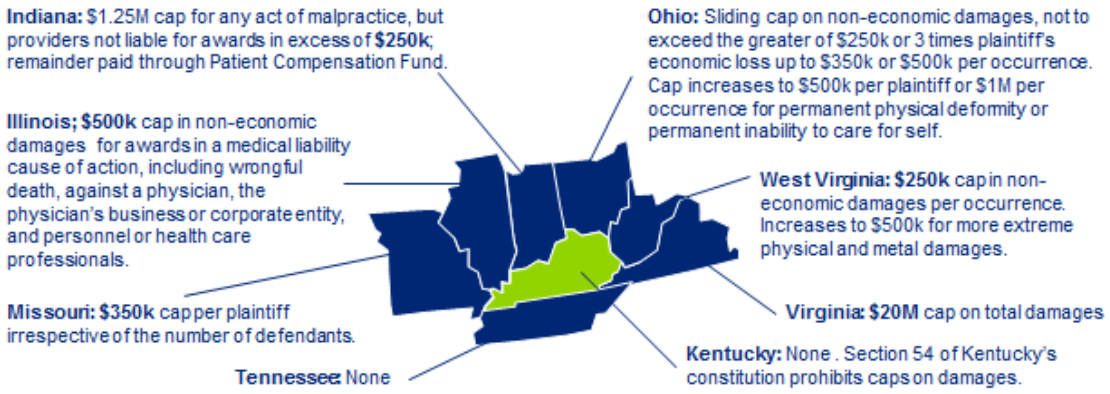
Overview

As of 2004, Kentucky was one of 20 states considered by the American Medical Association to be in a "medical liability crisis" due to an unfavorable medical liability climate and the growing threat of patients losing access to care.[89] Today, Kentucky is unique among its neighbors in that it does not have a medical malpractice cap in place (see Figure 14). Studies of the impact of medical malpractice caps have yielded various insights, including:

- Malpractice premiums in direct reform states declined by 8.4% over a three-year period.[90]
- States with damage caps averaged 12% more physicians per capita than states without.[91]
- Direct reforms, including caps on noneconomic damages, reduced the likelihood that a physician will be sued by 2.1%.[92]

Furthermore, a Deloitte survey of physicians from 2011 found that nearly three out of four physicians would be very comfortable with caps on pain and suffering for noneconomic damages;[93] perhaps not so surprising given that caps would directly limit risk for relevant health care provider groups.

Figure 14: Overview of medical malpractice caps in neighboring states*[94]*



[89] American Medical Association, Statement for the Record to the Committee on Energy and Commerce Subcommittee on Health U.S. House of Representatives, RE: Current Issues Related to Medical Liability Reform (February 10, 2005).

[90] Daniel P. Kessler & Mark B. McClellan, *The Effects of Malpractice Pressure and Liability Reforms on Physicians' Perceptions of Medical Care*, 60 LAW & CONTEMP. PROBS., 81-106 (1997).

[91] Fred Hellinger & William Encinosa, U.S. Dep't of Health and Human Servs., The Impact of State Laws Limiting Malpractice Awards on the Geographic Distribution of Physicians (2003).

[92] Daniel P. Kessler & Mark B. McClellan, *The Effects of Malpractice Pressure and Liability Reforms on Physicians' Perceptions of Medical Care*, 60 LAW & CONTEMP. PROBS., 81-106 (1997).

[93] "Physician perspectives about health care reform and the future of the medical profession". Deloitte Center for Health Solutions, December 2011.

[94] American Medical Association Advocacy Resource Center Report 2011. Accessed via http://www.ama-assn.org/resources/doc/arc/capsdamages.pdf.

In Kentucky, the primary challenge to implementing medical malpractice caps is a limitation within the state constitution stating that prohibits caps on damages. As a result, the implementation of a medical malpractice cap within the state would require statutory changes. Another approach that various states have used is a process-driven strategy, implementing different types of practitioner review boards that work to triage claims before they go to litigation. An effort along these lines was attempted in Kentucky in 2012, as part of House Bill 361; however, this bill did not pass.

Potential Next Steps

- *Evaluate Kentucky-Specific Impact of No Malpractice Cap:* One possible outcome of not having a medical malpractice cap in Kentucky is that some practitioners may leave the Commonwealth to practice in lower risk states. Academic literature does find evidence that states with medical malpractice caps do see a stronger physician supply. However, testing the impact specifically from practitioners who have left Kentucky will provide an important perspective as to whether or not to pursue either a statutory or process-based approach to limiting malpractice risk. By partnering with the AHECs, the Commonwealth could launch a targeted survey to alumni of the medical schools who chose to practice out of state, with a special focus on those individuals who started practicing within the Commonwealth. Through this survey, Kentucky can determine the extent to which the lack of a medical malpractice cap has influenced the retention of practitioners. If the data shows this to be a significant influence, that data could be used to support a statutory change.
- *Explore Opportunities for Process-Driven Approach to Limiting Malpractice Risk*: In order to institute a medical malpractice cap in Kentucky, a change would have to be made to the state constitution, which currently prohibits caps on damages. Making this change could be both controversial and time consuming. As a result, the Commonwealth should explore alternative methods that accomplish similar outcomes to a malpractice cap, but do not technically place a cap on damages. Some states, such as Indiana, have adopted medical review panels as a means of triaging incoming claims, assessing validity, and providing expert opinions that can be submitted as evidence if a case does go to trial. The review process can only be bypassed for most claims if both parties agree.[95] [96] Kentucky should further evaluate similar programs in other states and determine if this process-based approach could be implemented in an easier fashion than constitutional reform.

Potential Challenges

- *Public Concerns:* Placing any restrictions on the potential size of malpractice payments through caps, or on the ease with which a claim can be brought to trial through additional process, could be viewed negatively by some constituencies within the Commonwealth.
- *Legislative Barriers:* As mentioned above, implementing an official malpractice cap would require a change to Section 54 of the Kentucky state constitution, which reads, “The General Assembly shall

[95] Indiana State Medical Association Website: http://www.ismanet.org/legal/malpractice/review_panel.htm. Accessed on February 27, 2013.

[96] Indiana State Medical Association “Roles and Responsibilities of the INCAP Medical Review Panel”. http://www.ismanet.org/pdf/legal/RolesMedicalReview.pdf. Accessed on February 27, 2013.

have no power to limit the amount to be recovered for injuries resulting in death, or for injuries to person or property."[97]

Unique Workforce Group Challenges and Observations

- *APRNs*: According to a paper published in the American Academy of Nurse Practitioners Journal, the cost of medical malpractice insurance is higher for nurse practitioners, and "many are losing their places of employment as clinics close due to the increasing cost of premiums."[98]
- *MHPs:* One recent area of concern for MHPs has been the potential for increased malpractice activity resulting from telemedicine visits. A recent survey of six state mental health telephone consultation program directors, published in 2012, found no evidence of increased legal risk for practitioners providing mental health services.[99]

[97] Website of the Kentucky Legislature, last accessed on March 20, 2013. http://www.lrc.ky.gov/legresou/constitu/054.htm.

[98] Klutz, Diane L, "Tort Reform: An Issue For Nurse Practitioners [ABSTRACT]". Journal of American Academy of Nurse Practitioners, 2004. Accessed at http://www.ncbi.nlm.nih.gov/pubmed/15055424.

[99] Knutson, Katherine Hobbs et. al. "Medico-Legal Risk Associated with Pediatric Mental Health Telephone Consultation Programs". Administration and Policy in Mental Health and Mental Health Services Research, December 2012. Abstract available at http://link.springer.com/article/10.1007/s10488-012-0448-2.

7.8 – Expand loan forgiveness programs to improve distribution in rural and underserved areas

Overview

Debt loads for many health care provider groups have been on the rise, and some studies have shown that real income has been falling.[100] For context, the average debt load of a graduate from dental school in 2010 was $177,144.[101] Assuming a relatively low blended interest rate of 7%,[102] a dentist would have to pay over $2,000 per month on a standard 10-year repayment plan. Furthermore, the suggested minimum annual salary to cover these payments is over $300,000, which is more than double the median annual salary for dentists in the United States in 2010.[103] Given statistics like these, it is understandable why loan repayment programs have been utilized as an attraction and retention mechanism for health care workers. According to a Government Accountability Office report on the National Health Service Corps (NHSC), "the risk of turnover for clinicians in a loan repayment program was 1.67 times lower than that of clinicians in scholarship programs,"[104] indicating that loan repayment can also be an effective mechanism to keep health care supply in critical areas of need.

Kentucky's current loan repayment programs are almost entirely federally funded. For example, the NHSC program includes a loan repayment incentive and is used as a way to improve distribution of a diverse set of health care workforce, from dentists to primary care physicians to LCSWs and more in Kentucky's HPSAs. There is also a small state-funded loan repayment program open to a broad range of health care provider types, but it can only reach a small number of providers due to funding limitations.[105]

Potential Next Steps

- *Expand State-Funded Loan Repayment Program:* The majority of loan repayment programs available to health care practitioners in the Commonwealth are federally funded and are tied to HPSA designation areas. Expansion of federally funded programs may be limited at the federal level, but many states have started to invest in state-funded programs, including Kansas, Arkansas, Oklahoma, and Texas.[106] Expanding Kentucky's current state-funded loan repayment program, which is very small, would help Kentucky to target bringing specific types of practitioners to specific areas, without the restrictions of federally funded programs.
- *Benchmark Kentucky Loan Repayment Programs Versus Neighboring States:* In looking to expand Kentucky's loan repayment programs, one variable to consider is how current and potential programs compare against those in neighboring states. Conducting additional studies to understand the

[100] See for example "Medical School Tuition and Young Physician Indebtedness". American Association of Medical Colleges, 2004.

[101] American Dental Association website. Last accessed on March 22, 2013. http://www.ada.org/5767.aspx.

[102] See http://www.finaid.org/loans/ for a description of federal loan programs and interest rates. The interest rate on the Federal Direct PLUS Loan is 7.9%.

[103] Bureau of Labor Statistics website. Last accessed on March 22, 2013. http://www.bls.gov/ooh/health care/dentists.htm.

[104] Workman, Chris "Kentucky Health Workforce Health Workforce Working Group: Brainstorming and Analysis of Four Professions [Whitepaper]". October 10, 2012.

[105] Discussions with representatives of Kentucky Health Care Access Branch.

[106] www.acep.org/content.aspx?id=22472#sthash.taILTp7L.dpuf.

competitiveness of these incentives could help the Commonwealth calibrate any future repayment programs to increase effectiveness.

- *Explore Public/Private Partnerships to Fund Additional Programs:* Given that both state and federal funds can be limited, another avenue to fund program expansion could be the development of public/private partnerships. In instances where private institutions stand to gain through the attraction of certain workforce types, it could be possible to structure cosponsored repayment programs. This collaborative approach could yield opportunities to both create new sustainable incentives programs as well as extend current programs to improve competitiveness.

Potential Challenges

- *Funding:* Expansion of the current state-funded loan repayment program or the development of additional state-funded programs will require additional funding.
- *Increased Administration:* As programs expand, there may be increased administrative burden. One way to address this challenge could be to centralize all administration of loan repayment programs under a single department to promote administrative efficiency.
- *Prioritization Across Workforce Groups:* This study has shown that there are diverse workforce supply needs across all workforce groups. Finding an effective way to prioritize new programs to reach the highest need areas with the highest demand workforce groups will require careful prioritization. The ways in which program decisions are prioritized may cause concerns among specific workforce groups. The Commonwealth should develop a transparent mechanism for driving prioritization decisions.
- *Retention Impact Not Guaranteed:* While loan repayment programs can encourage a practitioner to stay for the period of time during which the incentive is active, there is no guarantee that a recipient of loan repayment will continue to practice in the same area in which the incentive is applied. While some studies do indicate that loan repayment is an effective mechanism, especially in relation to scholarships, retention outcomes should be monitored on an ongoing basis to determine long-term program effectiveness.

Unique Workforce Group Challenges and Observations

Loan repayment, especially when not restricted to federally funded programs, can be applied broadly to all workforce groups under consideration in this report. The current loan repayment programs within the Commonwealth already impact a diverse range of practitioners. For example, the list of NHSC program participants includes MDs and DOs, LCSWs, PAs, dentists, and more.[107] Average debt loads are higher for some groups, such as physicians, but earning potential should also be taken into consideration. For example, the hourly mean wage for a general dentist in Kentucky in 2011 was $62.31, but for a MFT was only $19.21, according to Bureau of Labor Statistics data.[108] For an individual with 50,000 dollars in student loans, the impact of a repayment incentive may be very different based on earning potential.

[107] List of NHSC program participants provided by Kentucky Health Care Access Branch on March 7, 2013.

[108] Bureau of Labor Statistics Data as of May 2011. Accessed via http://data.bls.gov/oes/search.jsp?data_tool=OES.

7.9 – Enhance programs that support recruiting for retention

Overview

According to one recent study, Kentucky ranked 24th in the country in terms of retention of physicians educated in state.[109] Improved development and targeting of students with a higher likelihood of staying in state, and especially in rural and underserved areas, could positively affect Kentucky's ability to expand the workforce across provider types.

A broad look at programs that have been implemented in different states and across different workforce groups surfaced the following themes:

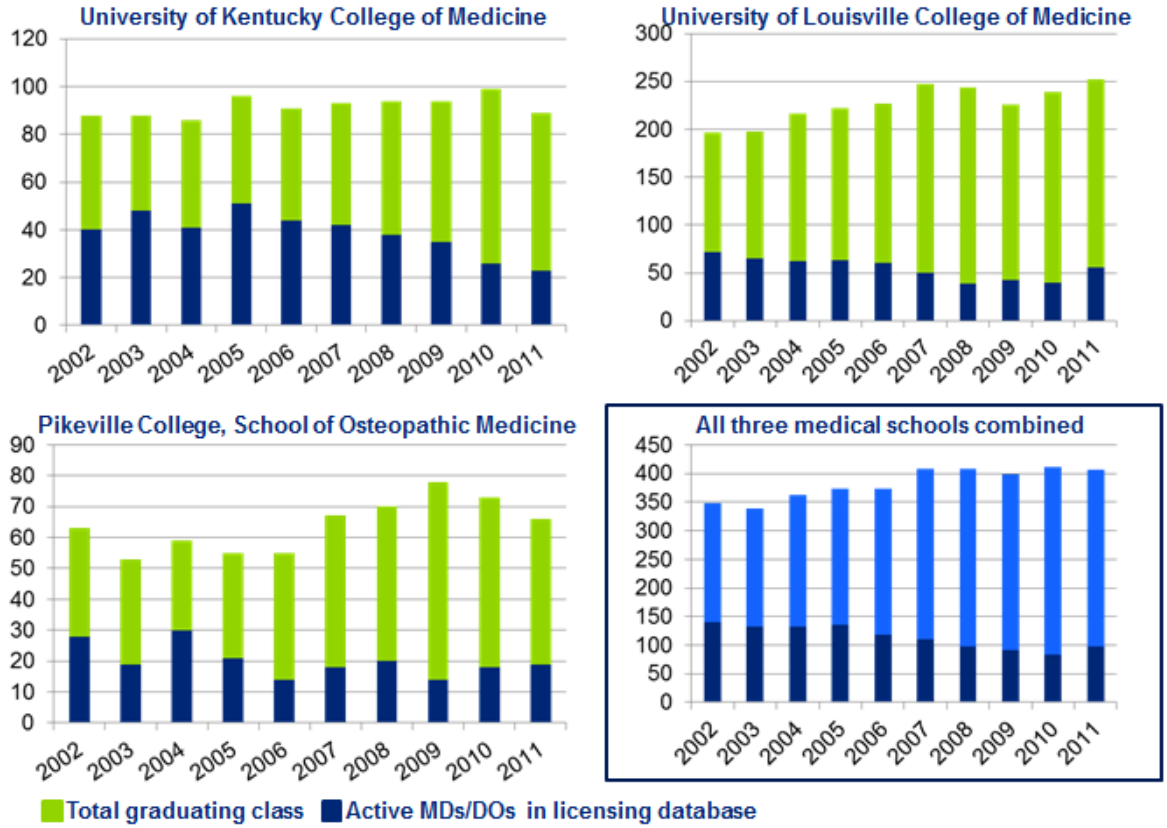
- Pre-College: Invest in new curriculum after school and summer programs in rural areas that build awareness and excitement around potential medical careers at foundational points in a student's education and drive home the importance of rural practice (e.g., Health Professions Clubs).
- Undergrad: Promote mentorship shadowing programs for students from rural and underserved areas who are interested in medical careers to facilitate academic success and application processes. Create early acceptance programs to support transition to MD/DDS programs. (e.g., Frontier Nursing Courier Program)
- Medical/Nursing/Dentistry School: Evaluate the potential to use preference-based mechanisms to expand opportunities for students applying from rural and underserved areas. Utilize tools like guaranteed/early acceptance programs to support a strong pipeline. Develop specific rural tracks that will help attract students who are interested in rural practice. (e.g., Jefferson Medical School PSAP)

Further Evaluating Kentucky In-State Retention of Physicians and Nurses

Looking at licensure database data combined with additional graduation rate data provided by the three Kentucky medical schools, an initial analysis of in-state retention was completed. This analysis used the fields "graduation year" and "school" in the licensing database to identify the number of active physicians from each of the three Kentucky medical schools by year who are currently practicing in the Commonwealth. Matching this data to the number of graduates for each program then provided a view into the retention rate by year, as shown below in Figure 15. This analysis should be considered directional, as further validation and testing should be done using additional data sources.

[109] Amednews.com. 2011. Keeping Physicians In State. [ONLINE] Available at: http://www.amednews.com/article/20111219/profession/130309963. [Accessed on March 18, 2013].

Figure 15: Initial Analysis - In-state retention for Kentucky-educated physicians by school by graduation year (includes residents)[110]

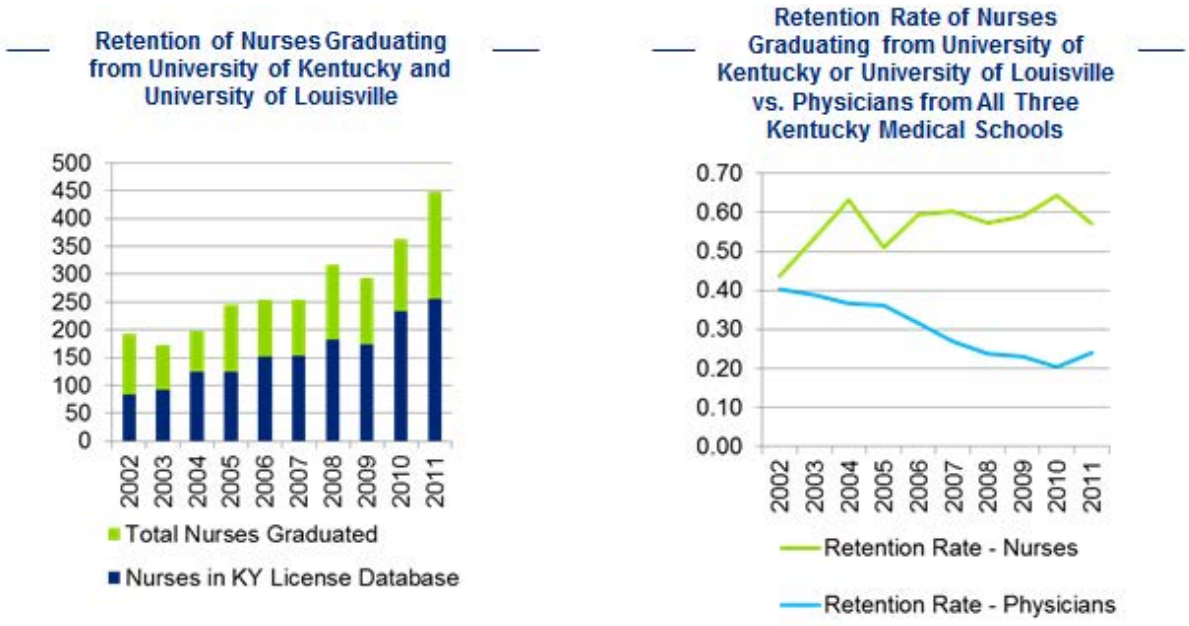


This initial look at the data shows an overall retention rate of Kentucky-educated physicians by graduation year cohort between a high of 40% in 2002 and a low of 20% in 2010. The overall retention rate of the students who graduated between 2002 and 2011 is 30%. Overall, there appears to be a downward trend in the retention rate, as the total number of graduates has steadily increased over the10-year period.

[110] All calculations are based on 2012 physician and nursing licensure data provided by the Kentucky Board of Medical Licensure and Kentucky Board of Nursing, and annual graduation figures provided by the Kentucky University AHECs.

When the same analysis was completed for the nursing programs at University of Louisville and University of Kentucky (University of Pikeville was not included in the nursing analysis), the retention trend was opposite, as indicated in Figure 16 below. Looking at retention for the two programs, there is a larger percentage of the nursing school graduates practicing in state, as well as an upward trend in the overall retention rate.

Figure 16: Comparing in-state retention for Kentucky-educated physicians and nurses[111]



These initial analyses raise some additional questions about in-state retention that are beyond the scope of this study. As this challenge is explored further, it will be important to consider where Kentucky's medical and nursing students are coming from as well as what states they may be heading to after graduation. Furthermore, looking deeper at specific specialties could yield additional insights, such as how these figures may be different for primary care physicians or for APRNs.

Note: A similar effort was considered with the dentist data, but the lack of coverage in the graduation year field of the licensing database made it impossible to analyze. As mentioned above, graduation year should be included in all licensing databases as a required field, specifically to support the evaluation of in-state retention rates. It is recommended that this analysis also be completed for all critical health care workforce groups, including MHPs and dentists.

[111] *Ibid.*

Case Study: Jefferson Medical College Physician Shortage Area Program (PSAP)

One recruit for retention program that is often considered successful is Jefferson Medical College's PSAP, which has been active since 1974. According to the program's website, graduates are eight times as likely as their peers to become rural family physicians and have a retention rate of 79% after 11-16 years of practice.[112] Key features of the program include:[113]

- Applicants to the program are expected to have grown up or lived in a small town.
- Preference for the 24 spots is provided to students from a handful of in-state colleges as part of the PSAP cooperative program.
- Financial aid eligibility is 10% higher for PSAP participants than for other students, totaling up to 70-80% of financial need.
- Multiple mentorship channels are provided.
- Mandated clinical clerkship in a small community outside Philadelphia. Students are also encouraged to take a rural preceptorship for their required ambulatory family medicine rotation and are given priority over other non-PSAP students for these opportunities.

Academic research testing the efficacy of the PSAP program has continued to find strong results, with a 2011 study showing that PSAP participants are much more likely than their peers to practice rural family medicine (32% versus 3.2%) and to practice any specialty in rural Pennsylvania (24.7% versus 2%).[114]

Potential Next Steps

- *Evaluate Definitions of Diversity in Education:* Some successful rural programs have gone through the process of expanding the established definition of diversity to include individuals from rural and underserved areas.[115] It is recommended that Kentucky schools evaluate current definitions of diversity to ensure that applicants from rural and underserved areas are being acknowledged as an important diversity group that should receive similar treatment to applicants from other protected classes.
- *Study Drivers of Low Retention:* Many factors may lead to a health care practitioner receiving education in one state and then practicing in another. To better understand these drivers for Kentucky's workforce, partnering with the AHECs to complete a comprehensive retention study is recommended. This study should seek to understand where Kentucky's health care students are coming from (e.g., in-state versus out-of-state, top feeder states), where they are going after graduation, and why. The analysis should cover all critical workforce groups for which this report shows a substantial need, especially MHPs, dentists, and primary care providers. The data from this

[112] Jefferson Medical Program Physician Shortage Area Program website. http://www.jefferson.edu/jmc/psap.html, last accessed on February 23, 2013.

[113] Jefferson Medical Program admissions website. www.jefferson.edu/jmc/admissions/pdf/PSAP.pdf, last accessed on February 23, 2013.

[114] Rabinowitz, Howard "Increasing the supply of rural family physicians: recent outcomes from Jefferson Medical College's Physician Shortage Area Program (PSAP)." Acad Med 2011.

[115] See for example the University of Michigan Medical School. http://www.med.umich.edu/medschool/ssa/ .

study should be used to develop specific legislative and programmatic interventions to increase the in-state retention of the Kentucky-educated health care workforce.

- *Create Accountability and Shared Purpose:* The drivers of retention for the health care workforce can be diverse, including malpractice concerns, reimbursement and scope of practice policies, loan repayment and other financial incentives, and even social and cultural factors. As a result, it may be necessary to convene a broader group to share accountability for raising in-state retention rates. This group could include representatives from colleges and universities, the Medicaid office, the Health Benefit Exchange, the Health Care Access Branch, the various professional associations, and others. The mission of each of these groups is impacted by the retention of critical health care workforce groups within the Commonwealth, and each group has a role to play in developing interventions that improve retention in both near and long term.

Potential Challenges

- *Controllability:* There are many drivers of retention, meaning that efforts to recruit for retention may be complicated by other unrelated elements, such as available incentives. Recruiting for retention, however, is still an important component of a broader workforce capacity development strategy and should be pursued in tandem with other efforts.
- *Resistance to Preference Mechanisms:* The use of preference mechanisms in admissions processes, such as providing specific spaces for students from a rural or underserved background, could be seen as controversial by some parties.
- *Long Timeframe/Hard to Measure Impact for Early Pipeline Programs:* Programs that seek to encourage awareness and participation in health care careers early in student's education, such as the University of Michigan Summer Science Academy program for 10th and 11th graders, may be difficult to measure in terms of value. It is recommended that additional research take place to better understand the types of early pipeline programs that have demonstrated a measurable impact on in-state health care workforce supply and tailoring potential Kentucky programs to mirror these proven efforts.

Unique Workforce Group Challenges and Observations

- *Physicians:* In comparison to nurses, the initial analysis detailed above shows a strong need to focus on this group. Efforts to increase the supply of medical school seats have brought the total graduation rate up to 407 in 2011, a 17% increase since 2002. However, based on this initial analysis, the increase in supply does not seem to be directly translating to an increase in the total number of Kentucky-based physicians being produced each year.
- *Nurses:* The in-state retention rate of Kentucky-educated nurses seems to be on the rise, even as the graduation rate has been steadily increasing over the last 10 years. While further analysis is needed to validate the findings, there may be lessons learned or leading practices that can be gleaned by exploring the ways in which nursing programs in Kentucky have been increasing in-state retention over time.
- *Dentists and MHPs:* Licensing data for these groups was not clean enough to enable a detailed look at in-state retention rates. It is recommended that additional analysis be done for these two priority groups, with a focus on finding alternative data sources to evaluate in-state retention. Additionally, these groups should work with their respective licensing boards to encourage investments in updating the available data to enable future analysis.

7.10 – Expand regional rural health tracks to improve rural pipeline and retention

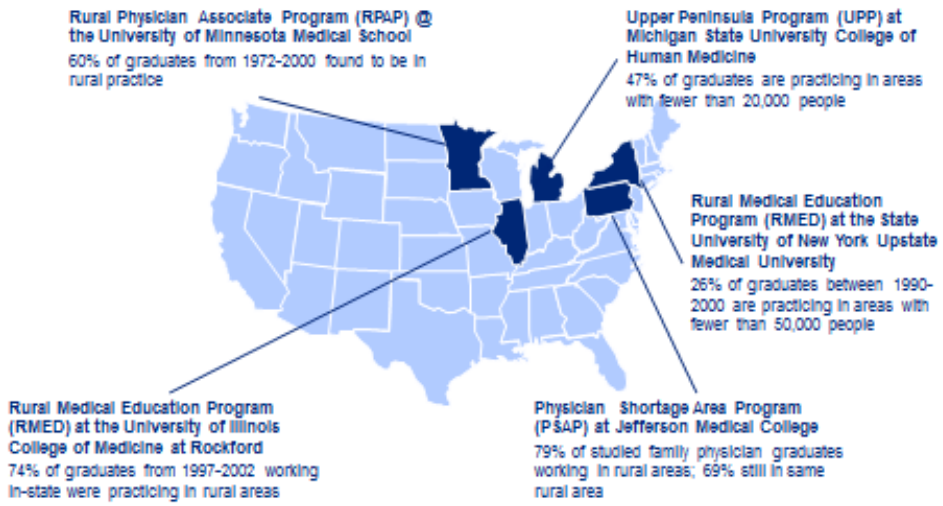
Overview

According to a 2005 AAMC survey, only 3% of recent medical students in the United States planned to practice in small towns or rural areas.[116] At the same time, as this study has shown, there is substantial unmet demand for health care services in rural areas across the Commonwealth. A 2012 study found that graduates of rural programs were "10 times more likely to practice rural family medicine than [international medical graduates]…and almost four times as likely to practice any rural primary care specialty."[117]

Expanding the infrastructure for rural education programs could be a strong approach to building supply of rural practitioners across the commonwealth. Today, there are two specific rural medical school programs in place within Kentucky: the Trover Rural Track at University of Louisville and the Rural Physician Leadership Program at University of Kentucky. The osteopathic medicine program at Pikeville University can also be considered to some extent a regional rural health program. A new program supporting additional rural education for dentists was also announced by Governor Beshear in 2011.

Other states have also embarked on developing regional rural health tracks. See Figure 17 for a review of outcomes data related to five rural programs.

Figure 17: Representative Rural Medical Campus Programs and Selected Academic Study Findings[118]



[116] Association of American Medical Colleges. Association of American Medical Colleges Matriculation Questionnaire 2005: All Schools. Referenced in Rabinowitz, Howard "Medical School Programs to Increase the Rural Physician Supply: A Systematic Review and Projected Impact of Widespread Replication." Acad Med, 2008.

[117] Rabinowitz HK, Petterson S, Boulger JG, Hunsaker ML, Diamond JJ, Markham FW, Bazemore A, Phillips RL. Medical school rural programs: a comparison with international medical graduates in addressing state-level rural family physician and primary care supply. Acad Med.2012;87(4):488-492.

[118] All figures from studies referenced in Rabinowitz, Howard. "Medical School Programs to Increase the Rural Physician Supply: A Systematic Review and Projected Impact of Widespread Replication". Academic Medicine, March 2008.

Potential Next Steps

- *Evaluate Current Programs:* Partner with educators and public health groups to evaluate the effectiveness of current programs within the Commonwealth. Furthermore, look externally to identify innovative programs in other states that are showing strong results to inform potential changes to Kentucky's rural health tracks. Evaluating existing programs in states, such as Minnesota, Michigan, Illinois, New York, and New Jersey,[119] among others, may yield leading practices.
- *Expand Existing Programs:* The current supply of positions in Kentucky's rural health tracks at medical schools is relatively small in comparison to the levels of rural health care workforce need. It is recommended that an evaluation take place of the funding required to expand the University of Louisville Trover Rural Track with current capacity of 10-12 students per year[120] and the University of Kentucky Rural Physician Leadership Program with current capacity of 10 students per year.[121] Furthermore, the Commonwealth should expand select programs for other workforce groups as well, such as the Frontier Nursing Couriers program[122] or the Southeast Kentucky Master of Social Work program.[123] Additional research on current programs and outcomes should be completed as a first step to planning specific investments in expansion.

Potential Challenges

- *Funding and Timeframe:* Developing additional academic infrastructure through existing program expansion or the creation of new programs can be challenging to fund and may take a long time to build and launch. As a result, initial planning for potential expansion of rural health tracks should begin soon so that benefits from these programs can be realized in the next five to ten years.
- *Clinical Rotations/Residencies:* Developing increased rural supply may also require additional in-state clinical rotation and residency opportunities in order to keep rural supply in Kentucky. As discussed above in relation to in-state retention of physicians, focusing only on expansion of graduates may not enable the full impact of the investment.
- *Prioritization*: Given limited funding and potentially long timeframes, it will be important to prioritize the development and/or expansion of rural health tracks to help address the most pressing rural workforce shortages. Based on this study, both MHPs and dentists show substantial rural need and could represent a good starting point for a deeper analysis related to rural health track expansion.

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[119] See Rabinowitz, Howard. "Medical School Programs to Increase the Rural Physician Supply: A Systematic Review and Projected Impact of Widespread Replication". Academic Medicine, March 2008.for a list of specific programs.

[120] University of Louisville School of Medicine website. http://louisville.edu/medschool/admissions/programs/trover-rural-track.html. Last accessed on February 23, 2013.

[121] University of Kentucky Medical School website. http://www.mc.uky.edu/meded/admissions/pathways.asp. Last accessed on February 23, 2013.

[122] See http://www.frontier.edu/courier for more information.

[123] See http://www.kyruralhealth.org/education/msw for more information.

Unique Workforce Group Challenges and Observations

- *Osteopathic Physicians:* The osteopathic medical school at Pikeville University is in and of itself similar to a rural health track. The mission of this school, which is in line with the overall purpose of osteopathic medicine as a practice, includes a dedication to "produc[ing] graduates who are committed to serving the health care needs of communities in rural Kentucky and other Appalachian regions."[124] According to the school's website, 60% of the graduates from this program are serving in rural areas in Eastern Kentucky or in other parts of Appalachia.[125] Expanding the overall graduation supply at Kentucky College of Osteopathic Medicine could function similarly to expanding rural health track programs at other colleges and universities.
- *Dentists:* In 2011, Kentucky's Governor announced a collaborative program to expand rural education for dentists.[126] As this program is developed and implemented, it may serve as a model for collaboration across universities in the Commonwealth to expand rural health tracks.

[124] KYCOM website at http://www.upike.edu/College-of-Osteopathic-Medicine/about/mission. Last accessed on March 21, 2013.

[125] *Ibid.*

[126] Governor Steve Beshear's Communications Office "Press Release: Gov. Beshear Announces More Than $650,000 for Rural Dental Education Partnership". September 7, 2011. Last accessed on March 21, 2013 at http://migration.kentucky.gov/Newsroom/governor/20110907dental.htm.

7.11 – Increase health care degree and residency capacity across the Commonwealth

Overview

According to the data made available for this study, while the number of nursing graduates from University of Louisville and University of Kentucky alone has more than doubled from 2002-2011, the total number of physicians graduated in state only rose by 17% in the same period.[127] As referenced above, in-state retention of Kentucky-educated physicians has been found to be between 20%-40% per year, which may mean that for 10 additional seats added at a Kentucky medical school, only two to four additional in-state practitioners are generated.[128]

At the same time, the total number of residency programs in Kentucky only increased by 5% between 2008 and 2012.[129] Residency slots have also gone through a recent redistribution process, aimed at better allocating residency positions against health care needs. However, a study published in Health Affairs in January 2013 found minimal rural benefits from the redistribution of residency positions resulting from the Medicare Prescription Drug, Improvement, and Modernization Act of 2003. This study states that only 12 of the 304 hospitals receiving extra residency positions were rural. Furthermore, the redistribution to rural areas accounted for only 3% of the total number of changed positions.[130]

Dentist data showed a slightly different trend, with 86% of the current in-state supply of dentists having been educated at either University of Kentucky or University of Louisville. As opposed to the physician group, dentists are relying very heavily on Kentucky-educated workforce supply. Whereas the physician group may benefit from a deep focus on retention of current Kentucky-educated supply, the dentist group may actually benefit further from programs that seek to draw in practitioners who were educated in other states or from other countries. Due to data limitations, dentist retention was not able to be evaluated. However, if further studies can validate that retention of graduates is high, it may make sense to invest in expansion of dental programs, as the likelihood of those investments leading to additional in-state supply could be high.

Potential Next Steps

- *Consider Implementation of Accelerated Degree Programs:* Some medical schools in the United States have started to experiment with accelerated degree programs. These programs have the potential to increase the rate at which physician supply is generated, in essence increasing additional capacity without having to expand the total number of seats in a given year. However, some concerns have been raised related to accelerated programs, related to quality as well as perception of accelerated degrees.[131] It is recommended that an analysis take place of the accelerated programs that are currently underway, both in terms of program design and quality of outcomes, to determine if

[127] Based on Kentucky practitioner licensing databases for physicians and nurses.

[128] Please see section 7.9 above for a detailed description of how these retention figures were calculated.

[129] NRMP Program Results 2008-2012 Main Residency Match; sum of reported quotas across all sites and all specialties.

[130] Candice Chen, Imam Xierali, Katie Piwnica-Worms and Robert Phillips. "The Redistribution Of Graduate Medical Education Positions In 2005 Failed To Boost Primary Care Or Rural Training." Health Affairs, 32, no.1 (2013):102-110.

[131] Hartocollis, Amanda "N.Y.U. and Other Medical Schools Offer Shorter Course in Training, for Less Tuition". New York Times, December 23, 2012.

Kentucky should consider a pilot program at one or more in-state medical schools. This analysis should expand beyond physician programs to explore the potential for accelerated programs for all critical workforce groups.

- *Set Clear Program Expansion Targets:* In partnership with AHECs and other key education stakeholders, develop targets and timelines for class-size expansions in degree programs for key workforce groups. This planning process should outline funding requirements, including class-size thresholds at which point additional physical or administrative infrastructure would be necessary.
- *Facilitate Public/Private Partnerships to Expand Residency Supply:* As MD and DO supply expands, it may be necessary to expand the total number of available residencies within the Commonwealth. In general, the number of residencies is controlled at the federal level through Medicare funding. Between 2008 and 2012, the total supply of Kentucky residencies rose only 5%, from 274 to 288.[132] A bill was recently introduced to Congress proposing an additional 15,000 residencies to be funded nationally, but specific to primary care.[133] Another way to potentially increase residency programs within the Commonwealth is through the development of public/private partnerships. These partnerships could rely on shared investments between the Commonwealth, which would benefits from additional residency slots through improved health care supply, and private hospitals or clinics, which would benefit from additional residents at a subsidized cost beyond federal residency allocations.

Potential Challenges

- *Physical and Programmatic Infrastructure:* Current buildings, faculty sizes, and administrative groups will likely need to scale alongside larger class sizes. Expanding physical infrastructure may be the largest challenge, both in terms of funding and timeline. Bringing current class sizes up to physical infrastructure limits may be a potential first step, followed by adding physical infrastructure at a later time.
- *Funding:* Increasing class sizes and/or co-investing in additional residency supply with private partners will require additional funding.
- *CMS Approval:* New residency positions may require additional Centers for Medicare & Medicaid Services (CMS), approval, even if the funding does not come from Medicare. Additional research is required here to more fully understand potential barriers related to residency approval processes.

Unique Workforce Group Challenges and Observations

- *Nursing:* As of 2011, Kentucky had nursing programs at 22 colleges and universities across the Commonwealth.[134] Given the large number of different programs, small increases in the class size in multiple programs could have a measurable impact on the overall supply. With nursing, there is also a push to focus more on advanced degree programs.[135] Focusing expansion efforts on masters and

[132] NRMP Program Results 2008-2012 Main Residency Match; sum of reported quotas across all sites and all specialties.

[133] Howell, Tom "Lawmakers push bill on primary-care doctor shortage". The Washington Times, March 18, 2013. http://www.washingtontimes.com/news/2013/mar/18/lawmakers-push-bill-primary-care-doctor-shortage/ .

[134] Health Career Programs – Colleges & Universities. Publication compiled by the North Central KY AHEC. Las updated September 2011.

[135] Institute of Medicine, "The Future of Nursing: Leading Change, Advancing Health". October 5, 2012.

PhD-level programs may be a way to align Kentucky's nursing supply with the evolving nature of health care in the United States.

- *Dentistry:* Dentists are not currently required to complete a residency before entering general practice in Kentucky, though may be required to do so for some specialties. In general, the lack of a requirement for mandatory residencies could make it less complex to expand available class sizes. However, Kentucky only has two dental programs (University of Louisville and University of Kentucky),[136] which means that infrastructure constraints could be a particular challenge if there is not substantial room available to expand current programs.
- *MHPs:* Compared to nurses and physicians, there are a number of schools graduating students with degrees in various mental health professions, including 10 schools with psychology programs and 17 with social work programs. Given the diversity of practice areas that mental health professionals cover, from ADCs to MFTs, a more granular analysis should be done of graduate supply of MHPs to effectively prioritize and plan specific areas for expansion.

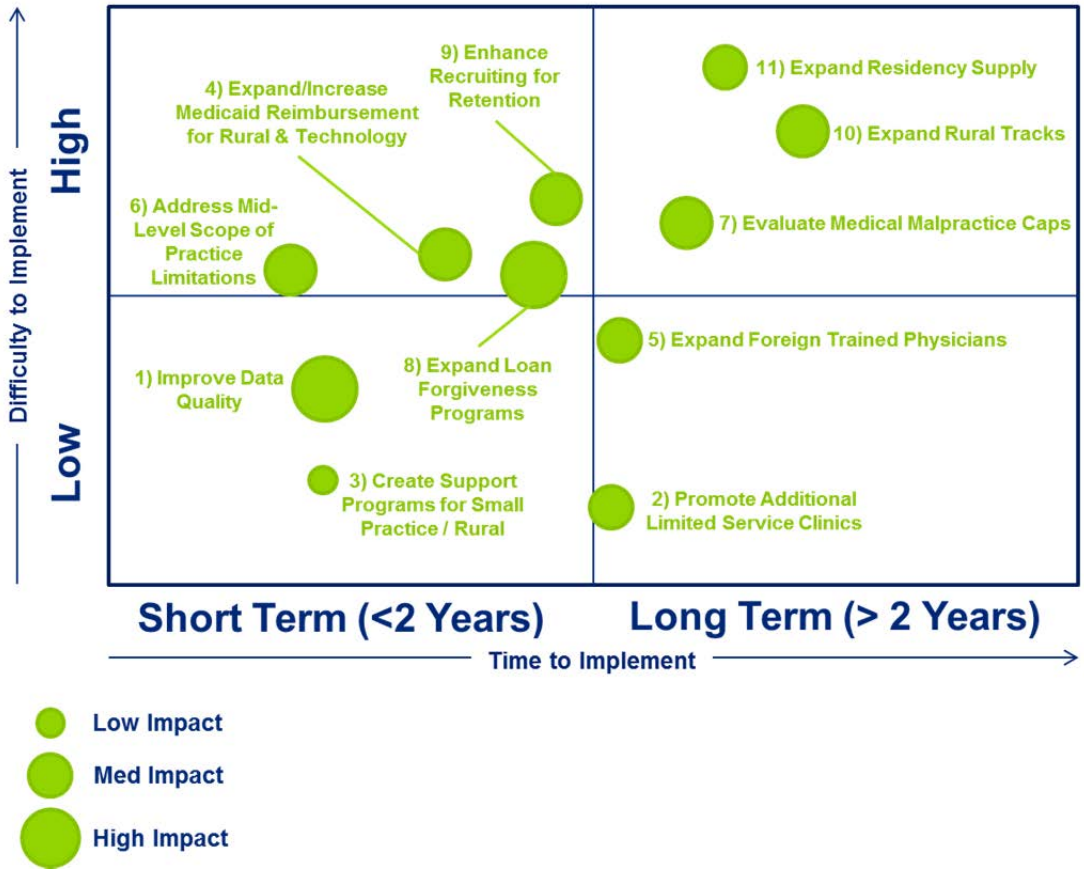
[136] Health Career Programs – Colleges & Universities. Publication compiled by the North Central KY AHEC. Las updated September 2011.

8. Conclusion and Next Steps

The overall finding of the study is that the health care workforce issues uncovered through this report are, and will continue to be, present with or without Medicaid Expansion, KHBE, or other programs across the Commonwealth. Intervention is needed to curb the trending decline of health care workforce capacity in relation to rising population demand, and no single approach will be the panacea.

In Figure 18 below, the report recommendations have been plotted in a prioritization matrix according to the estimated difficulty, time to implement, and potential impact on the Commonwealth's health care workforce. This, combined with the accompanying table, serves as a suggested prioritization of how the Commonwealth should proceed in terms of beginning to address the workforce gaps identified in this report from both a supply and demand perspective.

Figure 18: Prioritization Matrix of Recommendations

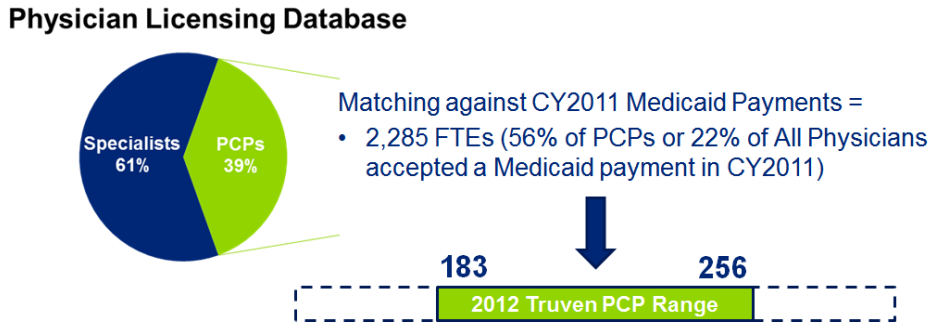


#	Description	Timing	Difficulty to Implement	Potential Impact (1-5; Low-High)
1	Improving professional licensure data quality and reporting across all workforce groups	Med	Low	5
2	Promoting additional LSCs to expand access in rural/ underserved areas	Low	Med	3
3	Creating support programs for small practices in rural and underserved areas	Low	Low	2
4	Expanding/Increasing Medicaid reimbursement for rural areas and technology-driven care	Med	Low	4
5	Expanding programs to engage international medical graduates in rural and underserved areas	Med	Med	3
6	Addressing scope of practice limitations for mid-level practitioners	Med	Low	4
7	Evaluating medical malpractice caps	Med	High	4
8	Expanding loan forgiveness programs to improve distribution in rural and underserved areas	Low	Med	5
9	Enhancing programs that support recruiting for retention	Med	Med	4
10	Expanding regional rural health tracks to improve rural pipeline and retention	High	High	4
11	Increasing health care degree and residency capacity across the Commonwealth	High	Med	3

9. Appendix

Calculating PCPs Who Accept Medicaid and the Corresponding PCP Population Need

An effort was made to estimate the number of PCPs who accept Medicaid by matching the physician licensing database to rendering providers who received a Medicaid payment in CY2011, however, the inherent limitations in using this approach resulted in a wide range of PCP need results depending on panel sizes:

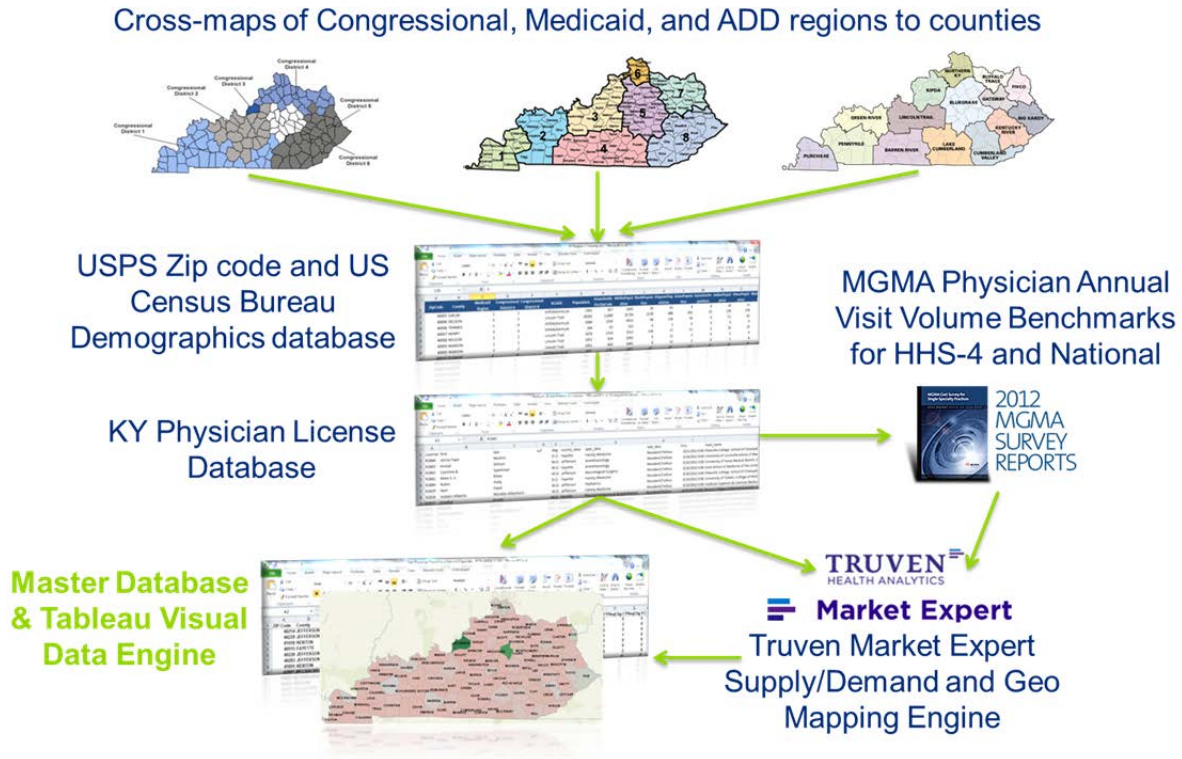


The Truven model is adjusted for actual PCP physician FTEs from the licensing database and is calculated by using age/sex visit rates of PCPs at the zip code level. The higher end of the range incorporates all 640,000 uninsured who may be eligible for Medicaid expansion or premium assistance. The lower end of the range is comparable to HRSA's HPSA estimates of 167 PCP needed, however, both could be understated if these practitioners choose not to accept Medicaid.

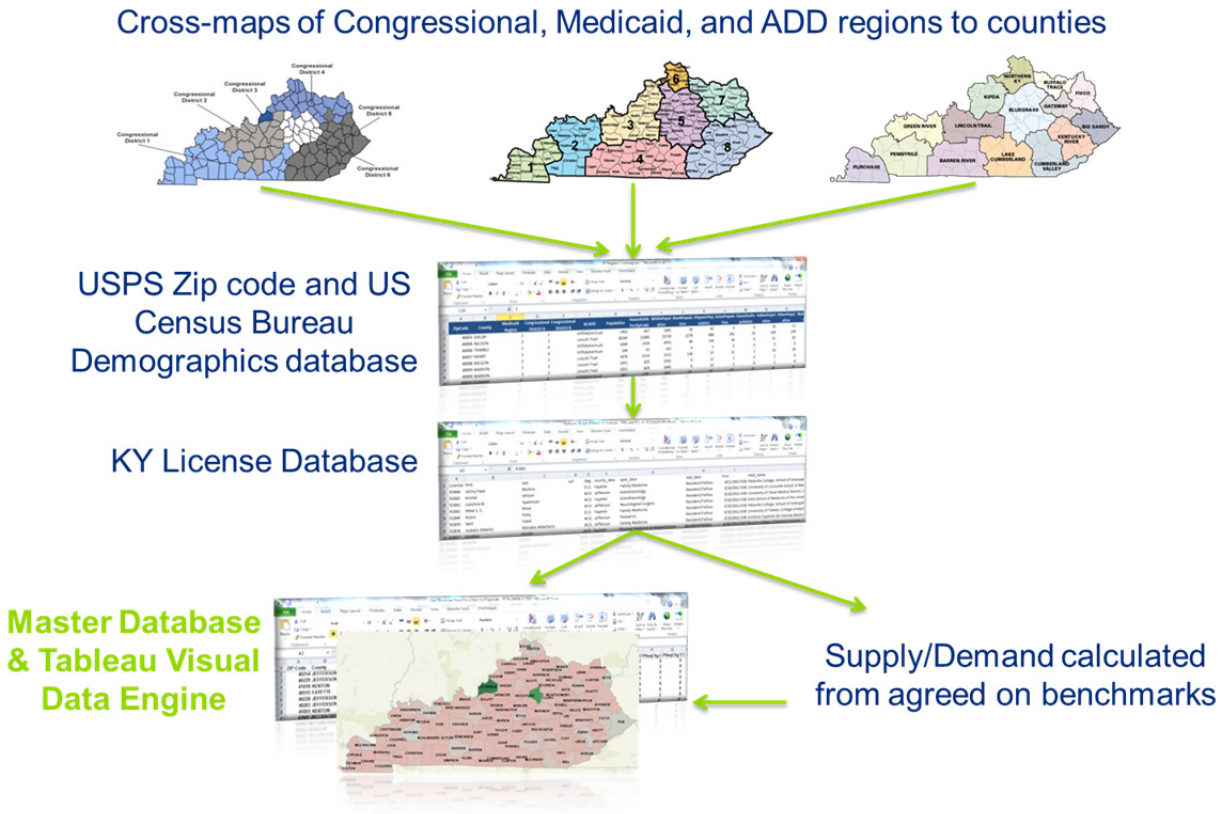
Additional notes:

- Benchmark used is from MGMA Physician Compensation and Production Survey: 2012 Report Based on 2011 Data; Majority Owner - All Owners, Practice Type - All Practices, Regions – Health and Human Services Region Four (includes: AL, FL, GA, KY, MS, NC, SC, and TN), Total Encounters (NPP Excluded)
- Once metric calculated from MGMA, visit volume per physician is then processed through the Truven Market Expert Physician Supply/Demand module to produce the physician FTE demand per zip code/county (which is derived by applying age and sex specific use rates to local populations and then dividing by physician visit productivity)
- PCP specialties align with HRSA definition and include: Family Medicine (without OB), Internal Medicine: General, Obstetrics/Gynecology: General, and Pediatrics: General
- Medicaid paid claims are derived from January 2013 Medicaid enrollment data by county provided by Kentucky Department for Medicaid Services and total state population from U.S. Census Bureau
- PCP specialties align with Health Resources and Services Administration (HRSA) criteria for Primary Medical Care and refer specifically to doctors of allopathic or osteopathic medicine specializing in the fields of: Family Practice, General Practice, Pediatrics, Internal Medicine (outpatient based), and Obstetrics/Gynecology

Master Database behind the visualization (PCP Physicians)



Master Database behind the visualization (Other than PCP Physicians)



Physician Specialty Benchmarking

The table below details the headcount of all available specialties represented in the physician licensure database and the percentage of the physician population each represents after segmentation and cleansing (see *4 - Professional Licensure Data Quality and Limitations*):

Specialty	Headcount	% Physicians
Family Medicine	1,547	14.2%
Internal Medicine	1,358	12.4%
Pediatrics	734	6.7%
Emergency Medicine	589	5.4%
Anesthesiology	570	5.2%
Obstetrics/Gynecology	488	4.5%
Surgery	450	4.1%
Psychiatry	431	3.9%
Orthopaedic Surgery	396	3.6%
Cardiovascular Disease	359	3.3%
Radiology	339	3.1%
Ophthalmology	275	2.5%
Pathology	219	2.0%
Neurology	214	2.0%
Gastroenterology	171	1.6%
Diagnostic Radiology	170	1.6%
Pulmonary Disease	165	1.5%
Urology	162	1.5%
Nephrology	159	1.5%
Otolaryngology	151	1.4%
Dermatology	135	1.2%
Hematology/Oncology	127	1.2%
Physical Medicine & Rehabilitation	103	0.94%
Plastic Surgery	99	0.91%
General Medicine	98	0.90%
Neurological Surgery	92	0.84%
Thoracic Surgery	87	0.80%
Radiation Oncology	79	0.72%
Allergy & Immunology	78	0.71%
Endocrinology Diabetes & Metabolism	71	0.65%
Neonatal-Perinatal Medicine	66	0.60%
Infectious Disease	62	0.57%
Vascular Surgery	59	0.54%
Child & Adolescent Psychiatry	56	0.51%
Rheumatology	55	0.50%
Interventional Cardiology	50	0.46%
Pain Medicine	48	0.44%
Hand Surgery	42	0.38%
Medical Oncology	33	0.30%
Pediatric Cardiology	31	0.28%
Occupational Medicine	28	0.26%
Preventive Medicine	25	0.23%
Pediatric Radiology	23	0.21%
Gynecologic Oncology	23	0.21%
Maternal-Fetal Medicine	22	0.20%
Colon & Rectal Surgery	21	0.19%
Hospice and Palliative Medicine	19	0.17%

Specialty	Headcount	% Physicians
Pediatric Critical Care Medicine	19	0.17%
Critical Care Medicine	18	0.16%
Interventional Pain Management	18	0.16%
Vascular & Interventional Radiology	17	0.16%
Pain Management	17	0.16%
Geriatric Medicine	15	0.14%
Sports Medicine	15	0.14%
Reproductive Endocrinology	14	0.13%
Sleep Medicine	14	0.13%
Neuroradiology	14	0.13%
Clinical Cardiac Electrophysiology	13	0.12%
Pediatric Hematology-Oncology	13	0.12%
Plastic Surgery within Head & Neck	13	0.12%
Pediatric Emergency Medicine	13	0.12%
Pediatric Gastroenterology	12	0.11%
Pediatric Endocrinology	11	0.10%
Pediatric Surgery	10	0.09%
Pediatric Infectious Diseases	9	0.08%
Dermatopathology	8	0.07%
None on File	7	0.06%
Hematology	7	0.06%
Pediatric Nephrology	6	0.05%
Pediatric Pulmonology	5	0.05%
Pediatric Otolaryngology	5	0.05%
Nuclear Medicine	5	0.05%
Neuropathology	4	0.04%
Undersea & Hyperbaric Medicine	4	0.04%
Anatomic and Clinical Pathology	4	0.04%
Forensic Psychiatry	3	0.03%
Surgical Critical Care	3	0.03%
Geriatric Psychiatry	3	0.03%
Addiction Psychiatry	3	0.03%
Plastic Surgery of the Hand	3	0.03%
Aerospace Medicine	3	0.03%
Developmental-Behavioral Pediatrics	3	0.03%
Medical Genetics	2	0.02%
Pediatric Rheumatology	2	0.02%
Pediatric Rehabilitation Medicine	2	0.02%
Neuromusculoskeletal Medicine	2	0.02%
Forensic Pathology	1	0.01%
Blood Banking/Transfusion Med	1	0.01%
Adolescent Medicine	1	0.01%
Clinical Genetics	1	0.01%
Surgery of the Hand	1	0.01%
Otology/Neurotology	1	0.01%
Pediatric Dermatology	1	0.01%
Grand Total	**10,925**	**100.0%**

Using the Truven Health Analytics Market Expert Module, the following common specialties were benchmarked at the state level using national average productivity (visit volume) and the resulting workforce capacity supply and demand are indicated on the rightmost columns (negative numbers indicate a surplus)[137,138,139,140].

Specialty	Projected Visits 2012	Projected Visits 2017	Physician Productivity 2012	Physician Productivity 2017	Physician Requirements 2012	Physician Requirements 2017	Requirements Change Count	Requirements Change %	Current Physician Supply	Net Physician Need 2012	Net Physician Need 2017
Allergy	222,992	229,957	2,400	2,400	93	96	3	3.1%	78	**14.91**	**17.82**
Cardiac/Thoracic Surgery	108,510	117,394	500	500	217	235	18	8.2%	87	**130.02**	**147.79**
Cardiology	499,350	545,515	1,900	1,900	263	287	24	9.2%	359	**-96.18**	**-71.89**
Dermatology	649,902	681,931	4,200	4,200	155	162	8	4.9%	135	**19.74**	**27.36**
ENT	368,316	383,129	2,600	2,600	142	147	6	4.0%	151	**-9.34**	**-3.64**
Family/General Practice	4,241,611	4,386,028	3,200	3,200	1,326	1,371	45	3.4%	1,645	**-319.50**	**-274.37**
Gastroenterology	214,540	226,639	1,400	1,400	153	162	9	5.6%	171	**-17.76**	**-9.12**
General Surgery	325,844	341,455	800	800	407	427	20	4.8%	450	**-42.70**	**-23.18**
Hematology / Oncology	244,090	265,708	2,300	2,300	106	116	9	8.9%	127	**-20.87**	**-11.47**
Internal Medicine	2,492,239	2,631,289	2,200	2,200	1,133	1,196	63	5.6%	1,358	**-225.16**	**-161.96**
Neurology	231,321	241,743	1,500	1,500	154	161	7	4.5%	214	**-59.79**	**-52.84**
Neurosurgery	96,043	99,698	1,000	1,000	96	100	4	3.8%	92	**4.04**	**7.70**
OB / GYN	576,725	579,963	1,700	1,700	339	341	2	0.6%	488	**-148.75**	**-146.85**
Ophthalmology	914,881	988,170	3,200	3,200	286	309	23	8.0%	275	**10.90**	**33.80**
Orthopedics	899,174	940,418	2,000	2,000	450	470	21	4.6%	396	**53.59**	**74.21**
Pediatrics	2,404,594	2,478,659	2,600	2,600	925	953	28	3.1%	734	**190.84**	**219.33**
Plastic Surgery	122,660	127,039	500	500	245	254	9	3.6%	99	**146.32**	**155.08**
Psychiatry	569,664	580,376	500	500	1,139	1,161	21	1.9%	431	**708.33**	**729.75**
Pulmonary Disease	140,497	151,321	1,300	1,300	108	116	8	7.7%	165	**-56.93**	**-48.60**
Urology	263,932	285,662	2,400	2,400	110	119	9	8.2%	162	**-52.03**	**-42.97**

The results, even taken directionally, strengthen the recurring theme that MHPs are an immediate area of need across the Commonwealth and a further investigation into this group is warranted to quantify where that need occurs.

[137] Total need includes only listed specialties and may vary from "All Specialties" figures in the report.

[138] "Projected Visits" data is based on the age and sex usage rates based on the local population.

[139] "Current Physician Supply" data is based on physician license database as of December 2012 and after segmentation and cleansing (see *4 - Professional Licensure Data Quality and Limitations*).

[140] "Net Physician Need" assumes current physician supply in 2012 and 2017.

Potential KPIs to Measure Progress

To help the Commonwealth track progress against the findings in this report, a number of potential KPIs were formulated over the course of the study. While there are limitations in place that prevent a complete refresh of the data analysis conducted in conjunction with this report, the below KPIs provide potential guidelines for monitoring progress (using the figures contained in this report and the visualization tool as a comparison point):

- *Key Provider Growth Rate:* Percentage increase/decrease in # of PCPs, MHPs, and dentists over baseline[141]
- *Medicaid Acceptance Rate:* Percentage increase/decrease in # of PCPs accepting Medicaid over CY2011 baseline[142]
- *Urban Versus Rural Movement:* Percentage increase/decrease in PCPs, mid-levels, MHPs, and Dentists practicing in rural areas over baseline[143]
- *In-state School Retention:* Percentage increase/decrease in physicians (focus on PCPs), nurses, and dentists graduating from KY schools and staying to practice in KY[144]

[141] Percentage will need to be calculated using the raw licensing database information as segmentation and cleansing would not be able to be duplicated in a timely fashion (see *4 - Professional Licensure Data Quality and Limitations* for initial database counts).

[142] This number would be a directional result given the data issues related Medicaid and PCP matching (see *Calculating PCPs Who Accept Medicaid and the Corresponding PCP Population Need* in appendix).

[143] Assumes address listed in MHP license databases is valid – this would most likely be a purely directional KPI for the MHPs.

[144] This would require the dentist licensing database to be updated and validated school of graduation information.

Deloitte Reform Model

To independently verify the findings and projections of the overall workforce capacity study, the Deloitte team analyzed the Commonwealth using a proprietary reform model which projects enrollment under multiple expansion scenarios. The following information can be used in combination with the findings of this report for reference and planning purposes.

Note: the figures from the reform model are derived from third party sources and may not match the numbers in the report, which were derived from more granular data provided directly by the Commonwealth.

Methodology

- Uses extensive underlying data and detailed assumptions of future events to produce nine-year (2012-2020), annual projections of market segments and uninsured
- Customizable/flexible
  - National, state or regional
  - Scenarios to estimate sensitivity to specific actions and reactions of market players
- *Assesses impact on multiple sectors:* Focused on health plans, but has applications for state and Federal government, health care providers, and suppliers
- The baseline scenario is the interpretation of the economic environment and provisions of ACA anticipated to occur per government and trade consensus reports
  - Economic recovery by 2015; stable thereafter
  - Strong exchanges (volume grows to 86% in 2020)
  - 5% to 10% of employers drop coverage
  - Premium subsidies sufficient to encourage enrollment
  - Medicare payment "Physician fix" continues indefinitely
  - Moderate shift to Managed Care in Medicaid
- Additional scenarios evaluate variables that drive results

Health Reform Model – Kentucky Findings

Purpose

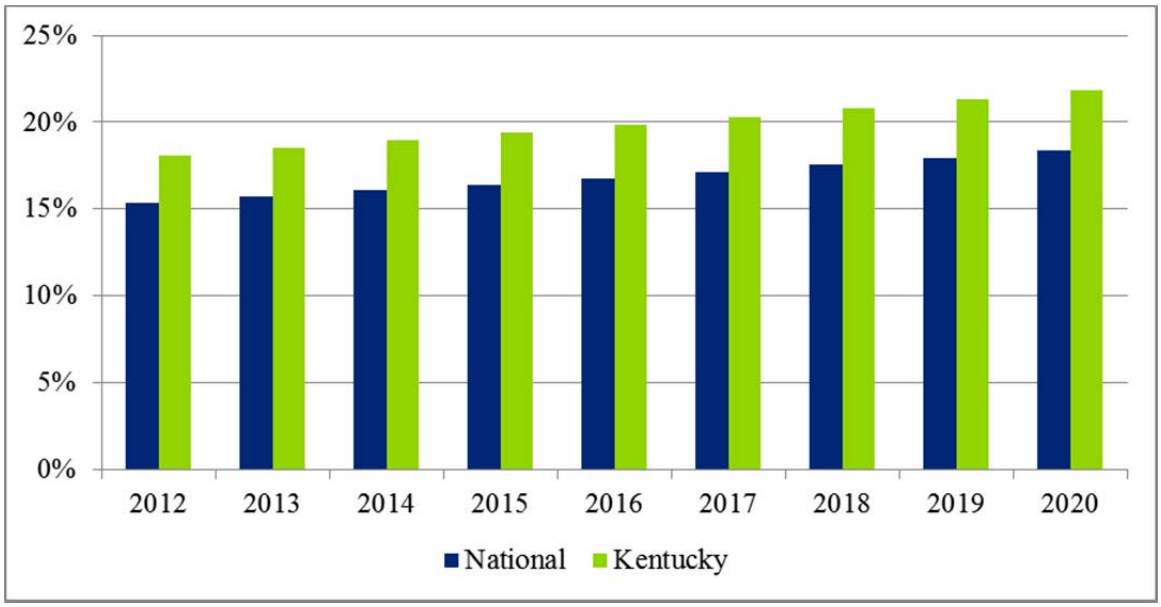
Produce State-level enrollment projections of coverage patterns in future years under multiple scenarios

Findings

- Kentucky is aging, with a decreasing proportion of the population projected to be of working age, and a growing proportion of those eligible for Medicare
- Medicaid is expected to remain relatively flat in terms of current enrollment despite some economic recovery. As eligibility expands under ACA, new people enter the program as well as a small number that were already eligible
- Income distribution of the uninsured population changes as the major changes due to ACA are reflected
- The largest shift in health insurance coverage is over the 2014-2016 time period. Sensitivity is reflected in the modeling of different scenarios reflecting different assumptions of market behavior
- The exchange is projected to become the dominant marketplace for individual health insurance, reflecting over 300,000 people in 2017. Another 115,000 people are estimated to be part of the SHOP in the same year

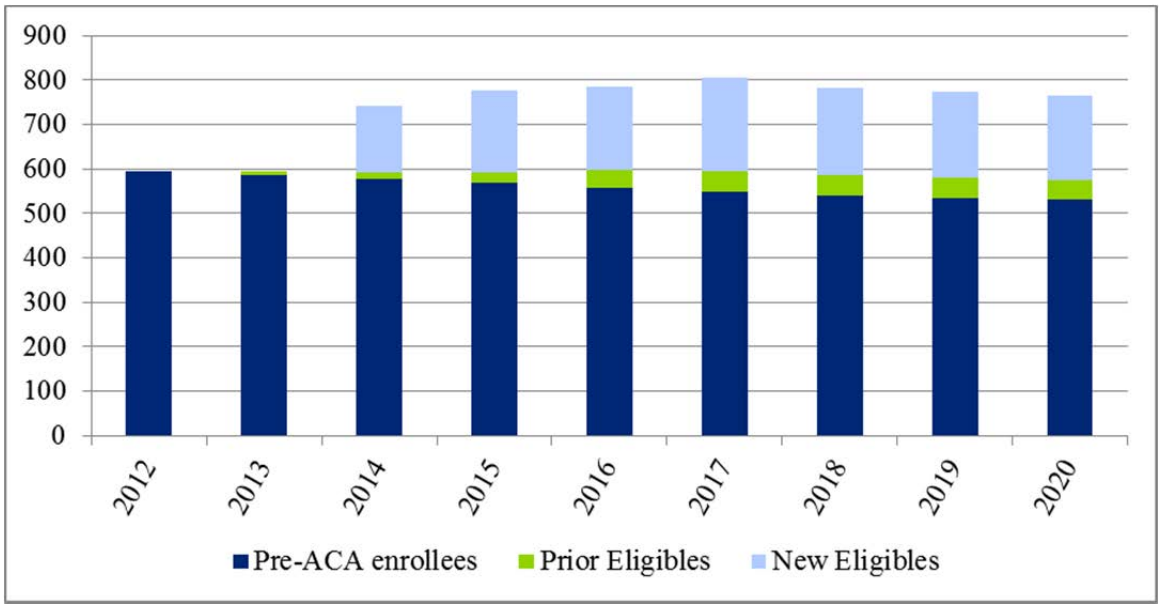
Kentucky – Medicare

Growing elderly share of the Kentucky and U.S. populations



Findings – Kentucky is aging, with a decreasing proportion of the population projected to be of working age, and a growing proportion of those eligible for Medicare.

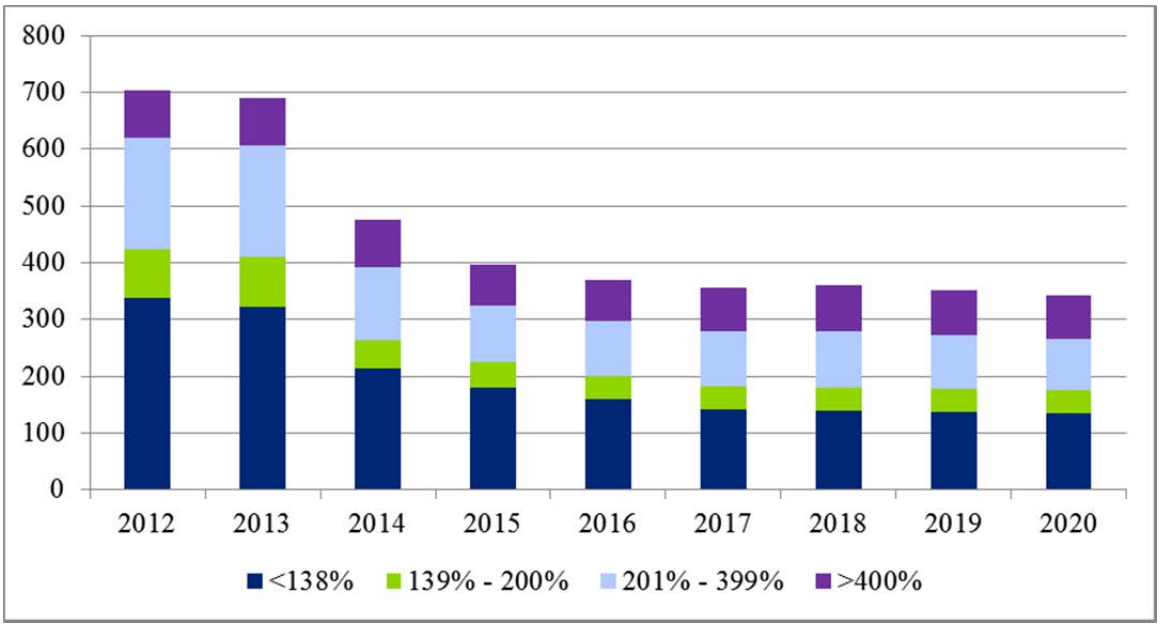
Growth in Medicaid projections



Findings – Medicaid is expected to remain relatively flat in terms of current enrollment despite some economic recovery. As eligibility expands under ACA, new people enter the program as well as a small number that were already eligible.

Kentucky – Uninsured

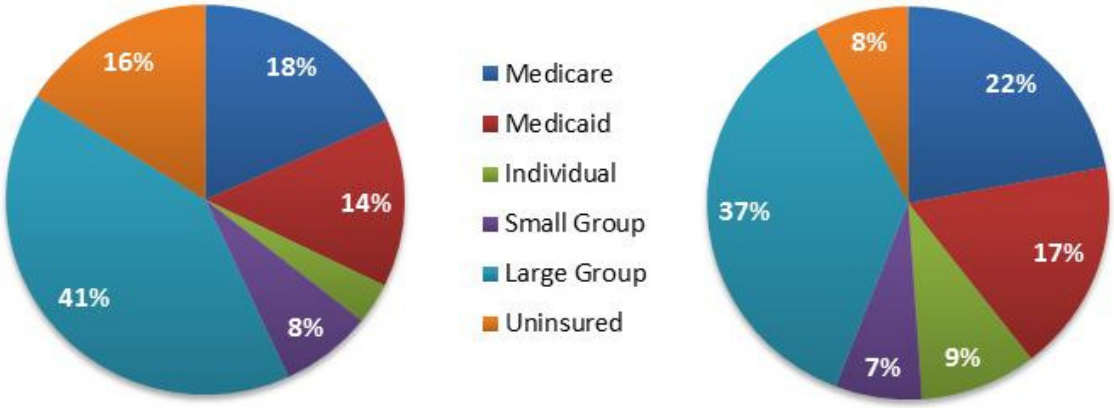
Projected changes in the income distribution of the uninsured over time (as a % of FPL)



Findings – Income distribution of the uninsured population changes as the major changes due to ACA are reflected.

Kentucky – Projected Population Distribution

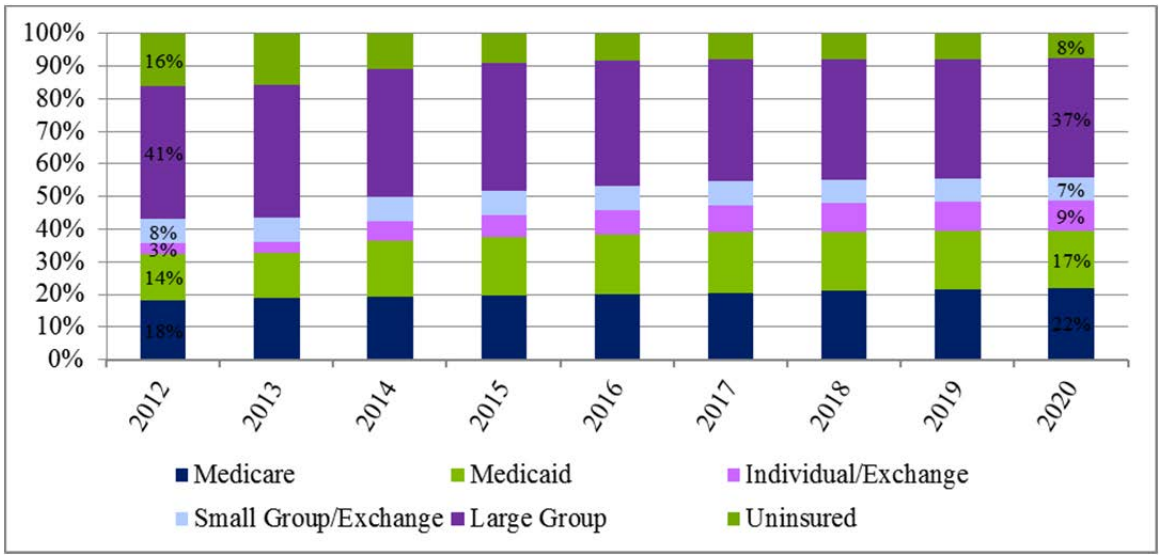
Projected changes in coverage distribution over time



Findings – There are shifts in health insurance coverage as the population ages and coverage is expanded (exchanges, Medicaid, etc.).

Kentucky – Projected Population Distribution

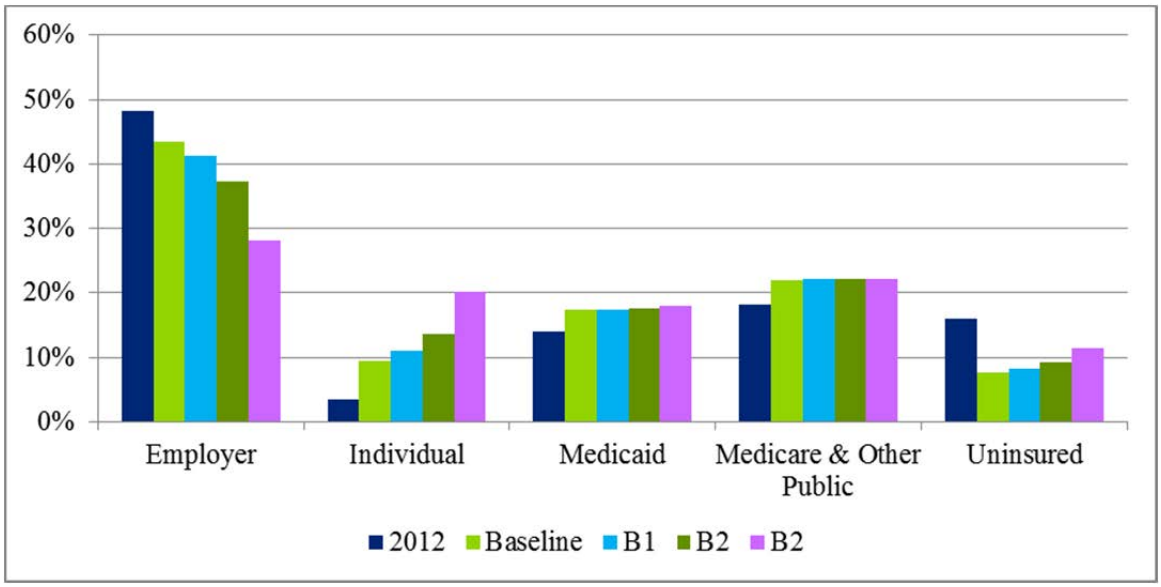
Projected changes in coverage distribution over time



Findings – The largest shift in health insurance coverage is over the 2014-2016 time period. Sensitivity is reflected in the modeling of different scenarios reflecting different assumptions of market behavior.

Kentucky – Alternate Scenarios

Distribution of coverage in 2020 under alternate scenarios that employers drop coverage

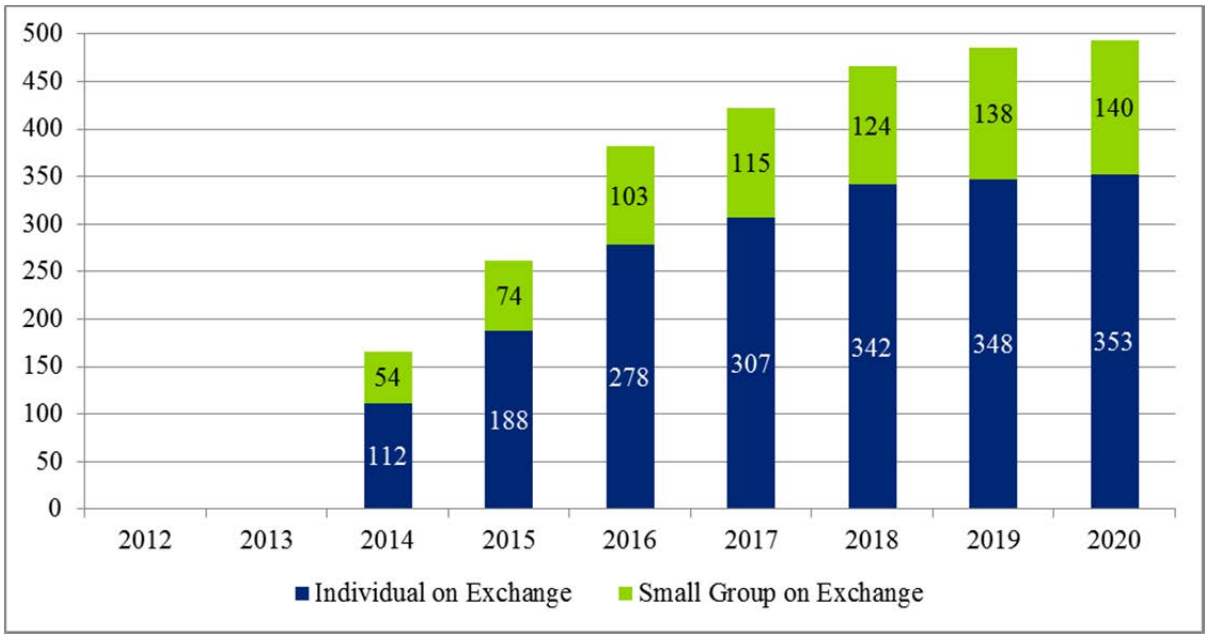


- **Scenario 1**: 5% of Large and 10% of Small Groups drop coverage
- **Scenario 2:** 10% of Large and 25% of Small Groups drop coverage
- **Scenario 3:** 25% of Large and 50% of Small Groups drop coverage

Findings – The sensitivity of employers dropping coverage ranges from 43% in the baseline to as low as 28% in the aggressive scenario. This implies a shift to individual coverage (9% to 20%) and the uninsured (8% to 11%).

Kentucky – Health Exchange

Projected Exchange Membership ('000s)



Findings – The exchange is projected to become the dominant marketplace for individual health insurance, reflecting over 300,000 people in 2017. Another 115,000 people are estimated to be part of the SHOP in the same year.

Kentucky Reform (‘000)

	Enrollment - KY ('000)									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
GROUP										
Grandfathered ASO	1,277	897	480	216	85	30	10	3	1	0
Non-Grandfathered ASO	243	639	1,047	1,342	1,485	1,522	1,536	1,554	1,557	1,555
Grandfathered Insurance	424	234	91	27	7	1	0	0	0	0
Non-Grandfathered Insurance	144	325	367	378	332	297	265	242	240	240
SHOP	0	0	54	74	103	115	124	138	140	140
Group Total	**2,088**	**2,095**	**2,039**	**2,037**	**2,013**	**1,966**	**1,936**	**1,937**	**1,937**	**1,935**
INDIVIDUAL										
Grandfathered - Individual	44	22	15	7	6	4	3	1	1	0
Non-Grandfathered Insurance	103	125	135	102	51	56	62	63	64	64
Health Insurance Exchange	0	0	112	188	278	307	342	348	353	357
Individual Total	**147**	**147**	**262**	**297**	**335**	**367**	**406**	**412**	**417**	**422**
Commercial (Group + Individual)	**2,234**	**2,242**	**2,301**	**2,334**	**2,349**	**2,332**	**2,342**	**2,349**	**2,355**	**2,356**
MEDICAID										
Medicaid/CHIP - Managed	537	539	674	708	717	738	719	712	706	701
Medicaid/CHIP - FFS	66	65	79	81	80	81	77	74	72	69
Medicaid Total	**603**	**604**	**753**	**789**	**797**	**819**	**796**	**786**	**778**	**771**
MEDICARE										
Traditional Medicare	656	689	697	720	736	759	782	805	828	853
Medicare Advantage	135	125	139	139	146	146	149	152	155	157
Medicare Total	**791**	**814**	**836**	**858**	**882**	**906**	**931**	**956**	**983**	**1,010**
Other Coverage (TriCare, etc)	53	53	53	53	53	53	52	52	52	52
Covered Population	**3,682**	**3,712**	**3,943**	**4,034**	**4,080**	**4,109**	**4,121**	**4,144**	**4,167**	**4,189**
Uninsured	695	682	469	394	365	351	355	346	338	333
Total Population	**4,377**	**4,394**	**4,412**	**4,429**	**4,445**	**4,460**	**4,476**	**4,491**	**4,506**	**4,522**

U.S. Enrollment (‘000)

	Enrollment - US ('000)									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
GROUP										
Grandfathered ASO	74,213	52,353	28,543	12,930	5,143	1,823	596	180	51	13
Non-Grandfathered ASO	14,294	38,018	64,832	84,829	95,401	98,957	100,887	103,062	103,751	104,321
Grandfathered Insurance	47,310	26,225	10,420	3,148	779	160	28	4	1	0
Non-Grandfathered Insurance	16,092	36,499	43,788	46,034	41,701	38,422	35,275	33,147	33,077	33,248
SHOP	0	0	4,307	5,994	8,755	9,807	10,632	11,832	12,150	12,214
Group Total	**151,909**	**153,096**	**151,889**	**152,936**	**151,780**	**149,170**	**147,418**	**148,225**	**149,030**	**149,797**
INDIVIDUAL										
Grandfathered - Individual	4,451	2,226	1,484	742	593	445	297	148	74	0
Non-Grandfathered Insurance	10,549	12,844	12,309	9,133	4,789	5,225	5,768	5,855	5,903	5,953
Health Insurance Exchange	0	0	9,746	15,815	23,302	25,717	28,573	28,967	29,258	29,581
Individual Total	**15,000**	**15,070**	**23,539**	**25,690**	**28,684**	**31,387**	**34,638**	**34,970**	**35,235**	**35,534**
Commercial (Group + Individual)	**166,909**	**168,166**	**175,428**	**178,626**	**180,464**	**180,557**	**182,056**	**183,196**	**184,265**	**185,331**
MEDICAID										
Medicaid/CHIP - Managed	30,489	30,993	36,462	38,419	39,549	41,079	40,694	40,902	41,130	41,272
Medicaid/CHIP - FFS	12,070	11,929	13,641	13,964	13,961	14,078	13,533	13,194	12,862	12,506
Medicaid Total	**42,559**	**42,922**	**50,103**	**52,383**	**53,510**	**55,158**	**54,228**	**54,096**	**53,992**	**53,778**
MEDICARE										
Traditional Medicare	36,372	37,314	37,450	38,284	39,015	40,474	42,054	43,774	45,598	47,500
Medicare Advantage	11,822	12,379	13,833	14,545	15,450	15,703	15,904	16,023	16,095	16,150
Medicare Total	**48,194**	**49,693**	**51,282**	**52,830**	**54,464**	**56,176**	**57,958**	**59,797**	**61,693**	**63,650**
Other Coverage (TriCare, etc)	3,961	3,978	3,996	4,012	4,028	4,042	4,055	4,067	4,079	4,091
Covered Population	**261,623**	**264,758**	**280,809**	**287,851**	**292,467**	**295,934**	**298,297**	**301,155**	**304,030**	**306,850**
Uninsured	52,467	52,022	38,667	34,323	32,404	31,630	31,955	31,781	31,649	31,635
Total Population	**314,090**	**316,780**	**319,476**	**322,174**	**324,871**	**327,564**	**330,252**	**332,935**	**335,679**	**338,485**

Commonwealth/KBHE and Deloitte Team Members

Special thanks to the team members from KHBE and the Commonwealth who made this report possible:

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