GME in the United States:

A Review of State Initiatives

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Part of the impetus for this project came from George F. Sheldon, MD, FACS, former chair of the department of surgery at UNC Chapel Hill and our colleague. Dr. Sheldon served as a mentor to all of the team and was an active participant in the planning and execution of the project to the time of his passing. Graduate medical education was one of Dr. Sheldon's many interests and he was committed to improving the training of all physicians. He worked hard to modernize and improve GME and served as a charter member of the Council of Graduate Medical Education (COGME) when it was founded in 1985. We owe much to Dr. Sheldon and we hope his wisdom is reflected in this work.

Executive Summary

The debate on how best to fund and reform Graduate Medical Education (GME) has moved up the health policy agenda. The dominant public funder of GME is Medicare with Medicaid and the Veterans Administration contributing significantly. Proposals to change GME have focused on funding, governance, and the prioritization of specialties. Most of these proposals come from national organizations offering national solutions. Generally absent from the discussion is the important role states play in reforming GME. Individual states have pioneered methods and organizational structures to target GME positions toward state health workforce needs and offered creative mechanisms to support GME.

The Program on Health Workforce Research and Policy, housed within the Cecil G. Sheps Center for Health Service Research at the University of North Carolina at Chapel Hill, with support from the American College of Surgeons and the North Carolina Area Health Education Centers (NC AHEC) Program, conducted a study of state-level GME initiatives to examine the extent to which states have or plan to: 1. use health workforce data to assess residency training needs; 2. implement novel GME financing initiatives, including all payer systems; 3. create governance structures to allocate GME positions between specialties, geographies and training sites; and 4. establish policies or measures to encourage accountability of public funds invested in GME. Semi-structured interviews were conducted in a nationally representative sample of 17 states. A total of 39 interviews were conducted with 45 participants in California, Florida, Georgia, Illinois, Maryland, Massachusetts, Michigan, New Jersey, New York, North Carolina, Tennessee, Texas, Utah, Vermont, and WWAMI states.*

The interviews paint a picture of states having much to risk and much to gain but often missing out on important opportunities to reform GME. Some states had rigorous data monitoring systems to identify workforce needs but data were not linked to decisions about where, and in which specialties, to expand GME. Some states developed policy making bodies that attempted to coordinate GME training decisions at the state level but few of these entities had a sustainable and coordinated role in state GME policy. Most states are investigating alternative funding models to support GME expansion but Medicaid and all-payer payment systems are often implemented in the same "hands off" way that Medicare dollars are treated, with individual teaching hospitals in the state driving decisions about how new dollars are allocated. In all states interviewed, efforts to track the accountability for spending of public GME dollars are minimal or are in a developmental stage. While state policymakers control a much smaller GME purse than that of Medicare, there are opportunities for states to take significant action.

Recommendations:

1) States should develop ongoing physician workforce data collection systems that allow policy makers to continuously identify the changing workforce needs of the state.
2) States should create a GME advisory entity that promotes discussion, coordination and education about Graduate Medical Education.
3) All payer, third-party payer, Medicaid and state appropriations for GME need to be carefully considered and designed to be responsive to the state's population health needs.
4) New GME funding should be tied to performance metrics and require monitoring about how funds are spent.
5) State policymakers should coordinate efforts that touch on the physician's entire career from medical school admissions through graduate medical education and into practice.

**WWAMI includes Washington, Wyoming, Alaska, Montana, and Idaho. The latter 4 states have an agreement whereby they send students to the University of Washington, which serves as a public medical school for all 5 states. We did not interview any experts from Alaska or Wyoming for this study, but we did interview WWAMI experts who were familiar with GME policies and programs in all 5 states.*

Table of Contents

GME in the United States: A Review of State Initiatives

I. INTRODUCTION

Many pressing issues are facing the physician workforce in the United States, including a rapid consolidation of health systems, new ways of organizing health care delivery, experimentation with alternative payment models, malpractice reforms, and multiple initiatives to increase access, improve quality, and lower costs. In the face of so many challenges, it is tempting to overlook the need to plan for the number, specialty mix, and geographic distribution of the future physician workforce.

There has been a rapid expansion in medical school enrollment (a combined 30% increase in first year allopathic and osteopathic medical school positions nationwide between 2002 and 2012)[1,2] without a concurrent plan to expand graduate medical education (GME) positions. Medicare is the largest single contributor of GME funds, in the amount of roughly $9.5 billion annually.[3] Policy toward GME is very mixed; there are proposals to either cut GME funding (i.e. Deficit Reduction Commission recommendations) or increase GME funding (i.e. The Resident Physician Shortage Reduction Act of 2013: H.R. 1180 & S. 577).

Debates over how best to support GME have become contentious; numerous organizations including the Macy Foundation, the American College of Physicians, the American Academy of Family Practice, the American Medical Association, and the Association of American Medical Colleges have been assembling data and publishing evidence to support their positions on how to change GME and who should bear the cost. Numerous papers have recently been issued calling for increased accountability of GME dollars with better alignment between funding of GME positions and the nation's health workforce needs.[3-9]

Often missing in these analyses and policy reports is the recognition that states play an important role in addressing GME. Individual states have pioneered methods and organizational structures to prioritize and target GME positions toward state health workforce needs and offered creative mechanisms to support GME. States have a strong stake in developing GME programs to meet the needs of special populations and their constituents. To better understand what states are doing, the Cecil G. Sheps Center for Health Service Research at the University of North Carolina at Chapel Hill, with support from the American College of Surgeons and the North Carolina Area Health Education Centers (NC AHEC) Program, conducted a study of state-level GME initiatives.

The objectives of this study were to examine the extent to which states have, or plan to:

1) use health workforce data to assess residency training needs;

2) implement novel GME financing initiatives, including all payer systems;

3) create governance structures to allocate GME positions between specialties, geographies and training sites; and

4) establish policies or measures to encourage accountability of public funds invested in GME.

II. METHODS

We interviewed a wide variety of GME stakeholders in a nationally representative sample of states to capture perspectives on state-based initiatives to finance and expand GME training. A total of 39 interviews were conducted with 45 participants in 17 states using a semi-structured protocol. The minimum number of interviewees per state was 2, the maximum was 4, and the median was 2. Interviews occurred between March 1 and June 28, 2013.

A. State Selection

States selected to be in the sample represented a balance of census regions and included: California, Florida, Georgia, Illinois, Maryland, Massachusetts, Michigan, New Jersey, New York, North Carolina, Tennessee, Texas, Utah, Vermont, and WWAMI states[i] (**Figure 1**).

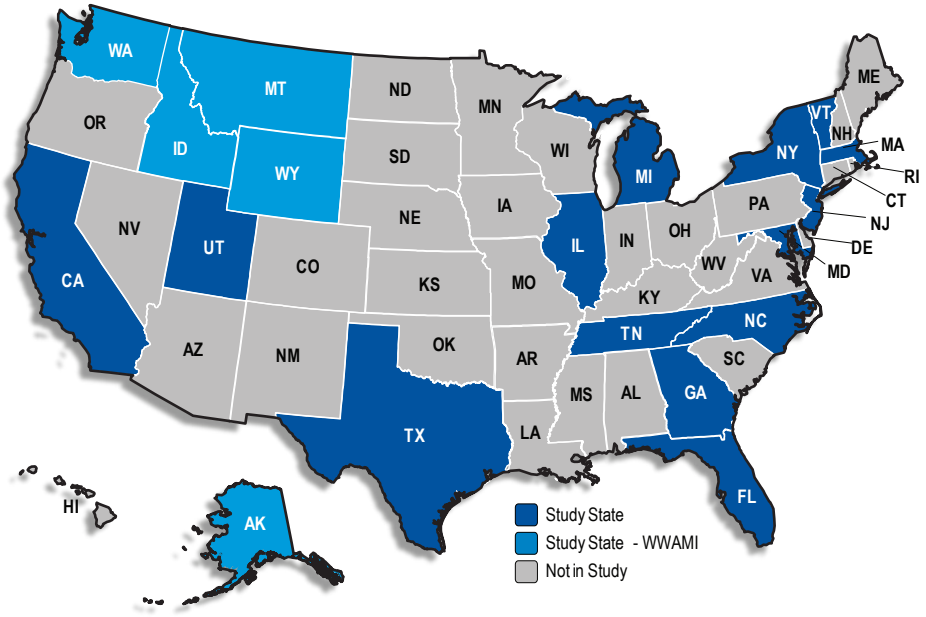
These states also represented a balance of demographic factors, including states with a high, low and average percent of urban and non-elderly uninsured populations. We also sought to include states with a range of high, low and average supply of physicians and residents-in-training per population (**Figures 2 and 3**).[ii]

Because we sought to investigate states as policy laboratories where innovative GME initiatives were underway, we also selected specific states based on information from subject matter experts and from peer reviewed and grey literature.

B. Key Informant Interviews

We used a purposive sampling strategy to identify key informant interviewees in each state. Key informants were identified from the research team's contacts, subject matter experts and stakeholder organizations. The American Medical Association sent an informational email about the study to

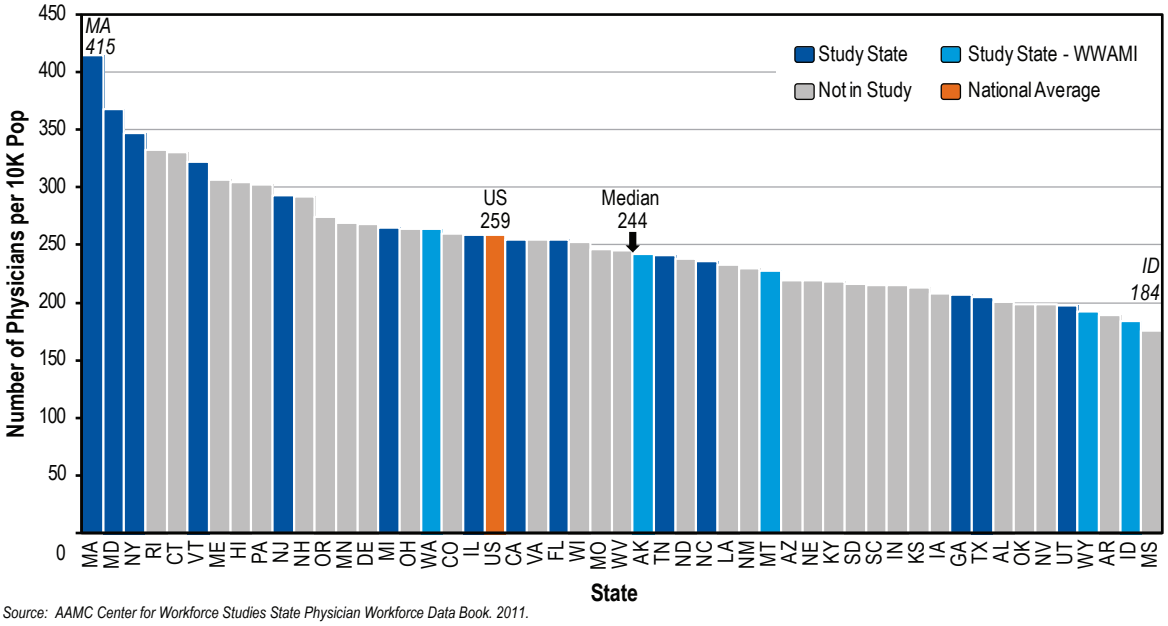
Figure 1. States in the study



[i] *WWAMI includes Washington, Wyoming, Alaska, Montana, and Idaho. The latter 4 states have an agreement whereby they send students to the University of Washington, which serves as a public medical school for all 5 states. We did not interview any experts from Alaska or Wyoming for this study, but we did interview WWAMI experts who were familiar with GME policies and programs in all 5 states.*

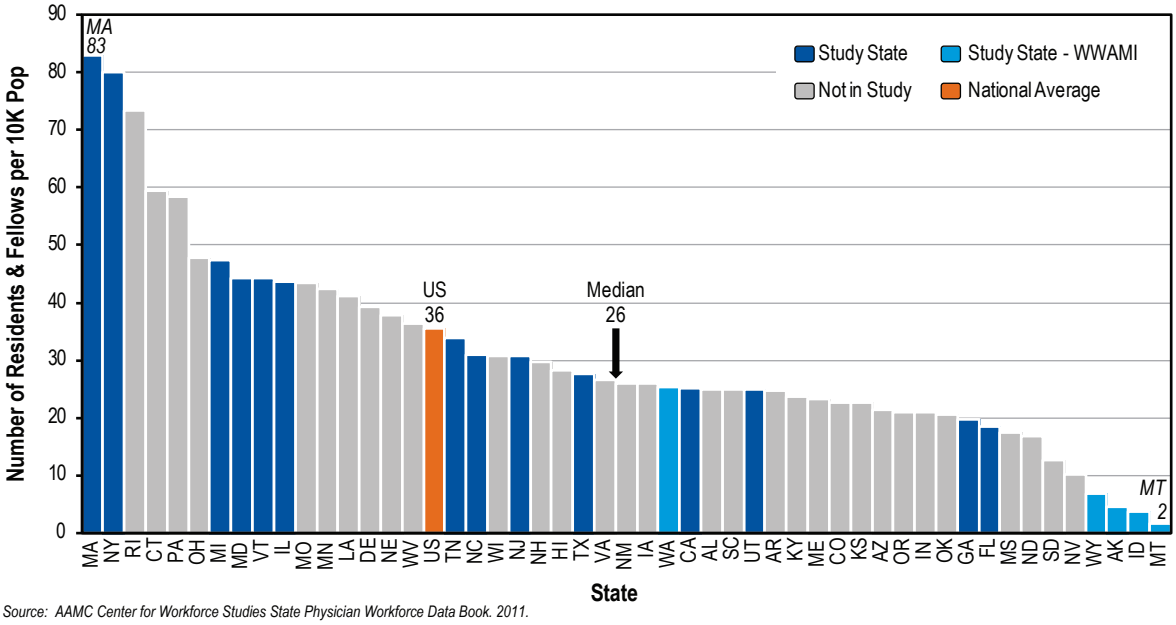
[ii] *For a fuller description of the sample selection criteria see Appendix 1.*

Figure 2: Total physicians per 100,000 population, 2010



Source: AAMC Center for Workforce Studies State Physician Workforce Data Book. 2011.

Figure 3: Total residents and fellows per 100,000 population, 2010



Source: AAMC Center for Workforce Studies State Physician Workforce Data Book. 2011.

state medical association contacts, requesting referrals to individuals knowledgeable about GME decision making. The American College of Surgeons also provided a list of contacts. Once an initial group of individuals was identified, we used a snowball sampling technique to identify additional key informants. In some instances, interviewees recommended contacts with specific GME knowledge or expertise beyond that of the interviewee (for example, in GME financing), and other interviewees recommended contacts with a different perspective on GME in their state (for example, in different medical education systems, government branches, or GME related non-governmental organizations).

The majority of our interview panel was comprised of deans, assistant deans, and associate deans in medical schools or directors of graduate medical education programs at academic medical centers or teaching institutions. Other respondents included GME stakeholders from non-governmental organizations with health workforce expertise, government employees with roles in state-level GME policy, Area Health Education Center (AHEC) directors, medical association health policy specialists, and hospital residency program directors. Key informants with insights into surgery GME were included as suggested by the authors and leadership of the American College of Surgeons.

We conducted phone interviews using a semi-structured interview guide (**see Appendix 2**). Interview questions concentrated on four key study domains related to whether and/or how states:

- assessed the mix of health workforce, including types of physician specialties, needed in their state to meet population health needs;
- considered, or pursued, various funding models to support an increase in GME positions, including all-payer systems;
- created governance structures that use workforce data to inform decisions about developing and allocating GME positions between specialties, geographies and training sites; and
- established (successfully or not) measures to ensure accountability of public dollars spent on GME for meeting the health workforce needs of the state's population.

Interviews lasted between 45 minutes and 1 hour. Interview questions were emailed to interviewees in advance so they could prepare responses, assemble supporting documentation and ask the appropriate individuals to join the phone interview. We also requested any available grey literature on state GME policy prior to interviews.

Interview notes were shared with interviewees within 10 business days of the interview. Interviewees were offered the opportunity to make corrections to the notes and to mark comments confidential if desired. If interviewees did not respond to the request for corrections,[iii] the original interview notes were used in analysis.

Our interview protocol was submitted to the University of North Carolina Internal Review Board in February 2013 and was exempted from IRB review.

III. RESULTS

A. Assessing State Health Workforce Needs

Interviewees in every state noted shortages of physicians in specific specialties and/or geographic areas. Respondents from all states reported that rural areas had difficulty recruiting and retaining physicians. Many also cited concerns about other underserved populations, including the urban poor and specific racial or ethnic groups.

[iii] *Eighteen interviewees in 14 states did not respond to the request to provide corrections to the interview notes.*

1. General Surgery, Primary Care, Psychiatrist and Other Specialty Shortages

Respondents from two states (California and North Carolina) noted that pediatric shortages were less of a concern than adult primary care, particularly general internal medicine and family medicine. A respondent from Michigan noted that the state's changing demographics were an important driver of health workforce needs—Michigan's pediatric population is shrinking relative to growth in the elderly population, but few providers in the state specialize in geriatric care. Interviewees from nine states described specific population groups who lack access to care, most frequently those of low socioeconomic status or minority ethnic groups.

Three states noted that pediatric subspecialists were in shortage, a trend that was recently noted by the American Academy of Pediatrics.[10] Nationally, the percentage of children who require subspecialist pediatric care is very small, so pediatric subspecialty GME programs are located at large academic health centers with a wide referral region to generate the patient volume required for training. As a result, few pediatric subspecialists graduate from GME training each year and their recruitment is a challenge. A hospital that loses a pediatric subspecialist frequently has difficulty finding a replacement, necessitating the transfer of those patients to other hospitals. An interviewee from Texas noted that losing just one or two pediatric subspecialists in a major metropolitan area would create an overnight shortage. A respondent from North Carolina noted that because there are so few pediatric subspecialists in the country, if a large Academic Health Center (AHC) in the state lost one of their physicians, a pediatric subspecialist from one of the state's competing AHCs would provide coverage during the recruitment period, and vice versa.

The supply of psychiatrists was mentioned as a concern by nearly all (14) states. A respondent from California noted that there was a shortage of psychiatrists in several parts of the state and the situation was "crisis-like" for many communities. A respondent from Idaho noted that all forty-four counties in the state qualified as Mental Health Professional Shortage Areas.

2. Geographic Maldistribution

All states except Vermont noted concerns about the availability of general surgeons in rural and underserved areas. General surgeons are particularly critical in rural areas to care for trauma and acute care general surgery issues. Management of these urgent surgical problems, including many traumatic injuries, appendicitis, incarcerated hernias, intestinal perforation, and necrotizing soft tissue infections, is time-sensitive and therefore ideally managed without the delay of transfer to other hospitals. In Montana, one respondent noted that there were only 2 or 3 general surgeons in the entire state that were not practicing in a metropolitan area. Another interviewee noted that all five WWAMI states were in a "horrible situation" due to the lack of rural general surgeons.

Interviewee comments substantiated the findings of prior studies on rural general surgeon shortages.[9,11,12] A respondent from Georgia noted that general surgeons were the oldest cohort of physicians in the state, and stakeholders were concerned about the future availability of general surgeons. Many respondents noted that most general surgery residents went onto specialty training and that few of the graduates who remained in general surgery sought positions in rural areas. One respondent at an academic health center in New Jersey reported that in the last 3 years, only one graduate had gone on to practice in general surgery, while all others went on to subspecialty training. A few respondents cited concerns that the trend of subspecialization may in part be due to the change in duty hour regulations because graduates from surgical residency programs had performed fewer procedures and were less confident going directly into practice, preferring instead to pursue ongoing training in fellowships.

Most surgical training occurs in large, academic health centers, rather than rural practice environments that prepare trainees for the realities of, and broad scope of, rural general surgery.[13] Interviewees described difficulties recruiting general surgeons to rural areas due to the lack of mentorship, limited abilities to consult with peers, call burden and lack of cross coverage, lack of job opportunities for a spouse, and concerns about local amenities and school systems. A few respondents noted that, in addition to being a critical provider of care to the community, general surgeons are an important economic force in rural areas. Rural hospitals are often the largest employers in small communities and a general surgeon is an essential economic driver for the hospital.[14] Without a general surgeon on staff, hospitals must resort to hiring locum tenens surgeons, which is expensive, or they may risk closing.

An interviewee shared an analysis of the rural physician workforce in Texas that showed that between 1999 and 2009 the number of general surgeons in rural areas declined by 8%. During the same period, the number of cardiologists in rural areas doubled and the number of orthopedic surgeons increased by 25%. The respondent noted that, in the absence of general surgeons, sub-specialty surgeons, some without general surgery preparation, were beginning to fill roles that were once taken by general surgeons in more remote parts of the state. The respondent did not comment on whether this was an appropriate trend.

All states reported a maldistribution of primary care providers. Respondents from Maryland, Massachusetts, and New York noted that even though their states had some of the highest physician-to-population ratios in the country, the maldistribution of physicians had resulted in pockets of the state, particularly in more rural areas, lacking primary care physicians. Respondents in Illinois noted that access to care was limited in the southern, more rural portion of the state.

Nine states reported concerns about the supply and distribution of obstetricians/gynecologists (OB/GYNs). In Tennessee, one respondent noted that in one major metropolitan area, OB/GYNs complained that they did not have enough work while a rural county about an hour's drive away had no OB/GYNs.

3. A National versus Local Market for GME?

The market for graduate medical education is national—programs generally recruit residents from a national pool of applicants and produce trainees who practice all over the country. Even respondents from AHCs that receive annual appropriations from the state legislature noted that their focus tended to be on serving national, rather than state needs. For highly specialized fields, a national perspective on training is logical. Highly specialized fields like neurosurgery, cardiac surgery and pediatric subspecialties require large patient volumes that are only available at AHCs in metropolitan areas and recruitment for these specialties tends to draw from a national pool. However, for core specialties, particularly general adult primary care, general surgery, and psychiatry, the market is local. These positions are needed across a wide variety of settings and training programs and rotations can be placed in a broader geographical area within the state.

Interviewees expressed frustration with national organizations that advocate for GME expansion and an increase in federal funding for GME without advocating that new funds be tied to local and national population health needs. Interviewees noted that GME monies would be best used not just to increase the overall supply of physicians but as a way to address the maldistribution of physicians by specialty and geography.

B. Using Workforce Data to Inform GME Policy

One hypothesis of this study was that many states were expanding GME programs based on anecdotal evidence and political/financial

considerations and not using workforce analyses to identify where GME expansion was needed by specialty and geographic area.

1. Data Collection and Analytical Challenges

Many states noted how difficult it is to determine the "right" number of residents needed in different specialties. Some interviewees reported using national data sources to benchmark their state's physician-to-population ratios to the national average and neighboring states. But states noted that national data were of limited use because average ratios do not account for the maldistribution of providers. For example, a respondent from Vermont noted that according to the AAMC data, VT has the highest primary care physician to population ratio in the nation, but because the state's primary care physicians are highly concentrated in a few areas, Vermonters have difficulty accessing primary care in rural areas.

The quality of physician workforce data collected varied considerably state-to-state. Some states, like North Carolina, Florida, and Texas, have a robust infrastructure in place to annually collect and analyze licensure data on the physician workforce. Physician specialty counts are available at the county level, providing a detailed understanding of the state's workforce. Other states conduct routine surveys of the physician workforce to gather data but survey response rates vary, from 80% to 100% in Georgia, to 65%-75% in Utah, and 16% in Michigan. New Jersey recently passed legislation requiring physicians to complete a workforce survey every two years. New York and New Jersey also conduct regular GME exit surveys, which provide specific data on the specialty, setting, and geographic location of practice for new GME graduates.

Several states noted challenges in physician workforce data collection. In California, legislation requires the Department of Health and Human Services to collect health workforce data, but no funding is attached to the mandate and training institutions are not required to provide data. While some institutions voluntarily provide data, many do not, and as a result, the data are incomplete. Illinois conducted a physician workforce study in 2010 and has discussed the creation of a body to track and maintain physician licensure data, but in the absence of state or other funding, no such body exists. Interviewees in Tennessee reported that no organization in the state routinely compiled physician workforce data. While many states within our sample reported using national data sources such as the AMA Physician Masterfile or the AAMC Physician Workforce Databook for benchmarking, only California, Florida, Georgia, Michigan, New York, North Carolina, Texas, and Utah have a dedicated body responsible for routinely collecting and analyzing state physician workforce data and there is substantial heterogeneity in the comprehensiveness and quality of workforce data between these states.

2. Growth in Undergraduate and Graduate Medical Education

There is a widely-held perception, in state legislatures and the public at large, that there is a physician shortage in the United States and that new or expanded enrollment in medical schools will address these shortfalls. Interviewees noted that policy makers rarely understood the importance of graduate medical education to fulfill licensure and practice requirements, and were more interested in financing a new medical school because it increases a university's or city's prestige, provides an economic boost to the community,[15] creates jobs, and tends to be perceived positively by local constituents.

This preference, coupled with the AAMC call in 2006 for a 30% increase in medical school enrollment16 and the current cap on Medicare funding for GME, has contributed to a much more rapid growth in the number of medical school graduates compared to first year (PGY-1) residency positions.[17] Nationally, the number of first year allopathic and osteopathic UME positions has increased by 30% between 2002 and 2012 (from 19,567 to 25,503),[1,2] while the number of PGY-1 GME positions in the National

Residency Matching Program's (NRMP) match has only increased by 17% (from 20,602 to 24,034).[19,20] However, one caveat of using the NRMP's data to estimate growth in PGY-1 positions is that not all PGY-1 positions available in the nation are a part of the match. Thus, if a specialty began to use the NRMP for matching during this time period, there can appear to be growth in the number of positions from one year to the next. Further, prior to the NRMP all-in policy, not all positions a program had were required to be in the match and programs could offer positions pre-match to independent applicants.

Respondents from states where UME growth outpaced GME growth noted that the state was unlikely to get a good return on investment for dollars spend on UME without corresponding increases in GME positions. This is because physicians who complete both UME and GME training in the same state are far more likely to remain in-state than those who just complete just UME or GME in the state. For example, in 2011 in North Carolina, 40% of NC medical school graduates and 42% of NC residency graduates remained in-state after completing training. However, 69% of physicians who complete both medical school and residency in North Carolina remained in state.[21]

While interviewees could quickly identify concerns with physician supply in primary care, general surgery and psychiatry, these shortage specialties were generally not the specialties exhibiting the strongest growth rates in each state. Even in states that are increasing production in core specialties such as general surgery and general internal medicine, many of these graduates subsequently subspecialize. Using data from 2011, the authors conducted an analysis that estimated the likelihood that resident trainees would end up in generalist versus specialty practice. The results of this analysis demonstrated that some states produce a higher percentage of GME graduates that continue on to generalist practice than do others. For example, Massachusetts, which has the highest ratio of residents and fellows to population in the nation,[22] produces the second lowest ratio of likely generalist physicians (**Figure 4, page 16**). By contrast, in the WWAMI region, where most all subspecialty training is concentrated on the Pacific coast of Washington, residents training in core specialties east of the Cascade Mountains and in Alaska tend to remain in core general specialties.

3. Use of Data by Policy Makers and State Legislators

On the whole, interviewees did not report many instances in which state legislatures used physician workforce data to make decisions about graduate medical education, even when data were available. Interviewees in a few states noted that legislators did not have a good understanding of graduate medical education or medical training in general. One interviewee noted common confusion in the legislature between a third year medical student doing a clerkship and a medical resident. Another interviewee noted that the complexity of graduate medical education, particularly different funding streams, was of little interest to legislators. Moreover, the estimated cost of $143,000 per resident per year[23] presents "sticker shock" for legislators. A few interviewees noted that, due to turnover in the legislature, particularly in states with term limits, continual education of legislators was required to motivate changes to state policy, but was difficult to do.

Interviewees reported that graduate medical education did not rank high on the list of priorities for state legislators compared to other legislative priorities, such as the economy. Adding to the GME challenge, legislator interest in healthcare policy is currently focused on the implications of the Patient Protection and Affordable Care Act, and Medicaid expansion in particular. One policymaker noted that in the current political climate, healthcare policy in general is a controversial and partisan issue. As a result, legislative discussions and action

are difficult. Two proposed bills, one requiring physician workforce tracking in Montana and another calling for a study of graduate medical education needs in North Carolina, died in committee in the most recent legislative sessions in both states. Interviewees commented in both cases that the bills were not particularly controversial or partisan. However, because both bills were related to healthcare policy and both legislatures are currently controlled by Republicans who have opposed the ACA, neither bill passed.

4. Exemplar Uses of Data to Shape State Medical Education Policy

Despite these challenges, there are some exemplar states in which data have been instrumental in making changes to state medical education policy. In Idaho, national physician workforce data were used by Governor Otter to advocate for increased funding for more medical student spaces at the University of Washington during his State of the State speech.[24] The Governor's budget also included $240,000 to support rural rotations for medical residents, which was approved by the legislature for FY 2014.[25] In Montana, a coalition presented physician workforce data to the legislature to advocate for an increase in UME positions. In 2013, the legislature expanded positions from 20 per year to 30 per year. The legislature also added $200,000 to the state's appropriation for GME.

In North Carolina, data on GME retention were used to support the development of a proposed general surgery residency program in Asheville. The program is a joint initiative of the local hospital (e.g. Mission Hospital) and the regional Mountain Area Health Education Center (MAHEC) program. While Asheville is considered a very desirable place to live, much of the surrounding area is rural and many counties are underserved. State-level data demonstrated that 30% of general surgeons who completed an AHEC residency remained in practice in rural areas of the state, compared to 19% who completed a non-AHEC residency.[21] A separate analysis conducted by a consulting group demonstrated a significant shortage of general surgeons in the western NC region compared to national ratios. Based on these data and the successes in GME recruitment and retention of an already established MAHEC family medicine residency program, medical leaders in the Western NC region have developed a proposal to support a surgical residency program (4 positions annually) and are actively seeking a funding source to support it. The program will be specifically tailored to training general surgeons operating to the full breadth of rural surgical care and will include rotations in rural critical access hospitals. The end goal is to produce more general surgeons for smaller hospitals in the surrounding region.

A few respondents noted that it is much easier to use workforce data to argue for the expansion of a program or creation of a new GME program than it is to use data to advocate for reductions in program size. A few respondents noted that teaching hospitals have the ability to reduce programs by small numbers, but it is difficult politically to eliminate a residency program, even if there is no longer a need for that specialty in the state. For example, workforce data indicated there was a shortage of anesthesiologists in Utah, and new anesthesiology GME programs were developed. More recently, data have shown that Utah has a higher anesthesiologist-to-population ratio than the national average, but anesthesiology GME programs in the state have not reduced in size. Reductions in programs based on workforce data were rare, but there were a few instances mentioned by interviewees. For example, in Georgia, an occupational health residency program had an in-state retention rate of 12%, so the program was closed.

In Georgia, physician workforce data were used to support the creation of an initiative from the Governor's office to provide state support for start-up costs for new GME programs in the state, targeting priority specialties.

Lessons Learned from the States: *Using workforce data to make evidence-based decisions about GME expansion*

- In general, states are primarily concerned about the maldistribution of physicians, particularly in general surgery, psychiatry, and primary care specialties (excluding general pediatrics).
- States need data on their current physician workforce to determine priority shortage areas and make decisions about where to target GME programs by specialty and location of training.
- States can learn from one another regarding how to collect, analyze, and use data for evidence-based GME decision-making.
- Even in states where good physician workforce data exist, the data are generally not used to inform GME policy.
- State legislatures have been more willing to invest in undergraduate medical education than graduate medical education even though the data show that the return on this investment (e.g. in-state retention for practice) is higher when physicians complete both UME and GME in-state.

C. Financing GME

Interviewees responded to questions about sources of funding (other than Medicare) for GME expansion in the state, including Medicaid, state appropriations, HRSA, the Veterans Administration and third party payers.

1. Medicaid GME Financing

Medicaid programs are not required to provide support for GME, but if they opt to do so they are eligible for matching federal funds. In 2012, Medicaid programs in 42 states and the District of Columbia provided $3.9 billion in support for GME.[26]

Respondents from two states where Medicaid had not previously been supporting GME noted they had developed new mechanisms to channel GME dollars through the Medicaid program in order for the state to receive matching Federal funds. In Vermont, the University of Vermont covers the state's share of the matched funds. Montana's legislature has regularly appropriated funding for GME, but only recently began moving those dollars to Medicaid to enable the federal match.

Fourteen of the seventeen states in our sample reported that their state Medicaid program provided funding for GME. However, the way that Medicaid GME funds are distributed and used varied widely from state to state. In most states, use of Medicaid dollars did not provide leverage for more state involvement in targeting GME funding toward needed specialties and geographies. Respondents noted that the dollars were treated the same way that Medicare dollars were treated, with individual training institutions making decisions how about to allocate the dollars among

specialties. Compared to the amount of money spent on GME by Medicare and by individual hospitals, the amount of Medicaid support for GME is relatively small. For example, a respondent from a residency program in Washington noted that Medicaid GME funding roughly amounted to less than 5% of direct GME costs. Respondents from Texas noted that Medicaid only provided GME support to five state-owned hospitals.

Several interviewees, all of whom were well versed in GME, reported that they did not have a clear understanding of the Medicaid funding mechanism. Others noted that Medicaid financing for GME is "opaque." For example, in North Carolina, one respondent noted that GME is built into the Medicaid cost report as part of disproportionate share (DSH) payments, making it difficult for hospitals to distinguish how much money they receive from Medicaid for GME. In Florida, GME costs were historically embedded in the Medicaid daily rates under a fee for service (FFS) system, which made specific GME funds difficult to track. In mid-2013, Florida passed legislation that included $80 million intended for Medicaid GME funding, with $20 million dollars of new funding. Under the new legislation, GME is linked with hospital reimbursement, based on the hospital's percent of residents and percent of inpatient hospital Medicaid reimbursement. Although the entire $80 million will go to hospitals with existing GME programs, there were no requirements in the legislation about how hospitals should spend these funds.

While most states reported that Medicaid funds were not dedicated to needed specialties, there were a few exceptions. In Michigan, Medicaid funds are appropriated from different pools, with one pool available for all specialties including primary care and an additional (smaller) pool available for just for primary care GME programs. In Tennessee, Medicaid funds are directed to primary care and are allocated based on a formula that accounts for each hospital's percent of total primary care residents in the state divided by its percent of residents of all specialties in the state.

Massachusetts provides an interesting case study of the difficulty of linking Medicaid GME to funding to needed physician specialties. Historically, Massachusetts paid for GME through the Medicaid program. In 2007, the Office of Health and Human Services implemented an increase in direct graduate medical education (DGME) rates for primary care and psychiatry, and a decrease in the rates for specialty care. Teaching hospitals in the state objected to this increase, arguing that the restrictions were unnecessary since the hospitals had strong programs to promote training in primary care. In response, the state Department of Health and Human Services requested that teaching hospitals develop plans to demonstrate their commitment to primary care. No hospitals submitted plans to DHHS. Ultimately, as a cost-saving measure, Massachusetts ended DGME funding from Medicaid to all hospitals in 2010. Interestingly, no teaching hospitals reduced GME programs following the Medicaid GME cuts.

Recent legislation passed in Massachusetts in 2012 created a Special Commission on Graduate Medical Education, which is directed to study the impact of GME on the state's health workforce and assess potential alternative funding streams to support GME, including Medicaid. The Special Commission's final report recommended increased funding for GME and tying new and existing GME funds to performance benchmarks, such as in-state retention, training in shortage specialties (specifically primary care, psychiatry, and general surgery), and training in community health centers in line with HRSA's Teaching Health Center model.[27] The Commission also recommended increased physician data collection efforts to be undertaken by the Health Care Workforce Center, as well as the creation of a GME advisory board to coordinate GME funding and workforce retention efforts throughout the state.

Lessons Learned from the States: *GME financing through Medicaid*

- States have a vested interest in medical education, with many states using public funds to support medical training, either through legislative appropriations or Medicaid.
- States have control over many aspects of healthcare delivery, including decisions about Medicaid expansion under the ACA. Medicaid is one of the main policy levers states can use to shape healthcare delivery at a state level. However, with few exceptions, states have not been able to effectively use Medicaid GME funding to target GME expansion.
- Since Medicaid's contributions to GME are small, and Medicaid payments for patient services are low in comparison to other payers, Medicaid may be a relatively weak mechanism to allocate GME positions, except on the margin.
- In many states, Medicaid funding for GME is not well understood by GME experts. Further, Medicaid GME funds are often indistinguishable from DSH and other Medicaid funding, creating what one interviewee deemed a "Medicaid soup."
- Teaching hospitals may be reluctant to implement specialty-specific tracking systems and metrics to increase accountability for public funding for GME.

2. HRSA's GME Programs

2a. Children's Hospitals GME Program, Preventive Medicine Program, and Integrative Medicine Program

HRSA provides several different types of GME grants that operate outside of CMS GME funding mechanisms. The Children's Hospitals Graduate Medical Education Program (CHGME) provides GME funding to freestanding children's hospitals (necessary as Medicare GME funding is based in part on the percentage of a hospital's Medicare population). The CHGME program supports 20% of general pediatric training programs and 39% of pediatric medical and surgical subspecialty training programs in the U.S.[28] During 2011, roughly $270 million was appropriated for CHGME programs. CHGME funding was not a focus of our study.

The Preventive Medicine Program supports residency training in preventive medicine specialties, and the Integrative Medicine Program supports residency training in evidence-based integrative medicine. Relative to other GME funding sources, neither of these programs is very large, and in 2013 and 2012 respectively funding for both programs amounted to less than $3 million each.[29,30] Neither program was a focus of our study.

2b. HRSA Teaching Health Center and Primary Care Residency Expansion Grants

The interview asked about two new sources of GME funding through the Health Resources and Services Administration (HRSA) created by the 2010 Patient Protection and Affordable Care Act—Primary Care Residency Expansion (PCRE) grants and the Teaching Health Center (THC) agreements. For several states in our study, these programs are a small but important source of GME funding. PCRE funds are available to existing GME programs to provide support for expanding positions in general internal medicine, family medicine, and pediatrics.[31] PCRE recipients must commit to seeking alternate sources of GME funding to ensure the sustainability of the additional GME positions

after the funding cycle ends in 2015. No additional funding cycles are planned for the PCRE program.

THC funding is available to community-based, ambulatory patient care centers with primary care (and dental) residency programs. In contrast to Medicare GME funds, which are provided to hospitals, THC GME funds are provided directly to training programs located in community-based settings. THCs are required to monitor and report training outcomes, including the number of graduates who provide care for underserved populations.[32,33]

As of August 2013, THCs had been established in ten of our study states, including California, Idaho, Illinois, Massachusetts, Michigan, Montana, New York, North Carolina, Texas, and Washington (Table 1). THC funds have been used to develop innovative GME programs in outpatient centers that have the potential to improve patient care in the local community. For example, the Erie Family Health Center, is an FQHC in Humbolt Park, IL has a new family medicine residency program funded by the THC mechanism. The residency program is affiliated with Northwestern University. Roughly three quarters of the Humbolt Park community is comprised of native Spanish language speakers. The residency program, open to 8 residents a year, focuses on serving underserved communities and is highly competitive. To be eligible to apply for residency training at this program, candidates must be fluent

Table 1: HRSA funding by program type and state

State	2013 HRSA Teaching Health Center[1]	2010 HRSA Primary Care Residency Expansion[2]	2013 HRSA Children's Hospitals GME[3]	2013 HRSA Preventive Medicine Residencies[4]	2012 HRSA Integrative Medicine Program[5]
CA	X	X	X		X
FL		X	X		
GA			X		
ID	X	X			
IL	X	X	X		
MA	X	X	X	X	X
MD		X	X		X
MI	X	X	X	X	X
MT	X	X			
NC	X	X		X	X
NJ		X	X		X
NY	X	X	X		
TN		X	X	X	X
TX	X	X	X		
UT			X	X	
VT					
WA	X	X	X		

[1] Active Grants for HRSA Program(s): Affordable Care Act Teaching Health Center (THC) Graduate Medical Education (GME) Payment Program (T91). Accessed online 22 July 2013: http://ersrs.hrsa.gov/ReportServer/Pages/ReportViewer.aspx?/HGDW_Reports/FindGrants/GRANT_FIND&ACTIVITY=T91&rs:Format=HTML4.0.

[2] Active Grants for HRSA Program(s): Affordable Care Act: Primary Care Residency Expansion (T89). Accessed online 22 July 2013 at: http://ersrs.hrsa.gov/ReportServer/Pages/ReportViewer.aspx?/HGDW_Reports/FindGrants/GRANT_FIND&ACTIVITY=T89&rs:Format=HTML4.0.

[3] US Department of Health and Human Services, Health Resources and Services Administration. 2013. Report to Congress: Children's Hospitals Graduate Medical Education (CHGME) Payment Program. Accessed online 22 July 2013 at: http://bhpr.hrsa.gov/childrenshospitalgme/pdf/reporttocongress2013.pdf.

[4] Active Grants for HRSA Program(s): Preventive Medicine Residencies (D33). Accessed online 22 July 2013 at: http://ersrs.hrsa.gov/ReportServer/Pages/ReportViewer.aspx?/HGDW_Reports/FindGrants/GRANT_FIND&ACTIVITY=D33&rs:Format=HTML4.0.

[5] Active Grants for HRSA Program(s): Integrative Medicine Program (IM0). Accessed online 22 July 2013 at: http://ersrs.hrsa.gov/ReportServer/Pages/ReportViewer.aspx?/HGDW_Reports/FindGrants/GRANT_FIND&ACTIVITY=IM0&rs:Format=HTML4.0.

in Spanish. Despite funding issues, the program has filled each year with residents who graduated from highly competitive US allopathic medical schools.

State respondents emphasized their concerns about the sustainability of the HRSA THC GME funds. Unlike Medicare GME funding, the THC program is time-limited and will require a congressional appropriation to sustain it after 2015. Because it takes at least 3 years to complete a residency program, states are currently accepting new THC residents without the assurance of continued funding. A respondent from Idaho noted that concerns about funding have created some difficulties in recruiting the new residency class. A respondent from Montana noted that if THC funds are not maintained, the state will likely have to close its new residency programs, since the programs will be too expensive for the state to operate over the long term. An interviewee from Massachusetts noted that, following the elimination of state Medicaid funds in 2010, one of the few community health centers in the country that sponsored its own residency program, the Greater Lawrence Family Health Center, struggled significantly to recover from the loss of state funds. The program received THC funding and has been able to continue operations, but may be under threat again if THC funds are not renewed.

3. GME Training Supported by the Veterans Health Administration

The Veterans Administration (VA) is another important source of GME funding and training capacity in all states interviewed, except Montana. Nationally, the VA funds about 9% of all GME positions, which is about the same average for states in our study sample.[34] Approximately 30% of the nation's medical residents receive training at the VA each year.[35] A respondent from Michigan noted that it was useful to have trainees rotate through the VA system, since the VA serves as a model for providing high quality care at a lower cost in a team-based setting.

4. Third-Party Payers and All-Payer Systems

The majority of states reported that insurance companies or other third party payers did not provide direct financial support for graduate medical education. Several interviewees mentioned that they were unaware of any discussion of third party payers contributing to GME funding in their state. One interviewee noted that because

Lessons Learned from the States:
HRSA-funded GME programs: Teaching Health Center (THC) and Primary Care Residency Expansion (PCRE) grants

- THC and PCRE funds are an important new source of GME funding and are innovative because they link GME training to needed specialties and geographic areas, shifting training from hospitals to ambulatory settings.
- Unlike residency programs at hospitals, THC residency programs are required to report on physician production metrics, which introduces a level of accountability not seen in other sources of Federal GME funding.
- The lack of sustainability of HRSA THC funds has left some residency programs vulnerable to closure and has made recruiting new residents more difficult.

policy makers are debating cutting federal GME dollars, state stakeholders had been brainstorming alternative options to support GME, including third party payment—but this idea had not moved beyond the discussion phase.

All-payer systems may be an appealing alternative source of GME funding for states, particularly as concerns have been raised about the long-term sustainability of federal GME dollars. However, respondents believed it would be difficult to convince third party payers to pay for GME. Several interviewees noted that it seemed unfair that public insurers bore the cost of GME when third party payers did not, given that private insurers also benefit from a well-trained physician workforce. One respondent noted that if the state could make a case for improved quality of care with third party payment of GME, insurers may be more likely to support such a system.

In two states, the foundation arms of health insurance providers gave a small amount of funding to support new residency positions. In Idaho, an insurer provided $400,000 for four years to support rural GME training. In North Carolina, the Blue Cross Blue Shield Foundation contributed funding, along with the Duke Endowment Foundation and the University of North Carolina, to support two new family residency positions over three years at a Prospect Hill Community Health Center, a Federally Qualified Health Center serving a rural, medically underserved, majority Spanish-speaking population. However, in both cases, foundation funding was provided for program start-up and will not be sustainable over the long term.

4a. Third Party Payment for GME: Kaiser Permanente in California

Kaiser Permanente is a healthcare system that integrates physician practice, hospital care and an insurance product. Kaiser Permanente also funds teaching and research programs that support its patient-care mission and operates its own medical education pipeline. Kaiser Permanente has one of the oldest residency training programs in the country, for which it receives CMS funds like other teaching hospitals. Kaiser Foundation Health Plan (the insurance arm of Kaiser) also devotes a percentage of its revenue to a community benefit pool and the additional costs for residency positions above the CMS cap are being funded out of this pool. Roughly 50% of Kaiser Permanente GME graduates are then employed in the Kaiser system. This "grow your own" approach positions Kaiser to reap downstream benefits from its residency programs by avoiding recruitment and retraining expenses. This renewable cadre of physicians know the Kaiser system and can seamlessly transition to a new role as a staff physician. Kaiser serves as the sole example in our sample of a third party payer providing direct financial support for GME.

4b. All-Payer Systems: Case Studies of Maryland, New York and California

Maryland was the only state in our sample that currently has an all-payer system for GME, and to our knowledge, Maryland is the only state in the country with such a system. Since 1974, Maryland has operated under a CMS waiver, whereby the Maryland Heath Services Cost Review Commission (HSCRC) regulates hospital payer rates. Hospitals are required by state statute to charge the HRCSC rate to all public and private payers.

Maryland hospitals do not receive direct GME payments from Medicare or Medicaid and therefore Maryland hospitals do not fall under the Medicare caps; rather, GME payments, as well as uncompensated care and other community benefit costs, are built into the rate for hospital services. Thus, Medicare, Medicaid, and third party payers all contribute the same amount for GME. In the recent past, no hospital has approached the HSCRC to request funding for new residency programs or positions and no additional funding for GME has been provided.

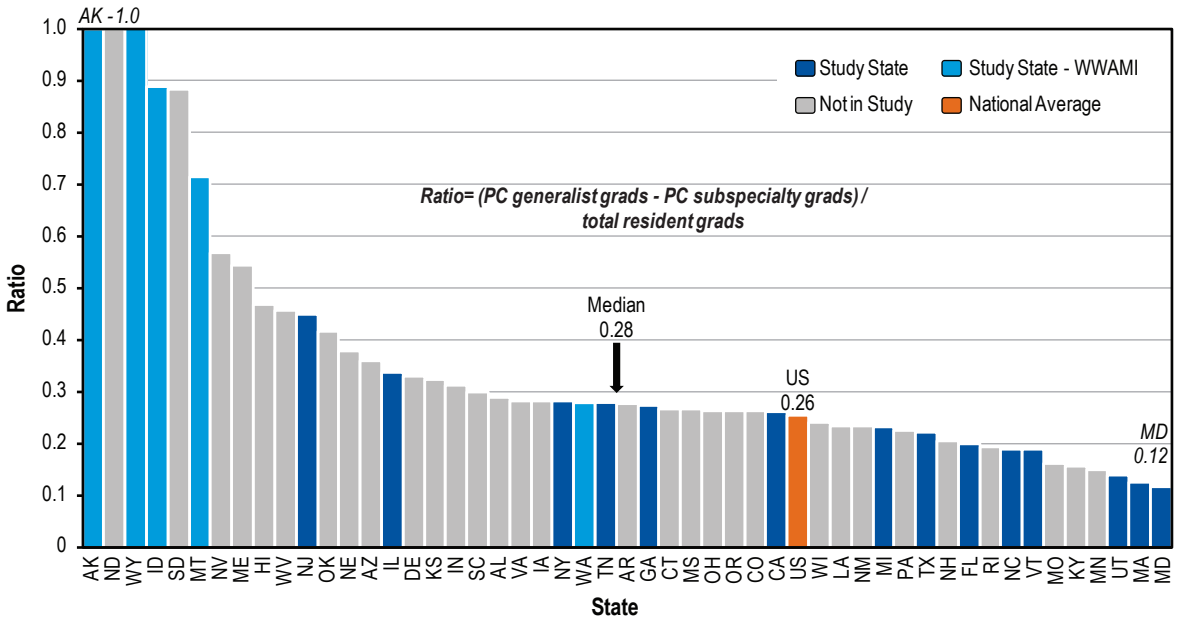
The HSCRC uses financial reports from hospitals to determine direct GME expenses and uses a formula

to determine indirect GME expenses. The intent of the IME (Indirect Medical Expenses) formula is to create a level playing field for hospitals in the state, since teaching hospitals are more expensive to operate than community hospitals. Similar to national criticisms of Medicare IME, respondents noted that the Maryland IME formula is sensitive to a number of health system inefficiencies outside of medical education costs, many of which are unexplained. Furthermore, IME is difficult to separate from disproportionate share payments.

Decisions about GME expansion are not the purview of HSCRC or any other state agency. HSCRC sets the rates that hospitals are able to charge for services, but does not have a role in determining how GME funds are spent. If an institution decides to expand or reduce GME programs or positions, the HRCSC may not be aware of these changes. Teaching institutions have the authority to make all decisions about GME programs. Both of the major teaching institutions in Maryland, the University of Maryland and Johns Hopkins, spend more on GME programs than is reflected in the amounts from the HSCRC formula and both use hospital revenue to support residency training. No GME funding in Maryland is explicitly tied to state health workforce needs. Furthermore, in 2011, only 12% of Maryland GME graduates were likely to be generalists, the lowest percent of all 50 states (**Figure 4**).

New York had an all-payer system from 1983 to 1985. From 1986 through 1996, the state employed a non-Medicare all-payer system where all insurers except for Medicare paid using Medicaid rates as a base. In 1997, the state began operating under the Health Care Reform Act (HCRA) and moved to negotiated rate plans for hospitals, ending the non-Medicare all-payer system. Under HCRA, the state taxed private health insurers using per member fees based on region and type of insurance coverage. The monies from this tax, called the "covered lives assessment," were put into two separate pools. One pool was created to subsidize indigent care and the other was intended for GME. However, in the late 2000s, the monies from the GME pool

Figure 4: Percent of 2011 GME graduates likely to be generalists



Source: American Medical Association 2011 Graduate Medical Education database (collected via GME Track), Sarah Brotherton, personal communication 27 September 2012.
Note: This calculation subtracted the number of graduates completing subspecialty training from the number of core specialty GME programs in internal medicine, pediatrics, family medicine, surgery, and psychiatry, and divided by the total number of graduates of all residency programs in each state. See Appendix 1 for the detailed methodology.

were reallocated toward other Medicaid programs, specifically to support bad debt and charity care payments in teaching hospitals. One respondent from the state noted that third party payers continue to feel as though they pay for GME because of the covered lives assessment, but in reality, because of the reallocation of these funds, third party payers do not directly contribute to GME.

In 2013, House Bill 1176 in the California State Legislature proposed a $5 per covered life fee for health insurers. The monies are designated to support GME in the state. The amended bill calls for the creation of a Graduate Medical Education Council at the Office of State Health Planning and Development, a GME governance board directed to distribute GME funding to both new and existing programs. Eligibility criteria are based on a GME program's location in an underserved area; record of placing GME graduates in underserved areas; emphasis on primary care training; and emphasis on training physician specialties most needed by the community where

Lessons Learned from the States: *All-payer and third party payer systems*

- An all-payer system may provide a new state funding stream for expansion of GME programs and positions. However, if new funds are not tied directly to state health workforce needs and decisions about GME expansion remain the purview of teaching hospitals, an all-payer system is unlikely to address concerns about the distribution of GME positions by specialty and geography.
- Maryland's experience with an all payer system demonstrates the difficulty of determining IME costs when setting rates. IME is conflated with other hospital operating costs including disproportionate share.
- State appropriated funds are subject to temporal swings due to the political climate and priorities of the state legislature. In the case of New York, pooled funds once earmarked for GME were reallocated to other, more highly prioritized health system needs.
- Third party payers are not likely to contribute to GME even though they benefit from it. Either third party payers must be mandated to contribute by legislation, or there must be incentives in place that make contributing to GME serve their interests.
- If new GME positions intended to address state workforce needs are created in response to new state funding streams, to ensure long-term impact, funding must be sustainable or institutions must be aware that funds are time-limited and they will have to eventually absorb the costs of those positions.

the program is located. The legislation has not been viewed favorably by insurers and seems unlikely to pass in the 2013 legislative session.

D. Coordinating GME Decision-Making to Match State Workforce Needs

In all states interviewed, almost all decisions about GME expansion occur at the level of the training institution and are not based on workforce assessments of state needs. The most common reason mentioned for why hospitals have increased residency training was to expand service lines that generate revenue. Other reasons included recruitment of faculty or spouse, prestige, needing additional staff due to duty hours restrictions, and the local job market (for example, openings in nearby practices or the development of a new hospital). Respondents reported that decisions about expanding or adding new residency programs tended to include decision-makers at local teaching institutions, department chairs, and chief medical officers, not state government or policymakers.

Most states did not report any coordination at the state level for GME decision-making, or any coordinating body that guides the number, location, or specialty of new residency positions. Even in states like Vermont, which has only one GME institution in the state, no state government body worked directly with the medical education system to make decisions about the UME or GME pipeline of physicians necessary to meet the state's health workforce needs.

Nonetheless, a few states have or have had organizing bodies that provide some direction for GME policy, and can serve as examples to other states wishing to coordinate GME at the state level.

1. Virgin Hospital Start-Up Funding in Georgia

Georgia does not have a single policymaking body that makes coordinated, state decisions about graduate medical education. However, the state does have two entities, both created by statute, that have some influence over state appropriations for GME: one, an innovative new funding body at the Georgia Board of Regents; and two, the Georgia Board for Physician Workforce which conducts health care workforce studies and has a role in financing GME in the state.

The state of Georgia has historically been concerned about physician workforce shortages, with particular concern about primary care (general internal medicine, family medicine, pediatrics, and obstetrics and gynecology), and general surgery. Between 2001 and 2011, in an attempt to address physician workforce needs, the state expanded UME enrollment by 49%, by which point there were 29 more medical student positions in the state than residency positions.[36] To address this issue, Governor Nathan Deal spearheaded a plan to expand the number of residency positions by creating 400 new positions at hospitals that did not previously have a GME program. These so-called "virgin" hospitals would be able to capture new Medicare GME funds because they do not fall under the cap. Governor Deal's initiative, which began in fiscal year 2013, provides hospitals up to a dollar-for-dollar match for program start-up costs. Despite a fiscally conservative climate, the legislature committed $1.2 million to this program for fiscal year 2013 and an additional $2.07 million for fiscal year 2014. Because the matching start-up funds are only available to hospitals until they are eligible for CMS funds, the initiative was attractive to the legislature because it represented a short-term financial commitment on the part of the state, with the potential for long-term gains in federal funds.

The start-up funds are earmarked for development of allopathic or dual-accredited residency programs in primary care and general surgery to address the specialties under greatest workforce stress in Georgia. However, hospitals may also use start-up funds to support one or two new residency programs in their own preferred

specialties, as long as at least half of the new GME programs are in primary care or general surgery.

Any hospital in the state is able to apply for funds. However, to the extent possible, the Board seeks to target geographically underserved areas of the state, specifically the northeast and southwest regions. At the time of our interviews, six hospitals were in the process of developing new GME programs and four more were considering developing programs. Hospitals cannot use funds to evaluate whether to start a new GME program, but must commit in advance of receipt of funding to create a program. Start-up funds can be used to support any costs that the Accreditation Council for Graduate Medical Education (ACGME) and the state allow, including hiring GME program faculty and staff, renovating facilities, and paying for new equipment to support the residency program.

To be eligible for the state matching funds, hospitals must submit an application to the GME Regents Evaluation and Assessment Team (GREAT), a subcommittee of the Georgia Board of Regents. The GREAT determines which hospitals will receive start-up funding and has oversight responsibility for those funds.

One interesting outgrowth of the virgin hospital funding initiative has been the development of the South Georgia Medical Education & Research Consortium in the southwest portion of the state, which has applied for and will receive new seed funding monies from GREAT. The consortium is comprised of five competing hospitals, and works closely with community health centers, the Medical College of Georgia at Georgia Regents University, and the Southwest Georgia AHEC. It is located in one of the state's most underserved areas where physician recruitment has been particularly difficult. The consortium seeks to create up to a total of 150 new residency positions in the specialties of internal medicine, family medicine, pediatrics, obstetrics and gynecology, general surgery, and emergency medicine. The first class of residents will begin in July 2014.

A second state agency, the Georgia Board for Physician Workforce (GBPW), founded in 1976, is a legislated board that conducts state physician and physician assistant workforce studies and studies of undergraduate and graduate medical education (including exit surveys of all of Georgia's medical school graduates and all of Georgia's GME program graduates), provides a job matching service for physicians, provides funding for new Osteopathic GME Program Development, administers a medical school scholarship program, and administers loan repayment programs for practicing physicians. The GBPW functions separately from the GREAT, but does have a seat on that committee. The GBPW has no GME governance role, but it provides state appropriated capitation dollars to residency programs in the state, with the largest amounts going to family medicine and pediatrics residency programs, and smaller amounts going to all programs regardless of specialty. To be eligible for GBPW funding, programs must meet physician production metrics. Specifically, using a five year rolling average, 50% of a program's GME graduates must practice in GA (or 1 county across the border), and must have a license, Medicaid number, and hospital practicing privileges in the state.

2. The Utah Medical Education Council

Utah provides the only example in our sample of a statewide GME governance board that made decisions about residency positions based on state workforce needs. The Utah Medical Education Council (UMEC) is a legislated state agency with an 8-member governor appointed board that conducts health workforce studies, sponsors health professional job fairs, and supports rural workforce development initiatives.[37] From 2003 until 2010, the UMEC also managed a CMS demonstration project to manage the allocation of Direct Medicare GME funds. (Indirect Medicare

GME funds did not flow through the UMEC and were allocated directly to teaching hospitals.) The UMEC organized a GME consortium with representatives from all 4 GME institutions in the state and successfully applied for a CMS waiver.

During the period when the demonstration project was in effect, direct Medicare GME funds were distributed by the UMEC using an evidence-based approach. The UMEC conducts a physician workforce survey every 5 years. Beginning in 1997, the results of the physician workforce survey, along with data from other national sources, were used by the GME consortium to develop a prioritized list of the 12 critical physician shortage specialties for the state. To create the list, the UMEC looked at all 60 medical specialties with residency programs in the state and benchmarked against national ratios. The priority physician specialty list has been through 4 update cycles, roughly every 5 years. While the CMS waiver was in place, new CMS DGME for all 4 of Utah's teaching institutions were pooled and the UMEC distributed those funds to new GME programs based on how highly they ranked on the list of priority specialties. The UMEC contracted with each residency program based on the amount of training that took place at each institution, as well as by post-graduate year of training. Payments by physician specialty were held at a constant rate, regardless of where a resident trained. For example, the DGME amount for an internal medicine resident would not vary regardless of the training institution. Contracts were reviewed and adjusted annually by the UMEC. The law did not prevent teaching institutions from using their own revenue to expand or start residency programs that were not prioritized by the UMEC. During the period of the CMS waiver, Utah saw a net growth of 37% in FTE GME positions (225 positions), including 45 FTE positions that grew outside of the CMS waiver via the efforts of the GME consortium. This GME growth outside the waiver was the result of teaching hospitals restructuring and reallocating their GME program funds based on the UMEC's recommendations.

When the CMS waiver expired in 2010, CMS funds for DGME ceased to pass through the UMEC. The UMEC continues to hold an advisory role in decisions about increasing or decreasing GME positions through the GME consortium. The UMEC also plays a major role in health workforce studies and planning for the state.

3. Other Examples of State GME Boards

In 1994, New Jersey passed legislation creating the Advisory Graduate Medical Education Council of New Jersey. The purpose of the Council is to make recommendations for use of public and private GME funds for new GME programs to meet the state's physician workforce needs. This work includes reviewing applications for new GME programs to be developed in the state. However, many years ago the funding for this Council was eliminated in state budget cuts. Despite advocacy efforts to appropriate the funding, the Council has remained unfunded and is not active in GME governance and decision-making.

The New York State Council on Graduate Medical Education (NYS COGME) was established by legislation in 1987. NYS COGME is part of the Department of Health and Human Services and serves in an advisory role to the Governor and Legislature on matters of medical education. NYS COGME makes recommendations on a range of issues including curriculum, financing and policy for GME, but does not have a role in GME governance or decision-making regarding residency expansion or reduction. NYS COGME also manages a physician loan repayment program, a program to train medical residents in clinical biomedical research, and other DHHS programs with a focus on workforce and practice initiatives for physicians. New York formerly had a GME reform incentive pool and a designated priority

program to address state workforce needs, but these programs have been defunded.

The Montana Graduate Medical Education Council (MGMEC) was organized in 2011 by the Office of Rural Health/Area Health Education Center. The MGMEC is a voluntary body of individuals interested in developing new GME positions in the state. Historically, Montana has only had one GME program in the state, but will have a new family medicine program in 2013 and a new internal medicine program in 2014. The MGMEC currently serves as an advocacy and networking group, and has thus far organized a GME summit bringing together national GME leaders and successfully advocated for an expansion of state GME funding for all GME programs in the state. The MGMEC currently does not have formal decision-making authority, and is not funded or legislated. However, the group has informal authority due to the representatives on the MGMEC. The GME community in Montana is not large and the key players are represented on this Council.

The Special Commission on Graduate Medical Education in Massachusetts has recommended that a GME advisory committee be created under the auspices of an existing Health Care Workforce Center.[27] The Health Care Workforce Center would be charged with state physician workforce data collection, coordinating GME efforts and other workforce initiatives with different stakeholders, and overseeing GME funding distribution. The final report was released in July 2013 and no action has yet been taken on these recommendations.

While not a GME board per se, the Texas Higher Education Coordinating Board (THECB) is the state's highest authority on issues related to higher education from community colleges to health-related institutions, and the THECB's scope covers multiple public university systems. During the 2013 session, the legislature appropriated $17 million for grants to develop new GME programs, to expand existing positions and programs for new first-year positions, and to help fill existing, unfilled GME positions in the state.

Lessons Learned from the States: *GME decision-making at the state level*

- Most states did not report any coordination at the state level for GME decision-making about the number, location, or specialty of new residency positions.
- Georgia provides an innovative example of a way to incentivize the development of GME programs in needed specialties and locations by using short-term, state-appropriated start-up funds in "virgin" hospitals outside the cap.
- The Utah Medical Education Council uses a GME coordinating board to make prioritized, evidence-based, state-level GME decisions. Although the CMS waiver expired in 2010, the UMEC continues to advise on GME decision-making from a state perspective and conducts health workforce studies.
- There are examples of both formal and informal GME advisory groups that have advocated for GME policy changes at the state legislative level but many of these groups came together on an ad hoc basis to advocate for specific policy changes; few have had a sustainable and coordinated role in state GME policy.

A few interviewees reported examples of ad-hoc cooperation between teaching institutions. For example, in TN, TX, MT, and NC, respondents cited instances when a group of teaching institutions came together, in two instances as organized by a medical association, to speak in one voice to the legislature and collectively lobby for a GME policy.

E. Measuring Accountability for Investment of Public Dollars on GME

Several interviewees noted that there are few accountability measures in place related to GME training outcomes. Florida, Georgia, North Carolina, New York, Texas, and Utah all track data on in-state retention of GME graduates. WWAMI also tracks in-state and in-region retention of GME graduates. However, in the remaining states, state-level tracking of GME graduates was limited, or was restricted to particular sub-groups of trainees, usually recipients of financial aid or scholarships. Five interviewees noted that medical students or training institutions in their state did some level of retention tracking for graduates, but most often this tracking was conducted by individual departments or alumni offices for purposes of marketing and fundraising.

No states in the sample had accountability measures in place to track how public GME funds are spent. Several interviewees noted that Medicare has missed an important opportunity to shape and plan the health workforce, given the lack of accountability metrics for Medicare GME spending. Teaching hospitals are required to report to Medicare the number of residents in training, but do not have to provide detailed reports on how GME funds are spent by resident or specialty. Several interviewees also expressed frustration with the formula used to determine Medicare GME funds, which is based on the amount of service the institution provides to Medicare patients. Medicare GME funds are not tied to efforts to produce the types of physicians most likely to meet population health needs. In addition, GME programs frequently do not have information about the amount of CMS funding provided for the program.[7,8] Medicare GME funds are often pooled into a teaching hospital's general funds and are not linked to specific GME expenditures. CMS funds for GME are easy to identify as the money comes in to the hospital, but records of how those funds are spent are not available. The lack of transparency is similar with Medicaid funding, and many teaching institutions do not have the infrastructure in place to monitor the expenditure of public GME dollars.

With no strings attached to the largest public sources of GME funds and the remainder of GME program support coming from hospital revenue, academic health centers and teaching hospitals have controlled most of the decisions about specialties and training locations for the nation's physician workforce. Teaching institutions focus on their own service line needs, and as a result, the system has incentivized growth in subspecialty training, rather than training in needed specialties like general surgery, primary care, and psychiatry.[38] A recent national study assessing the outcomes of Medicare-funded GME institutions demonstrated that the 20 institutions producing the highest number of primary care graduates (41% of total graduates) received $292 million in Medicare GME funding, whereas the 20 institutions producing the lowest number of primary care graduates (6.3% of total graduates) received $842 million in Medicare funds.[6] The study showed a correlation between the rurality of the training location and the likelihood that graduates would practice in a rural area.[6] The authors noted that directing public GME funding to programs that provide trainees with experience in rural medicine may encourage more physicians to eventually practice in rural areas. This type of experience is particularly necessary for rural general surgeons, who must be prepared to handle the full breadth of rural general surgery, particularly if they are the only surgeon at a rural hospital.

Lessons Learned from the States: *Accountability*

- While some states track in-state retention and other GME accountability measures, monitoring varies by state and in many cases is restricted to particular scholarship programs or is centered on alumni office needs.
- No states in our sample had accountability measures in place to track how public GME funds are spent.
- Attaching accountability metrics to public GME funds has been the exception rather than the rule in most cases. As a result, AHCs and teaching hospitals have tended to expand GME programs in response to their own service line needs, rather than in response to population health needs.
- Incorporating accountability metrics in the current structure of Medicare GME funding is likely to be met with resistance on the part of institutions, who are used to operating in a GME infrastructure that does not require such measures.

Prior literature has called for incorporating accountability metrics into the current structure of Medicare GME funding.[39] Observers have noted that if states or other GME funders are to invest public dollars into the production of the physician workforce to meet local needs, they must require accountability measures to ensure a return on their investment. While accountability metrics are a much needed starting point, the implementation of such measures may face challenges as institutions are not accustomed to operating in a system that requires transparency for GME spending and, as the Massachusetts Medicaid example illustrated, they may actively resist efforts to increase transparency and accountability.

F. Looking Beyond GME: Other Strategies to Address Physician Workforce Issues

GME funding policy is not the only strategy to influence health workforce supply, and the perception of the relative importance of GME funding compared to other strategies to address workforce needs varied among the states and interviewees. Individual respondents from Georgia, North Carolina, Texas, and Utah listed GME expansion as the highest priority to address physician workforce needs in the state. In contrast, a different respondent from North Carolina and one from Michigan named strong loan repayment programs as the highest priority, and individual respondents from Florida and Illinois cited changes to medical malpractice reform as highest priority. An individual from California prioritized scope of practice changes for non-physician clinicians as the key to addressing the state's health workforce needs.

Vermont interviewees noted that the state's upcoming shift to a single payer system was likely to have the greatest effect on the physician workforce supply. Under the new system, primary care physicians will be paid at higher rates than they are currently, while specialists will be paid slightly less.

Thirteen of the states in our study had physician loan repayment programs in place to incentify physicians to practice in underserved or rural areas, prioritizing needed specialties. All loan repayment

programs are open to primary care providers. General surgeons are not eligible for national loan repayment from the National Health Service Corps and are only eligible for state loan repayment in four states in our sample: Georgia, Idaho, Montana, and Texas. Illinois and Florida have an established physician loan repayment program, but in the recent past, funds have not been appropriated to support it. Massachusetts, Illinois, and New Jersey do not have loan repayment programs.

North Carolina has recognized the importance of general surgeons as a state need. However, the loan repayment program in the state is not open to general surgeons. The amount of state appropriated funds for loan repayment have dwindled over time and adding another eligible specialty to the pool would further dilute funding. However, one respondent from North Carolina noted that a well-funded loan repayment for general surgeons in rural and underserved areas would likely be the most effective solution to address the shortage of these physicians in the state. Similarly, an interviewee from California noted that the amount of funding a physician was eligible to receive via loan repayment was critical in the program's effectiveness. California's loan repayment program provides $20,000 over four years to physicians who work in underserved areas. In the face of high student debt loads, $5,000 in loan repayment each year is not enough of an incentive to steer physicians into practice locations that make them eligible for the program.

In Florida and Illinois incentives to practice in-state were prioritized more highly than GME expansion by our interviewees. Interviewees from both states cited strict medical malpractice laws and high malpractice insurance costs that encourage physicians to practice out of state. One interviewee noted that if a physician in Illinois moved his practice 15 miles east over the Indiana border, he would save roughly $100,000 annually on liability insurance.

As states debate where to invest funds in the physician pipeline for the highest return on investment, GME may not be the highest priority in all cases. However, if monies are to be invested in medical education, investing in

Lessons Learned from the States: *Strategies to address health workforce issues*

- If states plan to address workforce shortages via investments in medical education, investing in GME expansion in core specialties in programs that target underserved areas is likely the most efficient strategy.
- Depending on the state, it may be more effective to use strategies other than GME funding to address physician workforce needs. For example, individual states may determine that it is more effective to prioritize state funding for loan repayment programs or undergo medical malpractice reform to attract and retain physicians in needed specialties and geographic areas in the state.

GME expansion in core specialties in programs that target underserved areas will likely provide a more favorable cost-to-benefit ratio than investments in new medical schools. Furthermore, combining investments in GME education with other strategies to increase the physician supply, such as robust loan repayment programs, will magnify the effects of each individual program.

IV. Conclusions and Recommendations

At the start of our work on this study, we believed that the 17 states selected would serve as a representative sample of the wide array of GME initiatives underway at the state-level. The goal in undertaking the study was to identify states that could serve as policy laboratories to provide federal and state policy makers with a range of innovative ideas about how to reform GME policy, governance and finance.

While the study revealed numerous instances of successful (and unsuccessful) attempts to reform GME, no single state employed innovative approaches in each of our four study aims. Some states had rigorous data collection and monitoring systems to identify workforce needs but these data were not systematically tied to decisions about where, and in which specialties, to expand GME. Some states had policy making bodies that attempted to coordinate GME training decisions at the state level but many of these groups came together on an ad hoc basis to advocate for specific policy changes; few groups had a sustainable and coordinated role in state GME policy. In all states interviewed, almost all decisions about GME expansion occurred at individual training institutions.

Most states are investigating alternative funding models to support GME expansion but Medicaid and all-payer payment systems were often implemented in the same "hands off" way that Medicare dollars are treated, with individual teaching hospitals in the state still driving decisions about how new dollars are allocated by specialty and geography. In all states interviewed, efforts to track the accountability for spending of public GME dollars are minimal or are in the developmental stage. In a few states, interviewees reported that efforts to boost financial accountability have been met with active resistance from teaching hospitals.

The interviews, taken as a whole, paint a picture of states having much to risk and much to gain, and often missing out on important opportunities to reform GME. While state policymakers control a much smaller GME purse than that of Medicare, there are opportunities for states to take action on the margin. While the scope of these changes may be small, relative to the programs funded by Medicare, they have the potential to make meaningful differences that would allow states to reform GME programs and to more effectively shape a physician workforce responsive to population health needs. The following recommendations provide a set of action items for states wishing to reform GME decision-making and funding.

Recommendation 1: States should develop ongoing physician workforce data collection systems that allow policy makers to continuously identify the changing workforce needs of the state.

The Council On Graduate Medical Education (COGME) released a report in August 2013 that included national level GME recommendations.[40] That report recommended increasing funding to programs in priority specialties (family medicine, geriatrics, general internal medicine, general surgery, pediatric subspecialties, and psychiatry) and in regions with fewer physicians per capita. This recommendation runs parallel to that of Massachusetts' Special Commission on Graduate Medical Education, which prioritizes training in primary care, psychiatry, and general surgery,

and locating programs in geographic areas with physician shortages.[27] While both reports have identified specialties and geographies in chronic shortage in many states, given the rapid pace of health system change and the need for states to respond to the health care needs of a changing population, states would be better off developing workforce data systems that allow them to continuously monitor and update specialties, geographic areas and populations in shortage rather than developing a fixed and persisting list. The Michigan case where the pediatric population is shrinking while the geriatric population grows and the Utah case of changing demand for anesthesiologists both point to the need for a dynamic system that keep pace with shifting workforce, health system, and population needs.

Each state (or multi-state region) should obtain current and renewable data on their healthcare workforce to identify specialty and geographic shortages and to guide decisions about how to prioritize GME funding. State policymakers need to create capacity for physician workforce data collection in order for stakeholders to have the ability to make evidence-based decisions. The National Center for Health Workforce Analysis is working on this effort via the minimum dataset initiative and provides guidance to states in the process of creating workforce data systems. States that have successfully implemented health workforce data systems can serve as a resource for states that are just beginning this process.

Recommendation 2: States should create a GME advisory entity that promotes discussion, coordination and education about Graduate Medical Education.

States and/or regions should create a GME board to provide all GME stakeholders in the state with a forum for discussion, education and decision-making. Undergraduate medical education in states tends to be overseen by academic centers, such as the Texas Higher Education Coordinating Board, the University of North Carolina Board of Governors, and the University of Georgia Board of Regents. However, teaching hospitals lead GME decision-making and there are few groups that seek to unify GME training decisions at a state level.

A GME Board can provide a forum for discussing physician shortages by specialty and geography, and allow teaching institutions to share information about GME programs in the state. Board membership could include teaching hospitals, medical schools, AHECs, health insurers including Medicaid, and other GME stakeholders. A GME Board could, at a minimum, be a forum for dialogue about physician workforce needs and residency expansion plans, but this role could be expanded into a policy making body that makes state level decisions about GME program expansion. The Board could also play a role in educating state legislators about undergraduate and graduate medical education, a role that is critical to orienting new legislators to the role that GME plays in ensuring a good return on investment for investments made in undergraduate medical education.

Georgia's efforts to develop a coordinating body and incentivize the development of GME programs in needed specialties and geographies represent an innovative approach that should be monitored. Teaching hospitals and other training institutions, particularly smaller (often competing) institutions, may wish to seek out opportunities for collaboration much like the Southwest Georgia Medical Education and Research Consortium. A consortium allows hospitals to build a critical mass of resources, staff, faculty, and patient volume that may allow for the creation of primary care or general surgery residencies.

Massachusetts's recent attempts to reform GME, including the creation of a Special Commission on Graduate Medical Education to study the impact of GME on the state's health workforce and identify alternative funding streams to support GME,

also bears monitoring. Other states may benefit from observing the success and obstacles facing Massachusetts as it implements the Commission's key recommendations, including increased data collection and workforce monitoring; the creation of a GME advisory board to coordinate GME funding and workforce retention; tying new and existing GME funds to performance benchmarks; and increased training in community health centers.

Recommendation 3. All payer, third-party payer, Medicaid and state appropriations for GME need to be carefully considered and designed to be responsive to the state's population health needs.

The cost of residency training remains the most significant obstacle to expanding GME. All-payer systems are increasingly seen as an appealing alternative source of GME funding, particularly as concerns have increased about the long-term sustainability of federal GME dollars. As state GME stakeholders begin to investigate and debate the all payer funding model, they should look to the Maryland case study which shows that unless all payer funding is tied directly to population health needs, it will do little to address concerns about the distribution of GME positions by specialty and geography.

Another obstacle, noted by multiple interviewees in the study, is that third-party payers are not likely to contribute funding to GME unless they can be convinced of the value proposition in supporting GME training in the state. State GME stakeholders need to investigate what it would take to convince third party payers contribute to GME. Our data indicated that insurers were resistant to contributing to GME funding, except in the case of Kaiser Permanente, which is a closed system with unique staffing and training structures. Insurers may wish to have a say in which specialties are trained, or in quality improvement in residency training. Engaging third party payers in discussions about medical education will enable GME stakeholders to determine where insurers' interests lie and what would be needed to elicit their support and financial investment in GME training.

Medicaid is one of the main policy levers state policymakers can use to shape healthcare delivery at the state level. With Medicaid expansions underway in many states, state policymakers are considering how they might more effectively utilize Medicaid funding for GME expansion. This study revealed that while 42 states and the District of Columbia provide about $3.9 billion in annual support for GME, this support did not provide leverage for increased targeting of GME funding toward needed specialties and geographies. Most states in our study reported that Medicaid dollars are treated in the same way as Medicare dollars, with individual training institutions making decisions how about to allocate the dollars among specialties.

Massachusetts provides an important case study of the difficulty of increasing the accountability of Medicaid dollars for funding GME expansion in needed specialties. Their efforts in 2007 to increase DGME rates for primary care and psychiatry and decrease DGME for specialty care met with objections from teaching hospitals that resisted developing plans to show how funds were directed toward needed specialties.

State GME stakeholders attempting to leverage state appropriations (other than through Medicaid dollars) to fund GME expansion need to recognize that state-appropriated funds are subject to quick re-allocation due to the political climate and priorities of the state legislature. The New York case study showed that pooled funds, once earmarked for GME, can be swiftly shifted to other, more highly prioritized health system needs. If GME policymakers pursue state appropriations, they need to create sustainable funding streams and structures for allocating funds among competing GME training institutions.

Recommendation 4: New GME funding should be tied to performance metrics and require monitoring about how funds are spent.

Significant advances have made at the national level to develop accountability metrics for measuring the outcomes of public investments in GME.[6] State policymakers may want to adopt these measures, as well as develop outcome measures of their own, to ensure that spending of public GME funds is transparent and requires reporting on key metrics that track trainees 5 and 10 years out to monitor instate retention, specialty choice, and practice in underserved areas. Initially, these requirements may need to be implemented only for new funding sources. A few interviewees in our study indicated that training institutions actively resisted monitoring and evaluation of public GME funds, but the HRSA THC funding program provides an example of successful implementation of metrics tied to GME funds for a new funding source.

Recommendation 5: State policymakers should coordinate efforts that touch on the physician's entire career from medical school admissions through graduate medical education and into practice.

State policymakers and GME stakeholders should reframe GME not as a stand-alone intervention to influence the specialty choice and geographic distribution of the physician workforce, but as a continuum of transitions linked across a physician's career. Our interviewees noted that state legislators tended to be more supportive of the creation of new medical schools than expansions in GME training. However, physicians who complete both UME and GME in the same state are more likely to practice in that state than are physicians who only complete one or the other in the state. For the highest return on investment, state policymakers should consider the physician pipeline beginning with admissions to medical school, and continuing through GME training, and out into practice.

Once in practice, physicians in needed specialties and underserved geographies should be eligible for loan repayment programs. Loan repayment programs should not be limited to a fixed set of specialties but instead linked to the specialties and geographies identified as in shortage using the data monitoring system outlined in Recommendation 1.

Thirteen states in our study had physician loan repayment programs in place to provide an incentive for physicians to practice in underserved or rural areas, prioritizing needed specialties. All these loan repayment programs are open to primary care providers. General surgeons are not eligible for national loan repayment from the National Health Service Corps and are only eligible for state loan repayment in four states in our sample: Georgia, Idaho, Montana, and Texas. States where such programs currently exist should be evaluated to provide models for how the National Health Service Corps might be expanded to include general surgeons.

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Appendix 1: State Selection Criteria

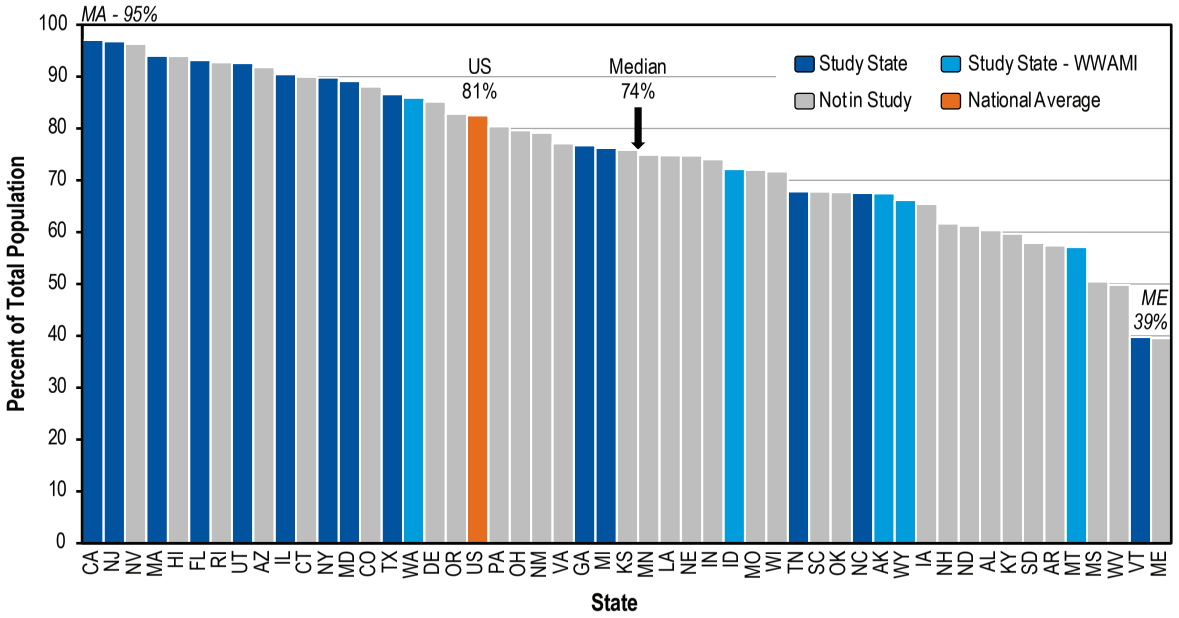
Analyses of population, workforce statistics and residency training data from all 50 states were conducted to ensure a diverse representation of states (Table A-1). To verify that our state sample reflected national norms and diversity, we used box and whisker plots to compare selected states to both the national average and to states not included in the sample on key indicators of population, physician supply and training.

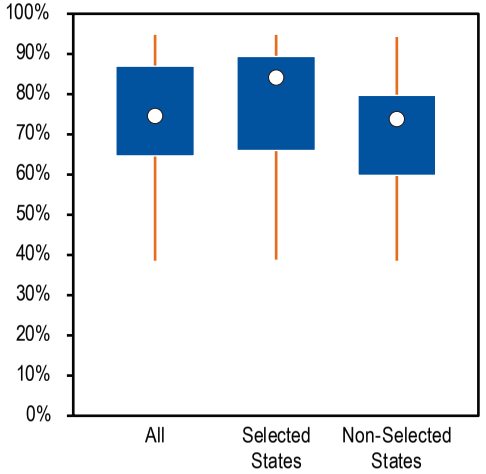
Table A-1: State characteristics

Statistic	Source
Percent population living in an urban area	U.S. Census 2010
Ratio of total number of physicians to 100,000 population	AAMC 2011 State Physician Workforce Data Book
GME residents to 100,000 population	AAMC 2011 State Physician Workforce Data Book
Percent IMG of total active residents and fellows in state on Dec 31 2010	AAMC 2011 State Physician Workforce Data Book
Percent active physicians who completed GME in state	AAMC 2011 State Physician Workforce Data Book
Percent of nonelderly population who were uninsured during 2009-2010	Kaiser Family Foundation
Percent of 2011 GME graduates likely to be generalists	AMA Graduate Medical Education Database[1]

[1] Using data from the AMA's GME database,[41] we estimated the percentage of resident physicians from each state who are likely to become generalists in five specialties: internal medicine, pediatrics, family medicine, surgery, and psychiatry. This "generalist ratio" equals the number of graduates from these five core programs, minus the number of graduates from sub-specialty fellowships in these specialties, divided by the total number of graduates of all residency programs in each state for the year 2011. Transitional year resident graduates and preliminary year resident graduates were excluded from this calculation. Since the numbers of graduates in both core and sub-specialty programs in these five specialties change little from year-to-year, this is an accurate estimate and corresponds closely to similar calculations in other reports.[17]

Figure A-1: Percent population living in an urban area, 2010

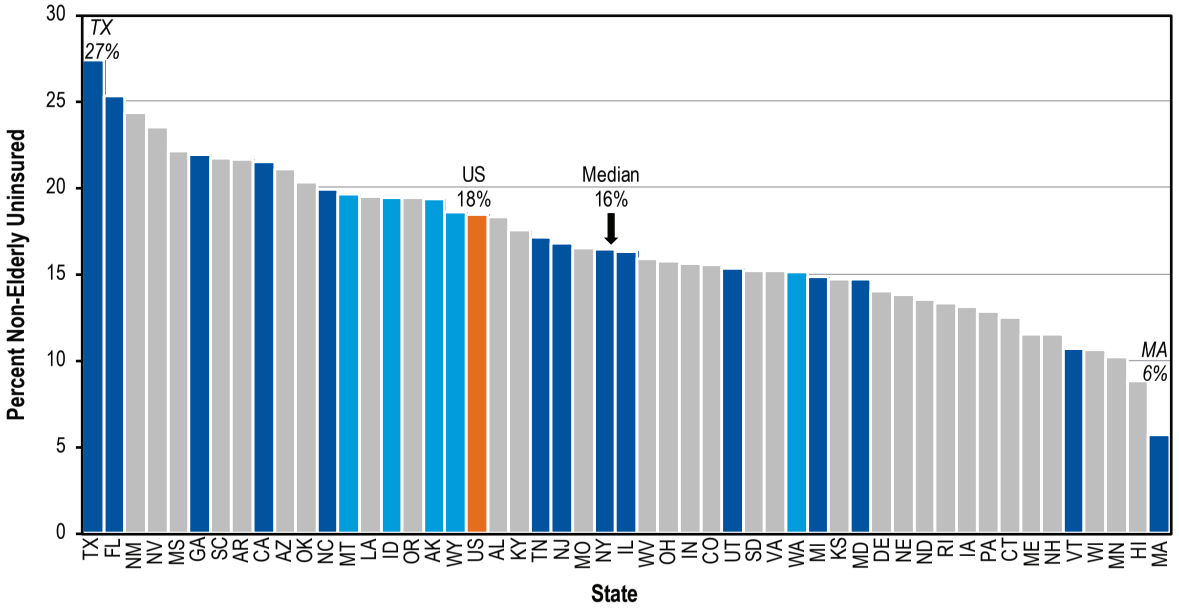


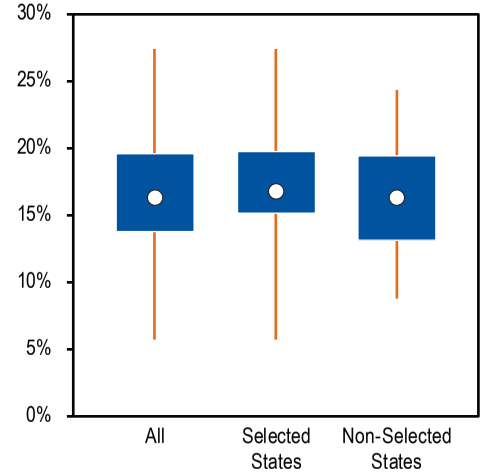


Values	All	Selected States	Non-Selected States
Upper Extreme	95%	95%	94%
Upper Quartile	87%	90%	80%
Median	74%	84%	73%
Lower Quartile	65%	66%	60%
Lower Extreme	39%	39%	39%

Source: U.S. Census Bureau Urban and Rural Classification. 2012. http://www.census.gov/geo/www/ua/2010urbanruralclass.html#percent. Accessed 16 July 2012.

Figure A-2: Percent non-elderly population who are uninsured, 2010

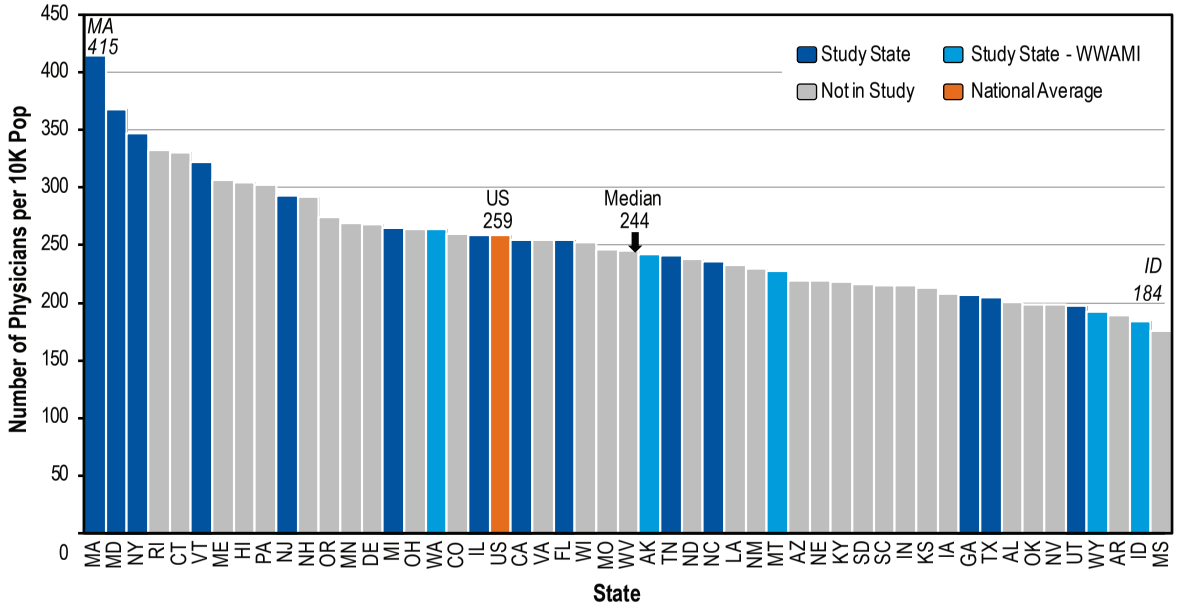


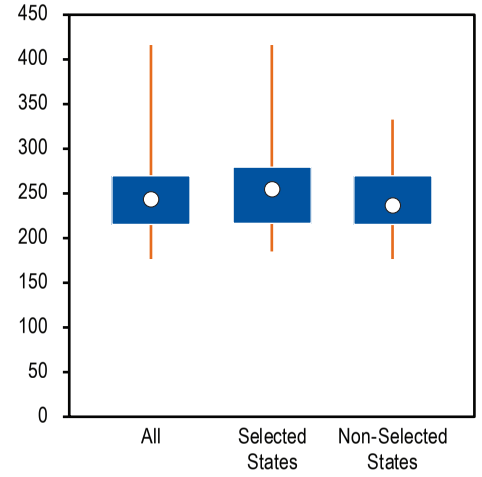


Values	All	Selected States	Non-Selected States
Upper Extreme	27%	27%	24%
Upper Quartile	20%	20%	19%
Median	16%	17%	16%
Lower Quartile	14%	15%	13%
Lower Extreme	6%	6%	9%

Source: Kaiser Commission on Medicaid and the Uninsured. The Uninsured: A Primer: Supplemental Data Tablse. 2011. http://www.kff.org/uninsured/upload/7451-07-Data-Tables.pdf Accessed 16 July 2012.

Figure A-3: Total physicians per 100,000 population, 2010

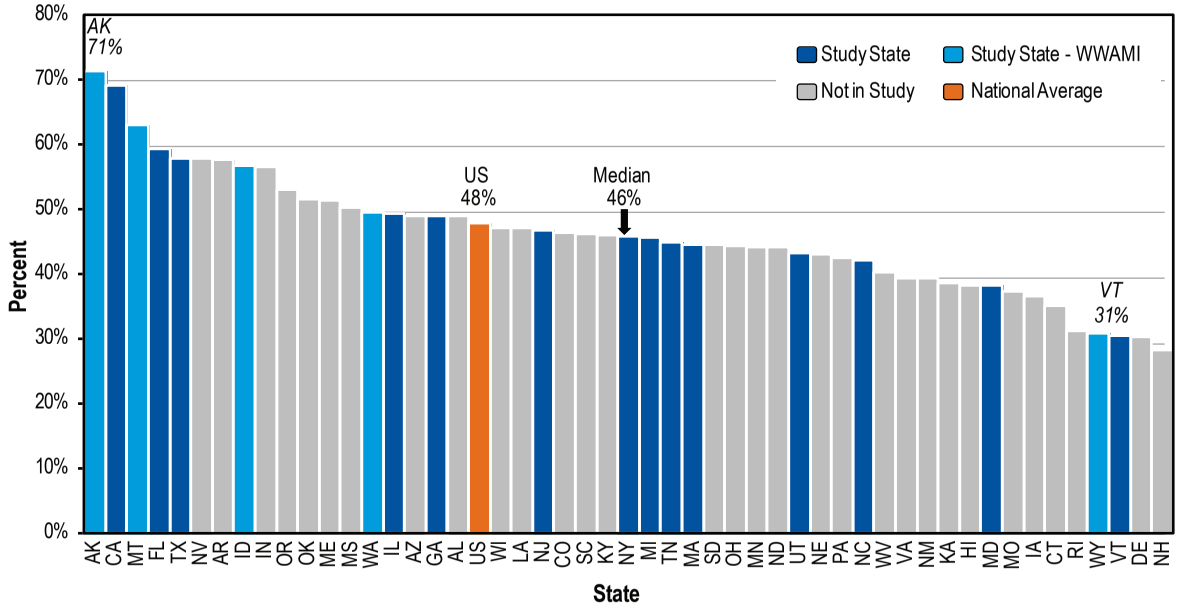


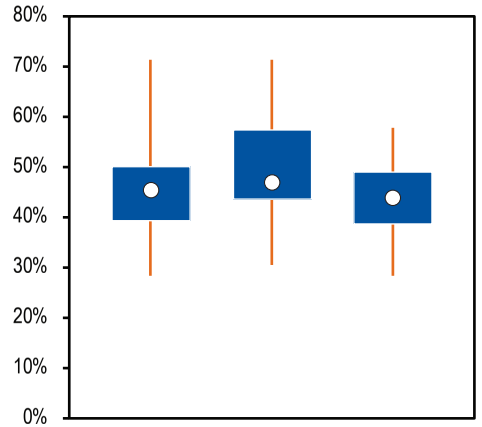


Values	All	Selected States	Non-Selected States
Upper Extreme	415	415	333
Upper Quartile	269	279	269
Median	244	255	238
Lower Quartile	216	217	216
Lower Extreme	176	184	176

Source: AAMC Center for Workforce Studies State Physician Workforce Data Book. 2011.

Figure A-4: Percent active physicians who completed GME in-state, 2010

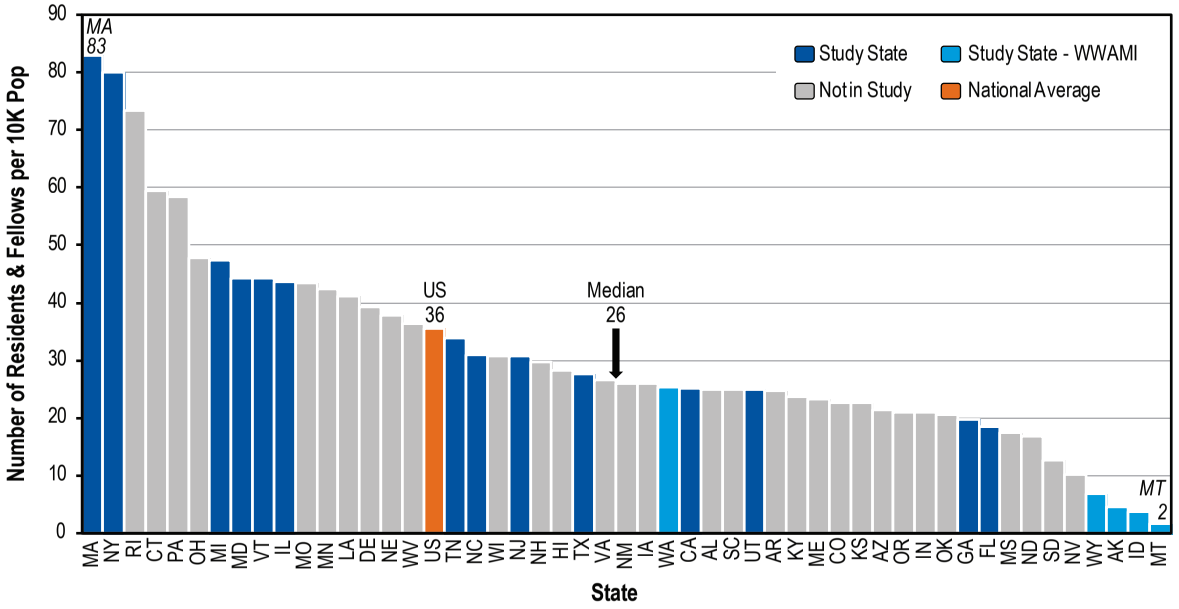


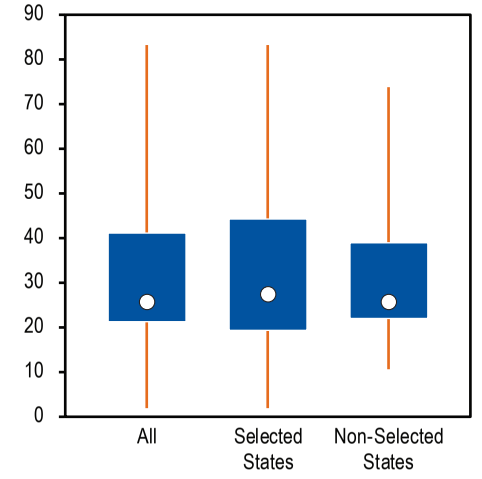


Values	All	Selected States	Non-Selected States
Upper Extreme	71%	71%	58%
Upper Quartile	50%	27%	49%
Median	46%	47%	44%
Lower Quartile	40%	44%	39%
Lower Extreme	28%	31%	28%

Source: AAMC Center for Workforce Studies State Physician Workforce Data Book. 2011.

Figure A-5: Total residents and fellows per 100,000 population, 2010

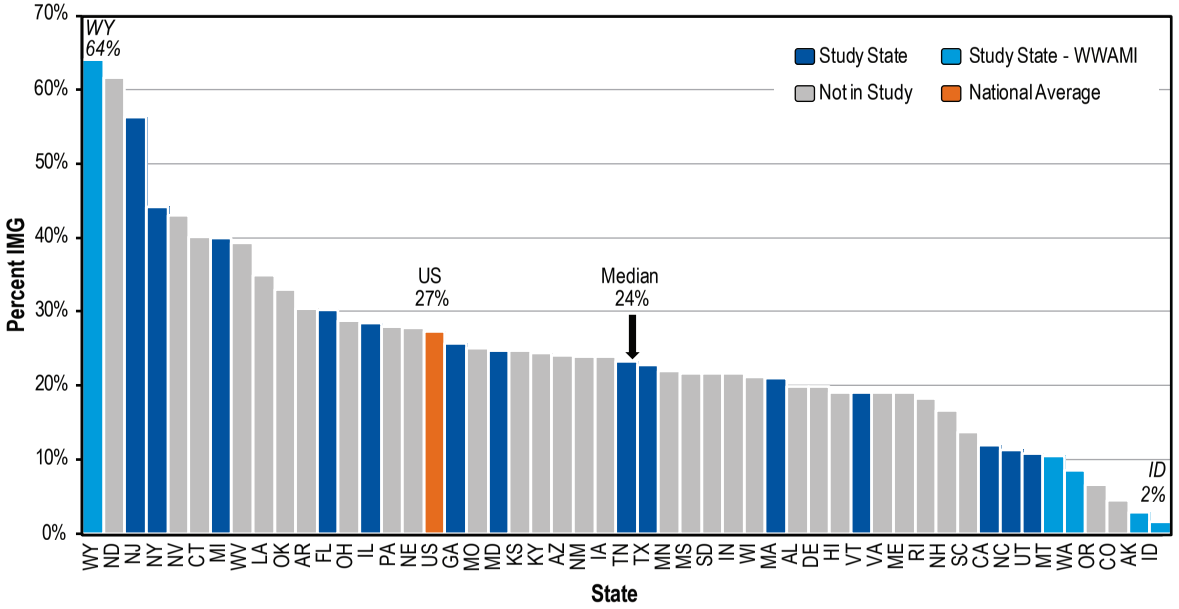


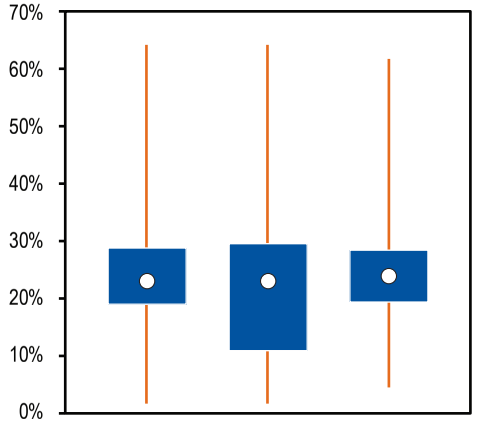


Values	All	Selected States	Non-Selected States
Upper Extreme	83	83	74
Upper Quartile	41	44	39
Median	26	28	26
Lower Quartile	21	19	22
Lower Extreme	2	2	11

Source: AAMC Center for Workforce Studies State Physician Workforce Data Book. 2011.

Figure A-6: Percent IMG of residents and fellows in the state, 2010

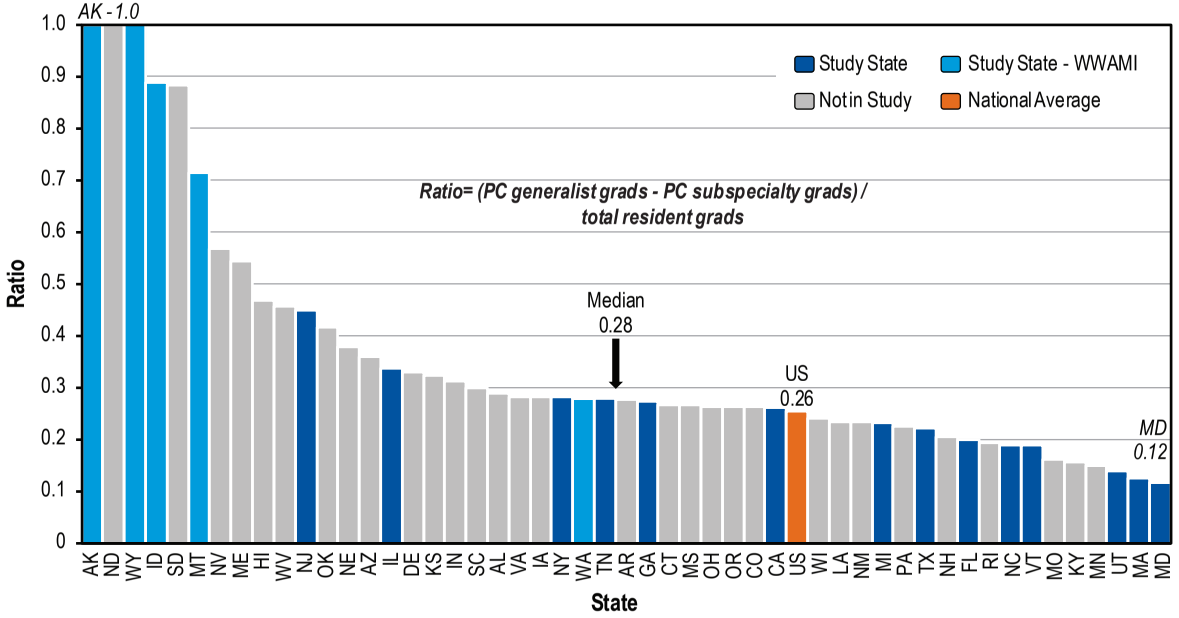


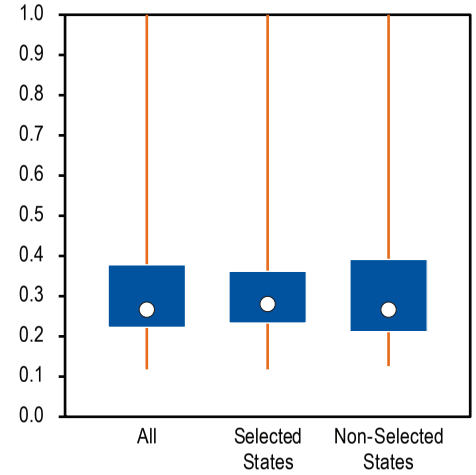


Values	All	Selected States	Non-Selected States
Upper Extreme	64%	64%	62%
Upper Quartile	29%	29%	28%
Median	23%	23%	24%
Lower Quartile	19%	11%	20%
Lower Extreme	2%	2%	4%

Source: AAMC Center for Workforce Studies State Physician Workforce Data Book. 2011.

Figure A-7: Percent of 2011 GME graduates likely to be generalists





Values	All	Selected States	Non-Selected States
Upper Extreme	83	83	74
Upper Quartile	41	44	39
Median	26	28	26
Lower Quartile	21	19	22
Lower Extreme	2	2	11

Source: American Medical Association 2011 Graduate Medical Education database (collected via GME Track), Sarah Brotherton, personal communication 27 September 2012.
Note: This calculation subtracted the number of graduates completing subspecialty training from the number of core specialty GME programs in internal medicine, pediatrics, family medicine, surgery, and psychiatry, and divided by the total number of graduates of all residency programs in each state. See Appendix 1 for the detailed methodology.

Appendix 2:
Structured Interview Guide

USE OF HEALTH WORKFORCE DATA TO DETERMINE RESIDENCY TRAINING NEEDS

1. Is your state concerned about a shortage of physicians or other healthcare providers?
    a. If yes, which ones?
    b. If yes, what strategies have been put in place to address these concerns?
    c. Have there been any formal studies of health workforce needs? If so, is it possible to get a copy of those reports?
2. Do you think the current system adequately supports the number of residency positions needed to meet future workforce demand in your state?
3. Do you think the current residency training system encourages an appropriate distribution of physicians by specialty and geography? If not, what are your specific concerns?
4. Do you think your state faces issues in the supply, distribution, specialty mix of surgeons? If yes, what are your concerns?
5. Does your state use health workforce data to inform decisions regarding undergraduate and graduate medical education?
    a. If yes, what data sources are used?
    b. Who collects and maintains the data?
    c. Are data collected as part of statewide workforce planning efforts?
6. What methods does your state use to analyze these data to determine which specialties, geographies or populations are facing shortfalls (Ask about benchmarking to national ratios, using measures of underservice, benchmarking to longitudinal trends, interviews, anecdotal evidence, stakeholder input, other)
7. Please describe specific findings from any analyses that were used to make decisions about GME in your state.
    a. What information was used?
    b. How was it used?
    c. Who used the information to make a decision?
    d. Were particular specialties, geographies or institutions recommended for expansion?
    e. What other types of data or information did you wish were available?

GME STAKEHOLDERS & DECISION-MAKERS

1. In the past 5 years, has your state undergone an expansion of medical school graduates (MDs and/or DOs)?
    a. If yes, was expansion via new schools? How many new students per year?
    b. If yes, was expansion via increased enrollment? How many new students per year?
2. Has your state expanded residency training in the past 5 years? Why or why not? Please respond for both MD/ACGME and DO/AOA programs.
    a. If yes, how many slots in which specialties?
    b. If yes, what factors were taken into account in the decision to expand residencies? How were the additional programs funded?
    c. If not, did residency programs reduce in size? Why? How many slots in which specialties?
3. What are the limitations to expanding residency training? (e.g. money, clinical volume, available faculty, accreditations standards)?
4. Who currently makes decisions about the specialties and programs in which to locate new residency slots?

What institutions do they represent? (Ask about academic health centers, hospitals, payers, private and public sector interests, representatives from medical specialties, other.)

   a. Are decisions planned/coordinated across the state?
   b. Have any residency slots been redistributed in the state in the last 5 years? How were those decisions made?

5. Does your state have a governance structure that allocates GME positions and/or funds (such as a "GME governance board")?
   a. If yes, how was this governance structure created?
      i. Is it legislated?
      ii. What stakeholders are represented?
      iii. How are members/representatives selected?
      iv. What types of decisions does the governance structure make?
      v. How is the governance structure funded? (e.g. state appropriations, federal funds, third party funds)
   b. If no, have there been attempts to create a formal governance structure? If yes, why were these efforts unsuccessful? If not, why not?
6. What other strategies has your state taken to address health workforce shortfalls (e.g. use of loan repayments to increase recruitment or retention, increased use of NPs/PAs, incentive programs to practice in state, etc.)? Which professions do you include in loan repayment? Do you include surgeons?
   a. In terms of priorities, how important is the expansion of residency slots relative to these other initiatives?

FINANCING MECHANISMS

1. Does Medicaid pay for GME in your state?
2. Are you aware of any additional sources of GME funding in your state?
   a. Federal? Ask about Veteran's Administration, DOD, HRSA? If HRSA, what programs?
   b. Industry? Ask about fellowships funded by drug and/or device companies
   c. Foreign Governments? For example, Saudi Arabia is buying fellowship slots from Ochsner in New Orleans, LA.
3. How have new residency slots been funded? (Ask about hospital revenue, Medicare, other Federal sources, Medicaid, state appropriations, etc.)
4. Does your state have an all-payer system?
   a. If yes, please describe how the system works and how each payer contributes.
   b. If no, why not? Is it something you have considered? Why or why not?
5. Do any third party payers contribute to GME?
6. If so, please describe the circumstances that led to third party contributions and how these contributions are made.

ACCOUNTABILITY

1. How does your state measure the success of its medical training pipeline?
2. Does your state have any mechanisms to track spending of public GME funds?
3. Is there public reporting of how GME dollars are spent by institution and by numbers of residents in which specialties?
4. Are GME expenditures tied explicitly to State health workforce needs? If yes, how does this process work? If no, why not?
5. Does your state track any measures of social accountability for GME programs? (e.g. in-state retention of graduates, retention of generalists, service in MUAs/HPSAs, etc.)

Authors

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The Program on Health Workforce Research and Policy

The Program on Health Workforce Research and Policy, led by Erin Fraher, is committed to advancing the science of health workforce research and the application of research to policy affecting health care professionals and the patients they serve. The Program provides an organizational umbrella for a variety of research projects on all types of health care providers, and has three main foci: research, policy analysis and service.

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The Sheps Center is one of the oldest and largest health services research centers in the country. The mission of the Center is to improve the health of individuals, families, and populations by understanding the problems, issues, and alternatives in the design and delivery of health care services. This mission is accomplished through an interdisciplinary program of research, consultation, technical assistance, and training that focuses on timely and policy-relevant questions concerning the accessibility, adequacy, organization, cost, and effectiveness of health care services and the dissemination of this information to policymakers and the general public.

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