Cost/Benefit and Economic Impact Analysis of Medical Education Expansion Options/Needs in Eastern Washington

Independent Assessment and Recommended Approach

October 31, 2014
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Introduction
Tripp Umbach was invited by the University of Washington (UW) to conduct a comprehensive, independent analysis of the costs and economic benefits of medical education expansion options in Eastern Washington. Tripp Umbach has completed multiple studies for both the University of Washington and Washington State University (WSU) over the past 20 years, as well as biomedical economic development plans for economic development organizations in Eastern Washington. This study focuses on the evaluation of expansion options:

1. An independent four-year allopathic medical school developed by WSU on its Riverpoint Campus in Spokane, Washington; or
2. An expansion of the UW WWAMI medical education program in Spokane, Washington as currently planned and referred to in this report as UW School of Medicine in Spokane; or
3. Development of a four-year allopathic medical school and expansion of UW class size to 80 or more students through UW School of Medicine in Spokane.

Tripp Umbach was retained by UW to develop a third-party analysis showing the costs, risks, and economic/social benefits of these three options. Tripp Umbach’s independent analysis also recommends the ideal medical education expansion solution for Eastern Washington, including recommendations about the establishment and expansion of clinical clerkships, biomedical research, and commercial spinoff activity as well as the expansion of Graduate Medical Education. Tripp Umbach also details the economic and societal impacts related to expanding physician workforce, and related health care industry expansion. This study is intended to allow leaders at UW, WSU, as well as multiple health care, education, and economic development partners regionally and statewide, to understand impacts and implications associated with a new independent medical school started by WSU compared with UW School of Medicine’s current commitment for expansion of medical education.

WWAMI Program Background
The WWAMI program was initiated in 1971 as an effort to address the maldistribution and shortage of physicians in the Northwest region, provide a broader range of educational opportunities for students, and address the need for primary care physicians oriented toward

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1Tripp Umbach is the leading provider of customized consulting reports and strategies for universities, hospitals, academic medical centers, and corporations throughout the United States and internationally, having completed more than 2,000 studies over the past 25 years. Tripp Umbach’s clients include 50 of the top 100 hospitals listed in the 2013 U.S. News & World Report listing of best hospitals, 50 of the 108 research universities in the Carnegie Classification (very high), and 75 medical schools in the United States, Canada, England, and Australia. Tripp Umbach’s corporate clients include GE, Blue Cross and Blue Shield, and Ford Motor Company. Tripp Umbach has completed studies in every state and more than 300 markets.

2This planned expansion of Spokane WWAMI classes could be with a partnership of WSU, with a new or additional partner, or through UW expanding the program alone.
rural practice in a cost-effective, efficient model\(^3\). It is a fully accredited program of the University of Washington School of Medicine. The WWAMI program is named for the five states (Washington, Wyoming, Alaska, Montana, and Idaho) that share resources and responsibilities in the regional educational program. Funds appropriated to the WWAMI program by each state’s legislatures ensure that each state will have a dedicated number of positions for their students in the entering medical class each year.

The University of Washington School of Medicine (UWSOM) is nationally recognized for this regional, community-based training program (WWAMI)\(^4\). In addition to providing regional, community-based clinical learning opportunities, the WWAMI program allows students to complete the first year of their medical education in small learning groups in their home state, which many students prefer. A variety of specialty programs are available throughout the five-state region that not only provide an enhanced educational experience for medical students, but also supports efforts to attract students to practice in rural and underserved communities. These include:

- **WWAMI Rural Integrated Training Experience (WRITE):** A six-month experience in a rural setting in which students complete clinical training working closely with community preceptors (clinical instructors).
- **Rural/Underserved Opportunities Program (R/UOP):** Four-week preceptorships (mentorships) available with practicing physicians in rural and urban underserved communities held over the summer between a student’s first and second year.
- **Targeted Rural Underserved Track (TRUST):** Longitudinal experience with a single rural community over a student’s entire medical school career, including completing both WRITE and R/UOP and returning regularly to learn about and work in the community.

Until last year, all students completed their second year of medical studies at the UW’s campus in Seattle. In 2013, WWAMI offered a pilot program,\(^5\) in which up to 20 students had the option to stay and complete their second year in Spokane. The students worked in small groups

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\(^3\) [http://www.washington.edu/students/gencat/academic/school_medicine.html](http://www.washington.edu/students/gencat/academic/school_medicine.html)


\(^5\) This refers to the commitment of the WWAMI program to keep the Spokane students on the Spokane Campus for both the first and second years. This trial only occurred at the Spokane campus.
with faculty guides – generalist physicians from the community — who worked with them throughout the year. The courses taught in Spokane were developed using the UWSOM’s second-year curriculum taught in Seattle, but adapted and improved to emphasize active, case-based learning.

At the conclusion of the second year, students enter the portion of the curriculum that is predominantly clinical through completing required and elective clerkships\(^6\). As part of clinical training, students complete clerkships at UWSOM, at its affiliated hospitals and clinics, and at community sites located throughout the five-state region\(^7\). During third- and fourth-year clerkships, UWSOM full-time and clinical faculty members provide supervised clinical training for the students.

UW School of Medicine is currently in the process of a major curriculum renewal for the entire WWAMI region\(^8\). When the curriculum renewal process is complete, the first two years of medical education will be folded into an 18-month curriculum that will occur in the student’s home state. The new curriculum will emphasize the active, case-based learning approach originally piloted in Spokane, and also allow students to gain access to the clinical environment earlier in the education process. The new curriculum is slated to go into effect in summer 2015, effectively ending the Spokane second-year “pilot”, and making all four years of medical education in Spokane permanent. The change of location and duration of the initial classroom portion of the education component are not the only changes proposed to the WWAMI program. In addition, the numbers of students in many of the states are expected to grow, particularly in Washington.

In April of 2014, WSU school officials announced the desire to open the state’s second public allopathic medical school. This action has resulted in the mutual dissolution of the partnership between WSU and UW for the Spokane WWAMI program. This report, therefore, intends to provide independent, third-party recommendations to best fulfill the medical education expansion needs in Eastern Washington for the State of Washington.

**Consultant Conclusions**

The Tripp Umbach research team completed 14 weeks of research and analysis of each of the programs, as well as the broader community and statewide needs. The team also met with business leaders in the Spokane community to gather impressions and information on the

\(^6\) Clerkships refer to the clinical work typically done within the third and fourth years of medical school in the clinical settings.


\(^8\) [http://www.uwmedicine.org/education/md-program/curriculum-renewal](http://www.uwmedicine.org/education/md-program/curriculum-renewal)
community needs in the area\. The conclusions below represent the summary of discoveries which were a part of this research. The data that informed these consultant conclusions can be found in Appendices A and B.

1. **UW School of Medicine in Spokane provides the most cost-effective way for Washington State to provide medical education in order to grow the state’s physician workforce.**

   The cost effectiveness of the WWAMI program has been a distinct advantage for more than 40 years for students in the WWAMI region wishing to pursue an M.D. degree. Benefits include:

   - Relatively low tuition;
   - A cost-effective way for rural states to train and retain the highest quality physicians;
   - Diverse, community-based clinical training environments;
   - A reputation for student preparedness among residency programs; and
   - A focus on feedback to make continual improvements.\(^1\)

   Tripp Umbach’s research indicates that newly accredited allopathic medical schools with 100 students per class range in their cost of education per student from $81,250 per student ($26 million operating budget) to $130,000 per student ($41.6 million annual operating budget). Since the proposed medical school at Washington State University in Spokane is quoted at $98,000 per student\(^1\), Tripp Umbach believes that the UW School of Medicine in Spokane at a cost of approximately $70,000 per student\(^2\) provides the most cost-effective option for the State of Washington. Tripp Umbach believes that developing a new independent medical school is currently the most expensive option to grow the state’s physician workforce.

2. **Eastern Washington cannot currently support two medical schools due to limited clinical training sites and limited residency training sites.**

   Tripp Umbach concludes that the scenario of having both the WWAMI and a new allopathic medical school operate separate medical education programs with 80 or more students each in Eastern Washington is not currently feasible. Interviews conducted by Tripp Umbach

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\(^9\) Meetings were conducted with various relevant members of the business community in Spokane such as individuals from Greater Spokane Incorporated (GSI), WSU, Empire Health Foundation, Avista, and Kiemle & Hagood.

\(^10\) [https://www.aamc.org/newsroom/reporter/feb2012/273818/wwami.html](https://www.aamc.org/newsroom/reporter/feb2012/273818/wwami.html)

\(^11\) Washington State University Medical School Feasibility Study, MGT, September 11, 2014 currently the estimated cost of the medical school in the feasibility study is quoted at $98,000 per student.

\(^12\) [http://opb.washington.edu/sites/default/files/opb/Budget/2015-17_State_Operating_Submittal.pdf](http://opb.washington.edu/sites/default/files/opb/Budget/2015-17_State_Operating_Submittal.pdf)
with health care leaders in Spokane\textsuperscript{13} indicate that providing training sites for 160 third- and 160 fourth-year students from two competing medical schools is not currently possible from health care clinical capacity, quality education, and coordination perspectives. Additionally, once the physicians graduate, the availability of residency slots will cause additional hurdles for the programs not only in Eastern Washington, but also throughout the state of Washington. From 2010-2014, the availability of residency slots nationally increased by 79; the current number of empty slots nationally in 2014 was only 20\textsuperscript{14}. Data from AAMC, AACOM, and NRMP \textsuperscript{15} predicts that by 2016, the number of M.D. and D.O. graduates will outnumber the available residency slots available. This does not account for previous-year graduates who were not matched, the United States (U.S.) citizens who attended and graduated from international medical schools, or those international medical school graduates who want to practice in the U.S. Increasing the number of medical school graduates without increasing the availability for them to remain in-state to complete their residency training would be ineffective in addressing the shortage of physicians within the state. This is not just a Washington State issue but also a national issue. When looking at the increasing response from M.D. and D.O. programs to increase class sizes and address the impending physician shortage, these efforts are fruitless if physicians are not able to find availability in ACGME accredited residencies.

Each of these areas of medical education raises specific important questions regarding the feasibility or necessity of developing a new medical school and points to significant challenges for both medical education programs being able to operate in the state of Washington under the current situation with respect to clinical training and availability of residencies.

3. Tripp Umbach concludes that the UW School of Medicine expansion or establishing a standalone medical school has the potential to generate the estimated level of overall economic impact outlined in the GSI/Tripp Umbach Report published in 2010\textsuperscript{16} which covers operational impacts, workforce impacts, and commercialization of research. While national data demonstrates that operational impacts from a standalone medical school typically generate more economic impact than regional program expansion, cited lack of new facilities and the higher operating costs to taxpayers associated with a standalone WSU medical school will negate much of this benefit.

\textsuperscript{13} Tripp Umbach conducted interviews with various relevant members of the business community in Spokane such as individuals from GSI, WSU, Empire Health Foundation, Avista, and Kiemle & Hagood.
\textsuperscript{14} This data is taken from the NRMP reports for 2010 through 2014.
\textsuperscript{15} Association of American Medical Colleges, “Graduate Medical Education and the Physician Workforce.”
\textsuperscript{16} \url{http://www.greaterspokane.org/images/stories/PDFs/live-work-visit/medical-school-economic-impact-report.pdf}
Tripp Umbach envisioned expansion and growth in Spokane in the 2010 study conducted in collaboration with GSI. This expansion and growth was envisioned in this report in three individual areas:

- **Academic** growth, which would occur with the expansion of the Health Science Programs in the Spokane area;
- **Health Care Workforce** growth, which is the impact of the doctors and health care professionals once they graduate and practice and the cost savings associated with high-level and available health care professionals; and **Research and Commercialization** growth or growth of the Bioscience Industry which will occur when research increases in the area, and additional spinoffs.

UW has proven strengths in each of these areas, leading Tripp Umbach to believe that UW is best suited to facilitate this expansion and growth, as well as to fuel the economic impact in the Spokane market.

Tripp Umbach envisions the following impacts:

- An expanded UW School of Medicine program will provide greater physician workforce development impacts as the University of Washington has a greater opportunity than Washington State University to grow graduate medical education programs in Eastern Washington based on capacity and experience;
- Biomedical research impacts of an expanded UW School of Medicine program have the opportunity to be greater if the University of Washington increases basic science and clinical translational research collaborations between Seattle and Spokane; and
- The operational impacts of a new standalone medical school at Washington State University would be higher; however, the cost to taxpayers associated with the new WSU medical school will also be higher, thereby negating much of the economic impacts associated with operating the standalone medical school.

**Key Findings**

1. **Expansion of UW School of Medicine in Spokane, in conjunction with statewide residency expansion, is the most cost-effective and beneficial option for the State of Washington to address the need for more physicians in the state.**

The expansion of the UW School of Medicine in Spokane is the most cost-effective option and can scale up to provide the needed physician workforce for the State. This option also provides economic impact for Spokane and the State at the least cost to Washington taxpayers. The current cost of educating a student through the WWAMI program is roughly $70,000 per year versus the cost predicted by the new medical school budget for WSU at $98,000 per year. The idea that a new successful medical school can be established and
address the physician shortage using only the resources utilized to run the current WWAMI program is not realistic. While some of the current WSU faculty and staff will be available to the new medical school, there are many other positions that will need to be filled in order to grow the program to the level that WSU is looking to achieve. WSU lacks the capacity at this time for a clinical medicine program and this would require significant development time and expense. The need to increase the level of faculty and staff positions necessary to support and operate a new medical school would be increasingly expensive and duplicative of what already exists with a model of shared services in administration as well as staff.

The goal for Washington State needs to be centered on the best way to meet the demand for physicians in the state. The number of medical schools in Washington State is not relevant; what is important is the number of medical students and residency positions available in order to retain physicians. For example, the state of Minnesota, which is similar in population size to the Washington State has only one public medical school. University of Minnesota School of Medicine is a medical school and medical research center, which is connected to the University of Minnesota. In 2013, the entering class had roughly 290 medical students and the program had over 2,000 students and 978 residents\(^\text{17}\). While there is only one public medical school, the state of Minnesota has a cost-effective way to supply physicians to the state – in rural and urban areas alike, ranking 10th in active primary care physicians per 100,000.\(^\text{18}\) Conversely, Florida has many public medical schools; however, they simply do not have the residency slots to support the students that they graduate. Therefore, Florida continues to have a physician shortage issue. Even though the state is investing hundreds of millions in new medical schools, due to lack of residency slots, the state still ranks 42nd with 19 physicians-in-training per 100,000 population, according to the Association of American Medical Colleges.

2. Established medical schools, like UW School of Medicine’s WWAMI, typically have an advantage in educating physicians who remain in the region to practice medicine – especially in primary care specialties.

Established medical schools typically have an advantage in educating physicians who remain in the region to practice medicine – especially in primary care specialties\(^\text{19}\). New medical schools must work harder and invest significant time and effort to develop “pipeline” programs, whereby students from the region who complete middle school, high school, and college matriculate into the new medical school. The key to success in the workforce development arena; however, is ensuring that graduates can enter into available graduate

\(^{17}\) http://www.med.umn.edu/about-us/at-a-glance/index.htm
\(^{18}\) Per the AAMC 2013 State Physician Workforce Data Book Minnesota Ranks 10th in States with Active Physicians per 100,000.
\(^{19}\) http://www.hrsa.gov/advisorycommittees/bhpradvisory/cogme/Reports/eighteenthrpt.pdf
medical education programs in the same community or region. Without available residency positions, new medical schools retain less than one-half of their students, as the propensity to keep a student in the region drops significantly after they leave to complete residency training away from their home medical school.

Historical data from the University of Washington show that physician workforce development is one of the hallmarks of the WWAMI program. The WWAMI program has a student return rate far exceeding the national average; this rate is 54% within the state of Washington alone\(^{20}\). Overall, the WWAMI program has a return on investment for the State of Washington of 63.3% (WWAMI students who, regardless of their state or origin, choose to return to Washington to practice)\(^{21}\).

In addition, more than one-half of WWAMI graduates become primary care physicians – a figure that is well above the nation’s 34% average (approximately).\(^{22}\) The impressive primary care numbers may be the reason why other medical schools have attempted to establish programs similar to WWAMI. Tufts University School of Medicine in Boston partnered with the Maine Medical Center in Portland to offer the “Maine Track,” for applicants interested in rural medicine. In addition, the Western Interstate Commission for Higher Education student-exchange program offers training which is available across 13 different states in osteopathic medicine, pharmacy, and optometry. The University of Washington is recognized as a model program for keeping students engaged in primary care with rates entering primary care of approximately 50%, which is significantly above the national average\(^{23}\). Therefore, Tripp Umbach believes that the WWAMI program would be very successful at producing doctors that remain in the region.

3. **The University of Washington has the most experience and capacity to grow graduate medical education programs in Spokane and Eastern Washington.**

An impressive, organized, grassroots effort is underway in Spokane to develop more than 100 new residency positions. With leadership provided by the Empire Health Foundation, Providence Health System, Washington State University, and a federally qualified health center (Teaching Health Center), federal funds have been pledged to begin planning for several new residency programs. Adding sizable increases in residency training to the current residency positions in Eastern Washington represents a key move forward in

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\(^{20}\) 2013-14 WWAMI “Washington State Report” pg. 5
\(^{21}\) 2013-14 WWAMI “Washington State Report” pg. 5
\(^{22}\) Quote from Suzanne Allen from AAMC interview. https://www.aamc.org/newsroom/reporter/feb2012/273818/wwami.html
\(^{23}\) 39% of US senior Allopathic medical students indicate that they are pursuing primary care specialties according to the 2014 Residency Matching Program.
ensuring that Washington medical students will be able to complete all of their training in the region.

The University of Washington, while currently not significantly involved in Spokane Teaching Health Center efforts to expand GME, is active in growing GME in Eastern Washington and throughout the state. In other Eastern Washington locations, Kadlec Medical Center in the Tri-Cities has received approval for a family medicine residency program in the Family Medicine Residency Network, and Wenatchee is working on development of a family medicine residency program in the Family Medicine Residency Network. Family Medicine Spokane residency program is part of the UW Family Medicine Residency Network and UW has been active in establishing the psychiatry residency in Spokane. Finally, the Providence Internal Medicine Spokane Residency program is affiliated with the UW School of Medicine. Additionally, UW has an active effort underway at the federal level to develop a GME “demonstration project” that would funnel considerably more resources to GME programs in Spokane and Eastern Washington. This could have significant impact on the residency availability issues currently seen within Eastern Washington. UW also has the experience and capacity to develop “regional tracks” for multiple University of Washington-sponsored residencies. Currently, UW is one of the most resident-rich medical schools in the U.S. with sponsorship of 96 ACGME-accredited residency and clinical fellowship programs. Based on Tripp Umbach’s national per capita residency population analysis, more than 650 additional residency positions are needed to meet the physician workforce needs of the State of Washington. Tripp Umbach believes that the University of Washington is in the best position to fulfill these needs.

4. Biomedical research impacts have the opportunity to be greatest through increased collaboration between UW, WSU, and other university partners.

The University of Washington is a clear research leader and has a proven track-record in securing funds at the top level from NIH, NSF, and other research-granting organizations, which generate a significant research impact for the state with fresh dollars entering into the economy that is above all other public universities. The existing Riverpoint Campus and its multiple partnerships with regional health care organizations, private businesses, and economic development organizations, such as GSI, is already an important springboard for future economic development in Eastern Washington and within a multi-state region. Academically, there is already active engagement by the University of Washington, Washington State University, Eastern Washington University, and

24 The Economic and Societal Impact of the University of Washington, Tripp Umbach, July 2010
25 Tripp Umbach’s economic impact analysis indicates that by 2030, the total economic impact of the project on adjacent counties in Northern Idaho will equal approximately $300 million.
other partner organizations in Spokane to attract research grants on the Riverpoint Campus. These partnerships currently facilitated by Washington State University in partnership with the University of Washington and other collaborators could launch new industries and add value to existing industries, creating new high-paying jobs in health care, higher education, and related industries. These partners each bring their individual brands to the collaboration while still allowing WSU to be in control of the local research entity and having the benefit of the University of Washington’s highly reputable brand in the research field. According to Tripp Umbach, research grants awarded annually on the Riverpoint Campus have grown from $12 million in 2009 to more than $22 million in 2014. The Spokane campus appears to be well on its way to reach a goal of $70 million in annual funds flowing in the region by 2030.

The University of Washington has more than $1 billion in annual research revenue. UW was the nation’s second-leading recipient of funding from the National Institutes of Health in 2013, and the first-largest recipient among public universities. The University of Washington has already assisted Spokane-based research and WSU substantially through its research partnerships in the Institute for Translational Health Sciences (ITHS). ITHS Regional Collaborations Program is a regional portal to facilitate access to ITHS resources for translational science investigators throughout WWAMI. ITHS has a significant research presence in Spokane. Examples are: Project ROAM (Rural Addiction Management Project for Rural Washington Physicians), the Practice-Based Research Network, Visiting Scholars program, and cancer drug delivery research. The ITHS is on its second funding cycle and expects to continue.

Lastly, there are currently about 40 UW/WSU projects funded, with topics ranging from rural health to emerging infectious diseases; the majority of projects are multidisciplinary. The potential to grow biomedical research in Eastern Washington is far greater through collaborations between the University of Washington and Washington State University than through individual institutions.
Consultant Recommendations:
Tripp Umbach recommends the following actions that the organizations should follow in order to provide the most beneficial outcome to the Universities, the State of Washington, as well as communities in Eastern Washington. These recommendations could be highly beneficial to all entities if the process is followed through in the appropriate manner, with the goal of being responsible stewards of state and tax payer dollars.

1. The University of Washington, through the UW School of Medicine in Spokane, must continue to implement its formal, long-planned commitment to grow the Spokane class size to 80 students per year by 2017, with the opportunity grow to 120 students.

To achieve the cost/benefit and economic impacts associated with growing medical education outlined in this report, the State of Washington, as well as the University of Washington through the UW School of Medicine in Spokane, must continue to implement its formal, long-planned commitment to grow the Spokane class size to 80 students per year by July 1, 2017, with the opportunity to grow to 120 students. In addition, all four years of medical education in Spokane should be made permanent.

2. The State of Washington should work to expand graduate medical education opportunities in concert with medical education expansion.

Tripp Umbach believes that all of the medical expansion efforts by either school will not benefit the state’s need for physicians unless there is an effort made to expand the residency slots available within the state. Efforts to expand and creatively fund graduate medical education within Washington will benefit the state and the physician shortages within the state, as much or more than expanding medical education alone.

3. The University of Washington should join the Spokane Teaching Health Center Graduate Medical Education Consortium.

Including the University of Washington in the Spokane Teaching Health Center Graduate Medical Education Consortium would be beneficial. Tripp Umbach believes that regardless of which model for medical education expansion is pursued in Eastern Washington (including the three scenarios outlined in this report), the University of Washington must be engaged immediately in a formalized partnership with the shared vision of expanding residency-training opportunities in Eastern Washington. The University of Washington should also engage immediately in collaboration with the Empire Health Foundation where existing University of Washington-sponsored residency programs could be extended to Eastern Washington.
4. **A formal biomedical research alliance in Spokane should be developed immediately.**

A strong alliance between the UW, WSU, and other university partners in Spokane must be formed to ensure that the efforts to grow biomedical research and related economic development are realized. The value of this collaboration is not being fully realized at this point through the independent efforts of the two universities. The sum of the strength and values brought to the table by each university within a formal collaboration would be greater than the amount of opportunity each university would bring to Eastern Washington separately.
Appendix A. Economic Impact Analysis

The table below illustrates the various types of economic, employment, and government revenue impacts both currently and in future benchmark years attributable to the expansion of programs and services at the future Academic Health Science Center at Riverpoint.

### Economic Impact of Graduate Medical Education

<table>
<thead>
<tr>
<th>Total Direct and Indirect Economic Impact in Millions on Eastern Washington</th>
<th>2009</th>
<th>2013</th>
<th>2017</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spokane WWAMI</td>
<td>$4.3</td>
<td>$10.9</td>
<td>$17.4</td>
<td>$92.4</td>
</tr>
<tr>
<td>WSU Pharmacy</td>
<td>$47.7</td>
<td>$56.5</td>
<td>$64.4</td>
<td>$86.4</td>
</tr>
<tr>
<td>EWU Health Sciences</td>
<td>$19.7</td>
<td>$21.7</td>
<td>$23.6</td>
<td>$32.5</td>
</tr>
<tr>
<td>WSU Nursing</td>
<td>$38.2</td>
<td>$38.9</td>
<td>$39.5</td>
<td>$45.6</td>
</tr>
<tr>
<td>Other Riverpoint Health Science Programs</td>
<td>$5.6</td>
<td>$8.2</td>
<td>$10.8</td>
<td>$21.2</td>
</tr>
<tr>
<td><strong>Health Care</strong></td>
<td>2009</td>
<td>2013</td>
<td>2017</td>
<td>2023</td>
</tr>
<tr>
<td>Spokane WWAMI Graduates</td>
<td>$3.6</td>
<td>$14.5</td>
<td>$24.9</td>
<td>$43.3</td>
</tr>
<tr>
<td>Health Care Industry Growth (GME, Hospital Growth, and Hospital Research)</td>
<td>$60.3</td>
<td>$120.0</td>
<td>$179.6</td>
<td>$329.7</td>
</tr>
<tr>
<td><strong>Industry</strong></td>
<td>2009</td>
<td>2013</td>
<td>2017</td>
<td>2023</td>
</tr>
<tr>
<td>Commercialization of Research</td>
<td>$5.1</td>
<td>$15.8</td>
<td>$26.4</td>
<td>$136.8</td>
</tr>
<tr>
<td>Research Institutes (e.g., ISM)</td>
<td>$18.4</td>
<td>$30.0</td>
<td>$41.5</td>
<td>$69.2</td>
</tr>
<tr>
<td>Bioscience Industry Cluster Impact</td>
<td>$9.3M</td>
<td>$11.5</td>
<td>$13.6</td>
<td>$51.8</td>
</tr>
<tr>
<td><strong>Total Regional Economic Impact</strong></td>
<td>$212.2</td>
<td>$328</td>
<td>$441.7</td>
<td>$908.9</td>
</tr>
</tbody>
</table>

- **$3.6 million annually** in health care cost-savings to the community for every primary care provider who establishes a practice in the region.
- Sustainable economic impacts as each physician who remains in the region generates **$1.3M in economic impact on the region annually**, and each physician’s practice within the region on average creates an additional six to seven jobs.
- A recent study shows that for every dollar billed by a family medicine clinic, more than $6 is billed by hospital-based physicians and other health care providers.
- Resident-driven clinic operations associated with primary care residency programs dramatically lower health insurance premiums paid by employers and employees.
- Residency programs in certain specialties may lead to the recruitment of additional subspecialty physicians who not only train medical students, but also provide subspecialty clinical services which were not available in the community prior to the formation of the residency program.
Outpatient services provided by residency programs include school-based programs, screenings, community-based education programs, nursing home support, emergency department follow-up and support for public health departments.

**Partner Benefits**

- Economic benefits of primary care GME programs to hospitals will provide a positive long-term return on investment as primary care GME program expansion will result in lower physician recruitment costs, greater referrals from a network of primary care providers trained in Central and Eastern Washington hospitals, and may lead to lower emergency department costs associated with unnecessary use of hospital facilities by patients who do not have a primary care provider.

- Strengthens other education functions at the individual hospital level, including continuing medical education (CME) for the medical staff, support for nursing and allied health training, and instruction of medical students. (The presence of such training programs provides a rationale to introduce new technology).

- Additional hospital operating revenue generation due to specialty physicians at the hospital because of GME programs.

- Increased revenue from health insurance companies for higher quality outcome measures anticipated from residency program clinical operations and quality outcome programs.

- Organizations such as academic medical center partner’s benefit from tertiary and quaternary referrals from regions where they have strong connections with primary care residency programs. Academic health science centers also benefit from funding associated with primary care access-related research in the eastern and central Washington region.

While the vast majority of funding nationally for GME is paid by the federal government through the Centers for Medicare and Medicaid Services (CMS) and by state appropriations, hospitals and health systems typically cover the cost of training a resident. Tripp Umbach estimates that the average cost of training a resident is $117,000 per resident per year and non-hospital funding equals approximately $92,500. Other sources of funding for residency programs include the Veterans Affairs Administration (VA), and new funding recently announced for various Community Teaching Health Centers. Innovative GME funding strategies may include paid residency positions from health insurance companies, conversion foundations, and corporate foundations.
Appendix B. Needs Assessment

The Future of the U.S. Health Care System

Over the past decade, an increasingly complex health care system has led to transformations in service delivery. These transformations emphasize:
- Generalist and primary care;
- Managed care that links inpatient and outpatient services;
- Continuity of health care services in partnership with communities;
- Cost-effective care and population approaches;
- Accountability for outcomes; and
- Explosion of information technologies.

Although the industry tries valiantly to differentiate public health and personal health care, the changes introduced by health care reform and the blurring of lines between individual and population-based health are forcing practitioners to understand and negotiate both worlds. Such trends reinforce the need to improve education and training in interdisciplinary collaboration both for individual care and for health initiatives aimed at communities and population groups.

The terms “population” or “population-based” care increasingly coupled with “health,” “health care,” “medicine,” “medical care,” or “managed care” indicate a changing reality in the organization and delivery of health care in the United States.

A population health perspective encompasses the ability to assess the health needs of a specific population, implement and evaluate interventions to improve the health of that population, and provide care for individual patients in the context of the culture, health status, and health needs of the populations of which that patient is a member.

Population-based care involves a new way of seeing the masses of individuals seeking health care. It is a way of looking at patients not just as individuals, but as members of groups with shared health care needs. This approach does not detract from individuality, but rather adds another dimension, as individuals benefit from the guidelines developed for the populations to which they belong.

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26 An approach characterized by a high degree of collaboration and communication among health professionals. What makes integrated health care unique is the sharing of information among team members related to patient care and the establishment of a comprehensive treatment plan to address the biological, psychological, and social needs of the patient. The interdisciplinary health care team includes a diverse group of members (e.g., physicians, psychologists, social workers, and occupational and physical therapists), depending on the needs of the patient.


Members with a particular disease must be prioritized so that disease management interventions are targeted toward those members most likely to cost-effectively benefit. This type of intervention is increasingly referred to as population health management.29

**Washington Outlook**

In the ongoing national debate about whether to accept federal funding to expand Medicaid or not, the State of Washington has moved health care forward by accepting the federal funding to expand its Medicaid coverage (Figure 1).

*Figure 1. State Commitment to Expand Medicaid Eligibility in 2014.*

With the acceptance of Medicaid funding in the State of Washington, along with changes in health insurance coverage requirements put in place by the federal government, there is projected to be a large influx in the number of Medicaid-eligible residents and newly covered residents under the Affordable Care Act.

- While officials had originally estimated that approximately 120,000 newly eligible adults would initially sign up for Medicaid in Washington State, about 300,000 actually did.31

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Physician Shortages
National Outlook

The U.S. Department of Health and Human Services Health Resources and Services Administration (HRSA) develops shortage designation criteria and uses them to decide whether or not a geographic area, population group, or facility is a Health Professional Shortage Area (HPSA) or a Medically Underserved Area or Population (MUA/P). HPSAs may be designated as having a shortage of primary medical care, dental, or mental health providers.

As of January 2013, across the country there were:

- 5,900 Primary Care HPSAs. Collectively, it would take approximately 16,000 practitioners to meet their need for primary care providers (a population to practitioner ratio of 2,000:1).
- 4,600 Dental HPSAs. It would take 6,600 practitioners to meet their need for dentists (a population to practitioner ratio of 5,000:1).
- 3,800 Mental Health HPSAs. It would take 2,200 practitioners to meet their need for mental health providers (a population to practitioner ratio of 30,000:1).

Figure 2. Health Professional Shortage Areas (HPSA) – Primary Health HPSA Designated Type

32 Rural Assistance Center. Health Resources and Services Administration (HRSA), Bureau of Health Professions (BHPR): July 9, 2013. Note: Alaska and Hawaii not shown to scale.
Washington Outlook

Similar to national trends, the State of Washington shows large swaths of land area that are designated as HPSA, MUA, and/or MUP. Of the 39 counties in the State of Washington, all 39 have some area of Primary Care HPSA designation (geographical area, population group, or census tract). Across Washington, 24 entire counties are designated as primary care HPSAs (61.5%).

✔ 45.05% of 1,185,342 Washington residents living in the 146 Health Professional Shortage Areas (HPSAs) in the state face primary care provider shortages.

✔ Medically Underserved Areas/Populations (MUA/Ps) are areas/populations the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA) has designated as facing barriers to accessing health care. There are 47 MUA/Ps in Washington.

Figure 3. Washington Primary Care HPSAs
The most recent Association of American Medical Colleges (AAMC) assessment of active primary care physicians cited Washington as having 99.1 active primary care physicians (ranked 13th) per 100,000 population, compared with 90.5 per 100,000 population for the entire country. In other words, Washington State reports a higher rate of physicians per 100,000 population, slightly better access to physicians than the national rate. There is still, however, demand for physicians located throughout rural areas of the state (i.e., throughout the HPSAs).

- HRSA estimates 218 additional primary care providers are needed to adequately serve Washington’s HPSAs.
- To maintain current rates of utilization, Washington will need an additional 1,695 primary care physicians by 2030, a 32% increase compared to the state’s current (as of 2010) 5,141 PCP workforce.

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36 AAMC 2013 State Physician Workforce Data Book
37 Petterson, Stephen M; Cai, Angela; Moore, Miranda; Bazemore, Andrew. State-level projections of primary care workforce, 2010-2030. September 2013, Robert Graham Center, Washington, D.C.
38 Petterson, Stephen M; Cai, Angela; Moore, Miranda; Bazemore, Andrew. State-level projections of primary care workforce, 2010-2030. September 2013, Robert Graham Center, Washington, D.C.
The physician landscape in Washington is split between eastern and western coverage. The western side of the State of Washington reports higher practicing physician rates than the statewide average; while the eastern region of the state reports lower practicing physician rates than the state average.

**Chart 2. Eastern and Western WA Physician Supply 2014**

Like many areas across the country, the state of Washington shows lower rates of physician supply in rural areas as opposed to urban areas. The data in Chart 2 coincides with Chart 3 in that the western regions of Washington are also the more urban areas and the eastern regions of Washington are the more rural areas with higher need for physicians.

**Chart 3. Urban and Rural WA Physician Supply 2014.**

In rural areas of Washington, there are only 57 per 100,000 practicing generalists, whereas in urban areas of Washington, there are 82 practicing physicians per 100,000 population.

Source: WWAMI AHEC University of Washington.

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The Age Factor

Another issue tied to physician shortages that is often overlooked is the fact that physicians retire. Not only is there currently a national shortage of physicians, but there are also many physicians who leave the field every year. Across the United States, there are approximately 798,235 active physicians. Of these physicians, 17.6% are under the age of 40, 56.2% are aged 40-59, and 26.2% are aged 60 or older. This equates to approximately 208,000 physicians across the country that will be retiring in the next few years.

At the same time that the state population is increasing and baby boomers are aging (with their corresponding increased health care requirements), Washington’s active physician force is aging. The number of doctors under age 40 (15.9%) is less than the number who are over 60 years of age (27.8%). It can be reasonably assumed that many physicians age 60 or older will leave their practices in the next few years. Washington is ranked 20th across the country of active physicians aged 60 or older — about in the middle for states in the nation. This is concerning as it will further impact Washingtonians’ ability to seek care.

More than one-quarter of Washington’s physicians will be retiring within the next five years.

Source: AAMC 2013 State Physician Workforce Data Book.

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41 AAMC 2013 State Physician Workforce Data Book
42 AAMC 2013 State Physician Workforce Data Book
Population Growth

The 2010 U.S. Census Bureau population estimates for Washington reported more than 6.7 million residents. The population is projected to increase to more than 8.6 million by 2030 (ranked 9th across the country in population growth from 2000-2030). While this population growth is a concern for the health care industry, potentially creating higher patient volumes, the real concern for health care in Washington is the percentage of individuals entering the age bracket of 65 and older.

There are currently approximately 70 million baby boomers, born between the years 1946 and 1964, still living in the United States. On the first day of the year 2011, the first baby boomers started turning 65. Starting on January 2011 and going for the next 19 years (2030), 10,000 baby boomers will turn 65 every day. Baby boomers constitute 35% of the U.S. population. Currently, 13% of the U.S. population is aged 65 and older; this percentage is expected to rise to 18% by 2030 (71.5 million people).

In 2010, more than 820,000 residents of Washington (12.2% of the total population) were aged 65 or older. By 2030, the number of residents aged 65 or older in Washington is expected to rise to over 1.56 million (18.1% of the total population). Lack of access to physicians might inadvertently deny many older individuals of needed medical care.

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45 Resources 50+ Fact & Fiction. Immersion Active.
47 Resources 50+ Fact & Fiction. Immersion Active.
48 U.S. Census Bureau
National Outlook

While medical and osteopathic school enrollment continues to climb, the number of available residency slots remains stagnant. This year, 1,097 U.S. senior medical students did not match in the first round — up from 815 last year — even though match participation was at an all-time high of more than 40,000, according to the National Resident Matching Program® (NRMP®). In 2013, medical school enrollment broke the 20,000 mark for the first time ever. Growth in physicians in residency training has been much slower. According to the Accreditation Council for Graduate Medical Education, the 2012-13 resident workforce totaled 117,717, a 1.8% increase from the previous year.

Each year, a bill is introduced in Congress to expand residency slots. And each year, the legislation goes nowhere. Both the Obama administration and Congress have proposed spending less on GME programs.

Reps. Aaron Schock (R-Ill.) and Allyson Schwartz (D-Pa.) are co-sponsoring the “Training Tomorrow’s Doctors Today Act”, a bill that would increase the number of graduate medical education (GME) slots by 15,000 over a five-year period. “This is an issue that’s uniting [Republicans and Democrats] on Capitol Hill,” Shock said. Some experts are much more skeptical of the claimed physician-shortage crisis. RAND Corp. researchers argued in Health Affairs that properly staffed, nurse-managed health centers and doctors’ offices that have adopted the patient-centered medical-home model have shown that provider organizations can serve more patients better with fewer physicians as long as they have the right team and right processes in place.

Organized medicine counters by arguing that nurse practitioners are no more likely to practice in underserved areas than physicians. The market is driving change as well. Retail clinics are growing rapidly around the country and now total around 1,400. These clinics generally are staffed by nurse practitioners who operate without on-site physician supervision. In 2010, an estimated 4.1 million families used a retail clinic, according to a study by the Center for Studying Health System Change.

In late October, Walgreen’s clinics were accredited by the Accreditation Association for Ambulatory Health Care, based on providing patient-centered, accessible, comprehensive care in coordination with a patient’s primary- and specialty-care providers.

49 Association of American Medical Colleges. Match Day Results Show Need to Increase Graduate Medical Education Slots. AAMC Reporter April 2013.
51 A team-based health care delivery model led by a physician, P.A., or N.P. that provides comprehensive and continuous medical care to patients with the goal of obtaining maximized health outcomes.
Tripp Umbach gathered undergraduate medical education and graduate medical education data and discovered:

- Across the country, in 2013, 38.7% of medical and osteopathic students ended up practicing in the same state where they received their undergraduate medical education (UME). California reports the highest physician retention rate from UME (62.4%). Washington ranks 16th in physician retention from UME at a rate of 44.9%; better than the national average.52-53 It is important to note that the denominator from this national data source includes WWAMI students from outside Washington. Therefore, the percentage is actually much higher. Among Washington students alone, the percentage of 54% and the return on investment of WWAMI for the state of Washington (return rate of WWAMI students from all states to Washington to practice, regardless of state of origin) is 64%.

- After completing training in an ACGME-accredited GME program, 47.4% of physicians either stayed or returned to the state where they completed their most recent graduate medical education. California again ranks #1 at 69.5% retention of physicians after GME; Washington ranks 14th at 49.2%.54

- Retention rates were highest for physicians who completed both UME and GME in the same state. Two-thirds (66.6%) of the physicians who completed UME and GME in the same state remained in-state to practice in 2013. In terms of overall retention (UME and GME completed in the same state), Hawaii reports the highest rate at 85.8%, while Washington reports a rate of 71.4% (ranked 18th).55

Tripp Umbach gathered population and current residency position data to calculate the recommended value of residency slots for Washington. The calculation specifics are as follows:

- The total population of the U.S. is 314 million; total population of Washington is 6.7 million. Washington represents approximately 2.1% of the population of the U.S.56

- There are currently 117,717 residency positions in the United States; 1,823 of which are held within the State of Washington (1.5%). Based on population demand, Washington should hold 2.1% of the total residency spots; this equates to 2,472 spots.57 By this calculation, Washington needs an additional 650 residency positions statewide.

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52 AAMC 2013 State Physician Workforce Data Book
53 This is derived from AAMC data which may differ from UW data in the way it is compiled.
54 AAMC 2013 State Physician Workforce Data Book
55 AAMC 2013 State Physician Workforce Data Book
56 U.S. Census Bureau. U.S. and World Population Clock.
57 Data Resource Book Academic Year 2012-2013. Accreditation Council for Graduate Medical Education.
Health Need
Access to Care

It is crucial that there are an adequate number of physicians and physician-specialists to serve the health care needs of individuals within rural geographic areas; however, simply injecting more physicians into an area is not a health care panacea. Access to health care is also influenced by other factors including economic factors.

National surveys reveal that those who have health insurance have better access to health care than those who are uninsured, make better use of preventive services, and have better health outcomes.58

The State of Washington reports an overall uninsured rate of 14% across adults and children.59 The national average is 15%; therefore, Washington’s rate is slightly lower than the national average. However, Figure 7 below shows the pockets of uninsured residents across the state (darker areas having higher uninsured rates).

Figure 7. Washington Health Insurance Coverage60

Adams, Franklin, and Yakima counties in Washington report uninsured rates of 25%, the highest in the state.

Source: County Health Rankings

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Health Factors Contributing to Need

Every year, the University of Wisconsin, in collaboration with the Robert Wood Johnson Foundation, puts out its County Health Rankings database that compares all of the counties within each state to one another, looking at various health care barriers (i.e., morbidity, mortality, tobacco use, obesity, access to care, education, employment, etc.).

Each county is given a Health Factor and Health Outcome ranking. The Health Factor ranking is comprised of tobacco use, diet and exercise, alcohol use, sexual activity, access to care, quality of care, education, employment, income, family and social support, community safety, environmental quality, and built environment. The Health Outcome ranking is comprised of mortality and morbidity.

With 39 counties in Washington; a rank of 39 is the “worst” or unhealthiest county, while a rank of one is the healthiest county.

**Ferry County (population 7,646)**
- Ranked 39th (worst in the state) for Health Factors, Length of Life, Clinical Care, Quality of Care, and Employment.

**San Juan County (population 15,875)**
- Ranked 39th (worst in the state) for Alcohol and Drug Use and Air and Water Quality.

**Franklin County (population 86,638)**
- Ranked 39th for Access to Care and Education.

Figure 8 shows the health factor rankings in the state of Washington. With darker areas (higher rankings) indicating the areas of worse rankings (“unhealthier”), the Northeastern region of the state reports some of the highest rates for Health Factors (measured through four types of indicators: health behaviors, clinical care, social and economic, and physical environment factors).

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61 Population based on 2013 data.
62 Population based on 2013 data.
63 Population based on 2013 data.

"A shortage of U.S. doctors would have a profound impact on all Americans by affecting access to quality health care, especially for the underserved who already encounter substantial barriers when seeking care."

Source: Jordan J. Cohen, M.D., Former President Association of American Medical Colleges
In 2014, Ferry County reported the highest ranking for Health Factors in the State of Washington. This indicates that residents of this county have a variety of barriers to quality health care.

Similarly, Figure 9 shows the Health Outcomes (Length and Quality of Life) map for the State of Washington also reporting the Northeastern region of the state report the highest (worst) rankings.

Ferry County Washington may be considered the unhealthiest county across the state with five county health rankings measures at the worst for the state; Health Factors, Length of Life, Clinical Care, Quality of Care, and Employment.”

Source: County Health Rankings

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Other Opportunities to Improve Health Care and Quality of Life

Table 1 shows us how well Washington compares to all other states across the country in a variety of health measures. Washington ranks 14th across the country in overall health; however, there are areas of interest that the state can focus on to improve health for all Washingtonians in the future.

Table 1. America’s Health Rankings for Washington, 2013.\textsuperscript{66}

<table>
<thead>
<tr>
<th>Topic</th>
<th>WA Rank</th>
<th>State Ranked #1</th>
<th>State Ranked #50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>14</td>
<td>HI</td>
<td>MS</td>
</tr>
<tr>
<td>Pertussis</td>
<td>46</td>
<td>LA</td>
<td>UT</td>
</tr>
<tr>
<td>Immunization – Children</td>
<td>39</td>
<td>HI</td>
<td>AK</td>
</tr>
<tr>
<td>Drug Deaths</td>
<td>36</td>
<td>ND</td>
<td>NM</td>
</tr>
<tr>
<td>Disparity in Health Status</td>
<td>34</td>
<td>AK</td>
<td>IL</td>
</tr>
<tr>
<td>High School Graduation</td>
<td>30</td>
<td>VT</td>
<td>NV</td>
</tr>
<tr>
<td>Infectious Disease</td>
<td>29</td>
<td>WV</td>
<td>MS</td>
</tr>
<tr>
<td>Poor Mental Health Days</td>
<td>28</td>
<td>ND</td>
<td>AL</td>
</tr>
<tr>
<td>Poor Physical Health Days</td>
<td>26</td>
<td>MN</td>
<td>KY</td>
</tr>
<tr>
<td>Lack of Health Insurance</td>
<td>25</td>
<td>MA</td>
<td>TX</td>
</tr>
<tr>
<td>Binge Drinking</td>
<td>25</td>
<td>WV</td>
<td>WI</td>
</tr>
<tr>
<td>Violent Crime</td>
<td>21</td>
<td>ME</td>
<td>TN</td>
</tr>
<tr>
<td>Cancer Deaths</td>
<td>20</td>
<td>UT</td>
<td>KY</td>
</tr>
<tr>
<td>Immunization – Adolescents</td>
<td>18</td>
<td>RI</td>
<td>MS</td>
</tr>
<tr>
<td>Obesity</td>
<td>18</td>
<td>CO</td>
<td>LA</td>
</tr>
<tr>
<td>Primary Care Physicians</td>
<td>17</td>
<td>MA</td>
<td>ID</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>16</td>
<td>NH</td>
<td>AK</td>
</tr>
<tr>
<td>Air Pollution</td>
<td>16</td>
<td>WY</td>
<td>CA</td>
</tr>
<tr>
<td>Dentists</td>
<td>9</td>
<td>MA</td>
<td>AR</td>
</tr>
<tr>
<td>Physical Inactivity</td>
<td>9</td>
<td>OR</td>
<td>AR</td>
</tr>
<tr>
<td>Occupational Fatalities</td>
<td>7</td>
<td>MA</td>
<td>ND</td>
</tr>
<tr>
<td>Premature Deaths</td>
<td>7</td>
<td>MN</td>
<td>MS</td>
</tr>
<tr>
<td>Preventable Hospitalizations</td>
<td>6</td>
<td>HI</td>
<td>WV</td>
</tr>
<tr>
<td>Salmonella</td>
<td>4</td>
<td>NV</td>
<td>MS</td>
</tr>
<tr>
<td>Infant Mortality</td>
<td>3</td>
<td>NH</td>
<td>MS</td>
</tr>
<tr>
<td>Low Birth Weight</td>
<td>2</td>
<td>AK</td>
<td>MS</td>
</tr>
</tbody>
</table>

\textsuperscript{66} United Health Foundation. America’s Health Rankings. 2013.

In 2013, Washington ranked 39th in Childhood Immunization Rate with only 65.2\% being immunized (national rate being 80.2\%).

Source: United Health Foundation
Insufficient Supply of Medical Students to Support Physician Workforce in Outlying Areas

Currently, there are two medical schools in Washington – Pacific Northwest University of Health Sciences and the University of Washington School of Medicine.

Pacific Northwest University of Health Sciences (PNWU) is an accredited private, nonprofit graduate school located in Yakima, Washington. The university’s inaugural program was the first new medical school to open in the Pacific Northwest in 60 years, and it confers the Doctor of Osteopathic Medicine (D.O.) degree. The school was founded in 2005, accepted its first class in 2008, and graduated its first class in May 2012. The inaugural class of 2012 in the College of Osteopathic Medicine was comprised of 75 students.

The University of Washington School of Medicine (UWSOM) is a public medical school located in Seattle, Washington, and is part of the University of Washington. UWSOM is the first public medical school in the states of Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI). The school maintains a network of teaching facilities in more than 150 towns and cities across the five-state region. As part of this partnership, medical students from Washington, Wyoming, Alaska, Montana, and Idaho spend their first years at partner state universities in their home states. In 2013, UWSOM graduated 222 students.

Between the years of 2002 to 2012, Washington has experienced a large increase in the number of students entering undergraduate medical education programs (64.6% in 10 years).

Table 2. Change in Number of Students Enrolled in Medical or Osteopathic Schools, 2002-2012.

<table>
<thead>
<tr>
<th></th>
<th>Total Students Enrolled in Undergraduate Medical Education (UME)</th>
<th>Students Enrolled in Medical School</th>
<th>Students Enrolled in Osteopathic School</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>80,180</td>
<td>102,498</td>
<td>27.8%</td>
</tr>
<tr>
<td>Washington</td>
<td>773</td>
<td>1,272</td>
<td>64.6%</td>
</tr>
</tbody>
</table>

It is clear that there is an interest from Washington students to enter the medical field based on the increased number of students entering undergraduate medical programs. It is much more likely for a student to stay in the state in which he/she was educated and trained than to return to a state after leaving for medical education (UME or GME). The rate of retention for medical students who conduct both their undergraduate and graduate medical education studies in Washington is 71.4% (ranked 18th in the country).

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67 AAMC 2013 State Physician Workforce Data Book
68 Includes students from all 5 WWAMI states.
**Federally Qualified Health Centers (FQHCs)**

The Centers for Medicare and Medicaid Services (CMS) announced in June of 2011 that 500 Federally Qualified Health Centers (FQHC), including 16 in Washington, have been selected for the FQHC Advanced Primary Care Practice demonstration project from over 800 applicants. The 500 community health centers in 44 states across the country will receive approximately $42 million over three years to improve the coordination and quality of care they deliver to people with Medicare and other patients. The initiative is designed to evaluate the impact of the advanced primary care practice model, also known as the patient-centered medical home, on improving health, improving quality of care, and lowering the cost of care provided to Medicare beneficiaries served by FQHCs.

There are approximately 292 FQHCs across the state of Washington. These 16 locations, spread throughout the state, are centers for innovation and the first step in analyzing a new way to provide care.

**Classroom and Facility Needs**

To address the issue of classrooms with the revised improved class size, regardless of which scenario occurs in this process, the need for facilities will need to be addressed as the class size increases. Due to extensive experience with new and expanded medical school programs, Tripp Umbach reviewed 12 new allopathic medical school facilities constructed over the past five years as a sample of medical schools representing various models. These examples are included in the table below. The table shows the initial average facility cost in each model for medical school facilities. With 75% of the facility costs supported by public funds and the average estimated tax revenue received by the state annually during a 15-year period ranging from **$8 million** for a Regional Campus model to **$28 million** for a university-affiliated model, each model provides a positive return on state facility investment at maturity.

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70 U.S. Department of Health and Human Services. Health Resources and Services Administration. Find a Health Center
Table 2: Facility Considerations Table

<table>
<thead>
<tr>
<th>Model</th>
<th>Independent</th>
<th>University Affiliated</th>
<th>University Regional Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Facility Cost</td>
<td>$83 million</td>
<td>$68 million</td>
<td>$28 million</td>
</tr>
<tr>
<td>Sample Facility</td>
<td>The Commonwealth Medical College</td>
<td>University of Central Florida College of Medicine</td>
<td>University of South Carolina Upstate School of Medicine</td>
</tr>
<tr>
<td>State Contribution at 75% of Facility Costs</td>
<td>$62 million</td>
<td>$51 million</td>
<td>$21 million</td>
</tr>
<tr>
<td>Economic Impact at maturity in 2030</td>
<td>$720 million</td>
<td>$882 million</td>
<td>$245 million</td>
</tr>
<tr>
<td>Tax Revenue in 2030 (Annually)</td>
<td>$36 million</td>
<td>$44 million</td>
<td>$12 million</td>
</tr>
<tr>
<td>Average Tax Revenue Generated per year over the 15-year period</td>
<td>$24 million</td>
<td>$28 million</td>
<td>$8 million</td>
</tr>
<tr>
<td>Total Government Revenue Generated over the 15-year period</td>
<td>$356 million</td>
<td>$425 million</td>
<td>$115 million</td>
</tr>
</tbody>
</table>
Appendix C. Statement of Consultant Qualifications

Tripp Umbach is a national leader in conducting feasibility analysis/economic impact studies and consultation services for leading academic medical campuses and for new or expanded medical schools. Tripp Umbach has provided consultation and economic impact analysis services to virtually every new or expanded medical school over the past 10 years. Since 1995, Tripp Umbach has completed national studies measuring the economic impact of all 130 medical schools, and more than 400 teaching hospitals for the Association of American Medical Colleges (AAMC), making Tripp Umbach the most qualified firm to assess the feasibility and economic impact of a new or expanded medical school or hospital campus. In 2000, 50 of the top 100 academic medical centers ranked by *U.S. News & World Report* were active clients of Tripp Umbach. Since 1990, Tripp Umbach has completed individual studies for more than 75 academic medical centers. Since 2004, Tripp Umbach has completed approximately 50 medical education-related studies.