WHIIEC

Health Information Technology Educational Resource Inventory

2014 Analysis

Contents

HIT Educational Programs Inventory Analysis Report 2014

Washington Health Information Industry-Education Council

Executive Summary

Background

The Washington Health Information Industry-Education Council (WHIIEC) is a volunteer forum that brings educators in health information technology (HIT) together with representatives of HIT employers: medical practices, hospitals, public health and other stakeholders. The purpose of the WHIIEC is to align statewide educational offerings with the HIT staffing needs of local employers.

In 2014, WHIIEC conducted an update of its previous year's HIT Educational Resources Inventory to catalog postsecondary certificate and degree programs that teach HIT skills. The programs in the inventory are available to Washington State residents without requiring them to move from the state nor pay out-of-state tuition.

This report contains a comparative content analysis of the WHIIEC Inventory to provide a picture of the evolution of HIT education programs over four reporting periods that cover the five year period 2010 – 2014.

The analysis examines how much the content of the inventory results changed from year to year. It investigates a proxy measure of whether HIT education available to Washington residents is expanding or contracting, and in what majors, by what modes of delivery, and resulting in which certificates or degrees. This analysis also examines whether more education institutions are offering HIT education than in previous years. Cost of programs and the variation in cost is compared between degrees/certificates. This analysis looks at how the HIT education programs are distributed and have changed since last year across general health career categories including Health Care Administration, Informatics, Biomedical, HIT Management, Nursing, and Clinical uses of health information technology.

Key findings

This analysis indicates that HIT education programs in Washington State are increasing in all of the metrics measured. For example, the 2010 prototype inventory identified 20 HIT programs; by mid-2014, the updated version includes almost 140 such programs. The greatest percentage increase of programs occurred at the Post-Degree level but the Master's level has the highest number of programs for the third year in a row. Online Only programs (geographically remote) are the most plentiful mode of delivery for all HIT education programs, while the others have grown since last year except hybrid programs. While the Bachelor's and Master's programs are nearly tied for the highest number of programs delivered on campus, the latter has been consistently the leader in Online Only programs for the three years this data has been available. The highest average cost is associated with PhD programs, while the lowest is in the Certification category. Compared with last year, the average cost decreased in the Bachelor's degree and Post-degree Certification categories, increased in the Certificate category and stayed the same in the other categories. The greatest disparity between highest and lowest cost of HIT educational programs is in the Bachelor degree category and the lowest disparity is in the PhD category. The health career category with the most education programs containing related content is HIT Management, followed by Informatics.

Introduction/Context

There continues to be pressure for more use/exchange of clinical and claims data in health care in order for providers to offer more informed care, to qualify for incentive payments allocated by the Affordable Care Act and also to keep abreast of current information technology advances and the value-based payments that our health care system in the United States is embracing. This increased demand for Electronic Health Record (EHR) use is creating a personnel shortage in health information technology. We can see this shortage reflected in the studies done in this field by Texas State University, the California Community Colleges Chancellor's Office and the WHIIEC Employer Needs Assessment HIT Educators have an interest in ensuring that their education and training offerings in HIT are aligned with employers' staffing needs and the needs of prospective students in order to reduce the HIT workforce shortage. This is the rationale for the HIT Educational Resources Inventory itself—

- as a tool for prospective students
- as a tool for employers and educators to facilitate the workforce retraining necessary to fill the gap between existing HIT labor pools and anticipated future need.

Students need information on education and training options within Washington's borders. Education institutions need to know how to best position themselves in the field of HIT education offered in Washington State. And HIT Employers need to know what preparation job candidates or existing employees can receive through the HIT training and certification or degree programs they complete.

This analysis of the HIT Educational Resources Inventory is a step beyond the inventory itself as a tool in promotion of HIT workforce retraining.

- Educators can use this analysis of the inventory to understand trends in educational offerings as well as how and where their institution fits into that field.
- The analysis can help inform decisions by education institutions about what HIT programs they need to offer to best meet the needs of their students to learn skills that will likely translate into employment in the expanding health care sector.
- This report can provide insight into possible areas of HIT education that are underserved in higher education, degrees/certificates that have similar programs competing for students, and what trends might influence decisions about cost, delivery mode, or location of HIT programs.
- Employers can use this tool to understand whether educational offerings are appropriate to fill their employee skill set needs. This analysis is useful for employers who wish to ensure a steady supply of new employees who have the HIT skills that open positions require or consider providing incentives for existing employees to retrain to fill those high-demand positions.
- The findings in this inventory analysis are germane to the issue of coordination between employers of HIT-skilled workers and the education programs that train those workers.
- HIT educators and employers can use this tool to further their collaboration toward resilience in meeting the rapidly evolving needs of health information technology to deliver value-based health care in our state.

Analysis Method

Datasets: The sample for the inventory was self-selected using the previous inventory versions (3), online search engine results, published state educational institution lists, professional education and HIT organization contact lists, and word-of-mouth leads. There are other online programs available to Washington residents that this inventory may not have included. The inventory does not include any HIT programs based outside the United States and not in physical proximity to Washington. Members of the

surveyed organizations were invited to participate, so the information is assumed correct when not contradicted by the contacted education institution.

Data Capture/Aggregation: For the 2010 prototype inventory, a web search was conducted early in the year using unspecified search criteria. For the 2012 iteration of the inventory a web search using search optimization keywords was used, followed up with telephone interviews to the identified institutions/programs. For the 2013 iteration, education institutions listed in the previous iteration were contacted by email inviting participation and review of their inventory listing contents, with a follow-up reminder message within two months. Other institutions were researched online and also contacted via email to review their listing in the Inventory. The email message identified WHIIEC, explained the purpose of the inventory and requested the recipient to review the institution's listed programs, suggest changes and updates, and requested that the message be sent onward if the contact was no longer the appropriate person to ask for this information. The 2014 iteration followed the same protocol as 2013.

Data Elements: The inventory reviewed several aspects of the HIT education programs deemed relevant to both prospective students and to employers seeking to understand what education programs exist to support the skills acquisition they desire in future employees. Items fell into four major categories:

1) Respondent organization demographics (organization type, location, delivery mode as it relates to Washington proximity);
2) Degree and/or Certifications offered
3) Programmic details such as expected outcomes of the programs, cost, credits earned, prerequisites, and practicum field experience required.
4) Contact information specific to the programs, in addition to imbedded hotlinks for both the institution and the specific HIT programs. Thus, interested parties can contact the institutions and programs directly to get more information than allowed by the scope of the inventory.

Coding/Billing courses were excluded from this inventory, consistent with the original reasoning that, although useful training and a potential springboard to other HIT work, the content does not typically teach how to support, implement nor use information technology but rather primarily how to input raw data into an IT system. If a significant portion of the courses for an HIT education program have information science or analytics in the curriculum, that program was included in this inventory even if it also had some coding/billing content.

This inventory includes programs that are presented within a reasonable driving distance of Washington State residents living near state borders. It also includes online programs in HIT available without the requirement of visiting distant campuses to either enroll or take required courses or practicum classes. To be included in the inventory and therefore this analysis, programs have to be from accredited institutions offering professional and/or technical post-secondary health information education programs available to Washington State residents on in-state campuses, in adjacent metropolitan areas (e.g., Portland, Vancouver, Victoria) or online. Accreditation information has been added to this year's inventory and reported for both the parent institution and the program itself where possible. The inventory is available online for free in support of the WHIIEC mission to operate as a bridge between HIT education and employment, especially in service to those workers who are displaced as jobs are outsourced oversees or are eliminated due to economic shifts.

The results of this study of the four versions of the WHIIEC Inventory were arrived at by the method of a content analysis of the inventory entries. The prototype version of the Inventory from 2010 did not

measure one metric that was included in the three subsequent versions, that of Post-Degree Certificate as separate from Graduate Certificate. Therefore, the analysis of this metric includes only three data points. All other metrics recorded are compared over the four versions. It should also be noted that the unlike the three published versions, the 2010 prototype relied solely on web searches as its data source without personal contact with the educational institutions themselves.

Results

This analysis of the HIT Educational Resources Inventory takes into account previous iterations of this instrument and presents multiple years' data where useful. It also examines aspects of the HIT Education domain that are beyond the immediately obvious information contained in the categories of the inventory itself, such as whether an institution is a two-year four-year or a PhD granting institution, and for which HIT career category the reported education programs contain relevant content. It is however beyond the scope of this analysis to conclude that any program reported to prepare a student to fulfill roles within a specific HIT career category actually does so.

Number of HIT Educational Programs Increases

The 2014 version of the inventory has revealed some notable increases in Health Information Technology (HIT) programs offered to Washington State residents. A survey of HIT education programs conducted by Bellevue College in 2010 served as the prototype for the later inventories. All metrics in this analysis are included in each of the four years that this survey was recorded with the exception of the category of Post-degree Certification in the 2010 study. In the four-year time period since then, HIT education program offerings have increased from a reported 20 to 138 available to in-state residents (Figure 1.) The total number of HIT programs offered increased in the last year alone from 99 to 138.
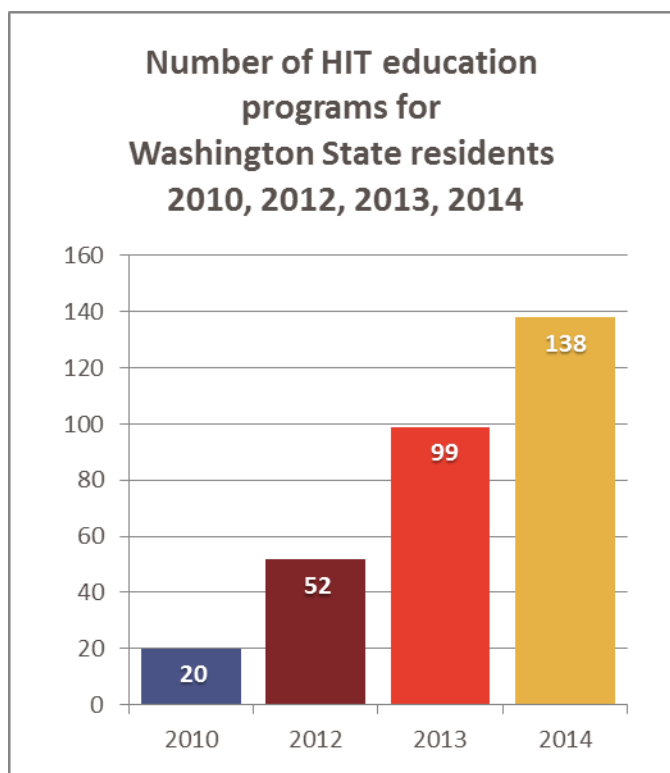

Figure 1

While the number of programs increases each year, the relative increase is reducing. In 2012 there were 32 more programs than in the last inventory and the subsequent two years have brought increases in programs of 47 and 39, respectively. From the pilot inventory in 2010 to the next iteration two years later in 2012, there was a 160% increase in the number of HIT Education program offered in Washington. The next year saw a 90% increase and this last year the increase percentage was 39% (Figure 2).
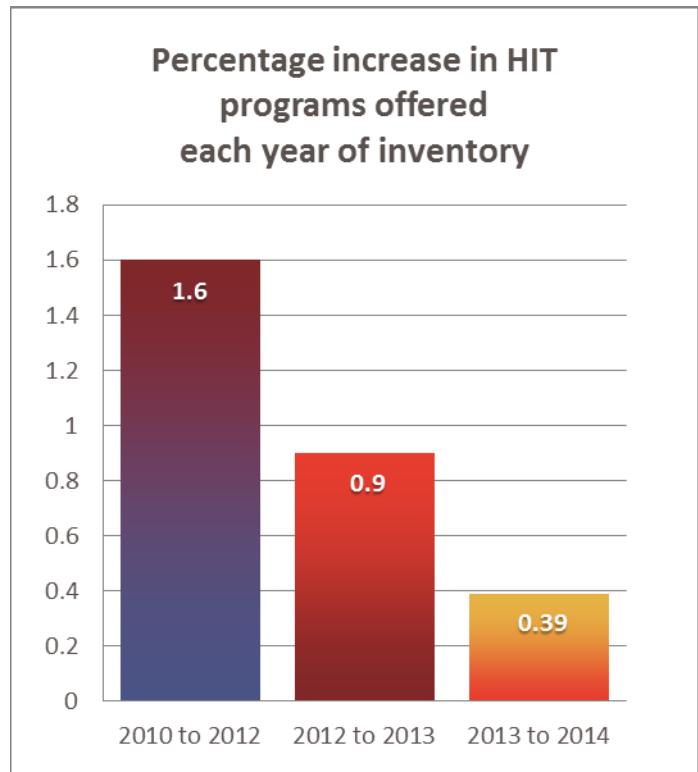
Percentage increase in HIT programs offered each year of inventory

	2010 to 2012	2012 to 2013	2013 to 2014
	1.6	0.9	0.39

Figure 2

Number of Educational Institutions Increases

In addition to the number of programs increasing, the number of educational institutions offering health information technology programs is increasing (Figure 3).
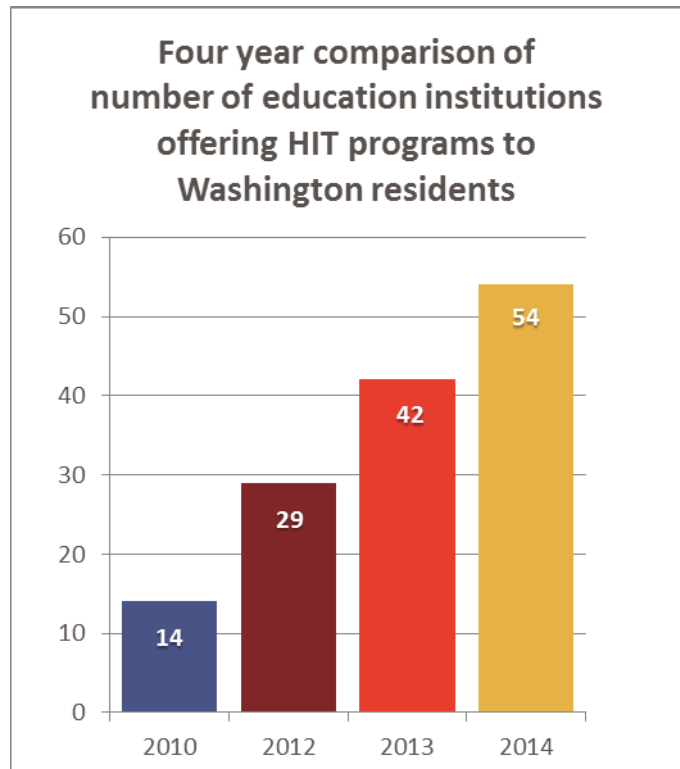
Four year comparison of number of education institutions offering HIT programs to Washington residents

2010	2012	2013	2014
14	29	42	54

Figure 3

The number of new institutions added to the inventory is dropping each year, but the first interval measured a 2-year period and the last two intervals are only one year each, so a trend line should not be imputed from this data (Figure 4).
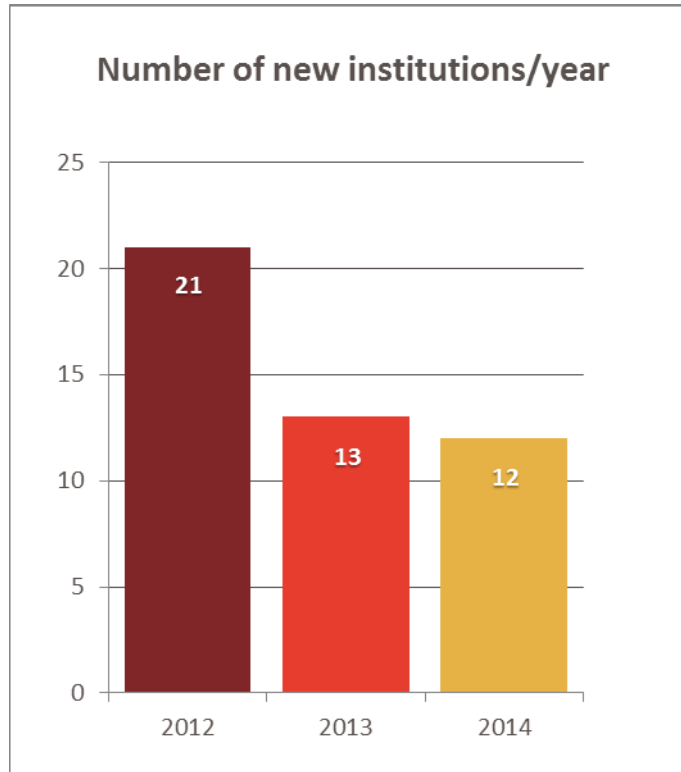
Number of new institutions/year

Figure 4

Many of the new institutions entering the field are out-of-state and are recently adding online versions of their existing HIT programs: 30 online added versus 1 on-campus since 2013. The recent increases in institutions are not Washington-based colleges and universities. The only on-campus addition occurred in Wilsonville, Oregon within driving distance of residents (Figure 5).
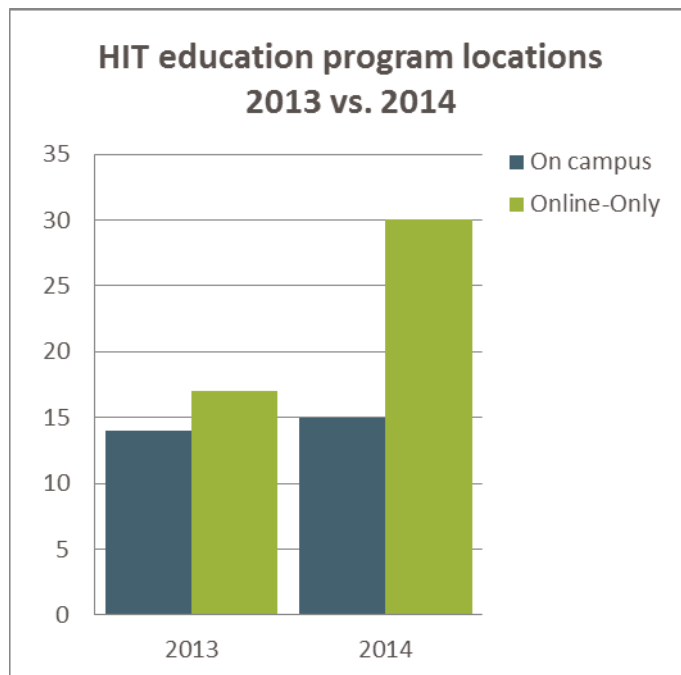
HIT education program locations 2013 vs. 2014

Figure 5

Number of Four-Year Institutions Increases

The institutions offering HIT education programs are primarily four-year degree granting institutions, and this has held true throughout the iterations of the inventory (Figure 6).
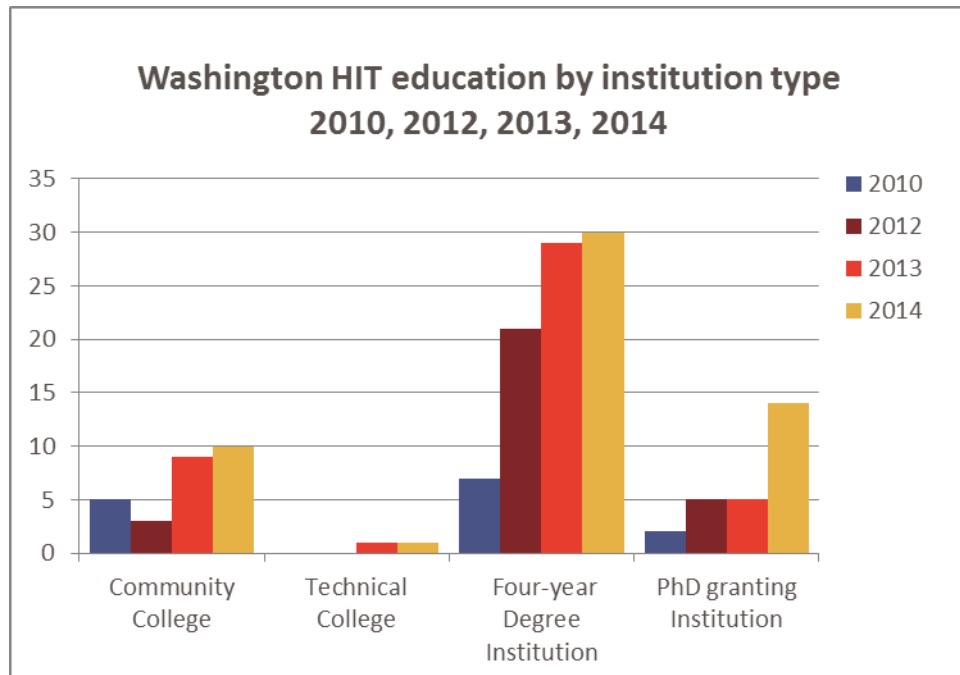
**Washington HIT education by institution type
2010, 2012, 2013, 2014**

Figure 6

Number of HIT Degrees and Certifications Increases

The distribution of this year's programs by degree or certificate offered shows growth in every category. The degree program with the greatest increase in offered programs by percent is the Post-degree Certification category as opposed to the Associate's degree last year (Figure 7).
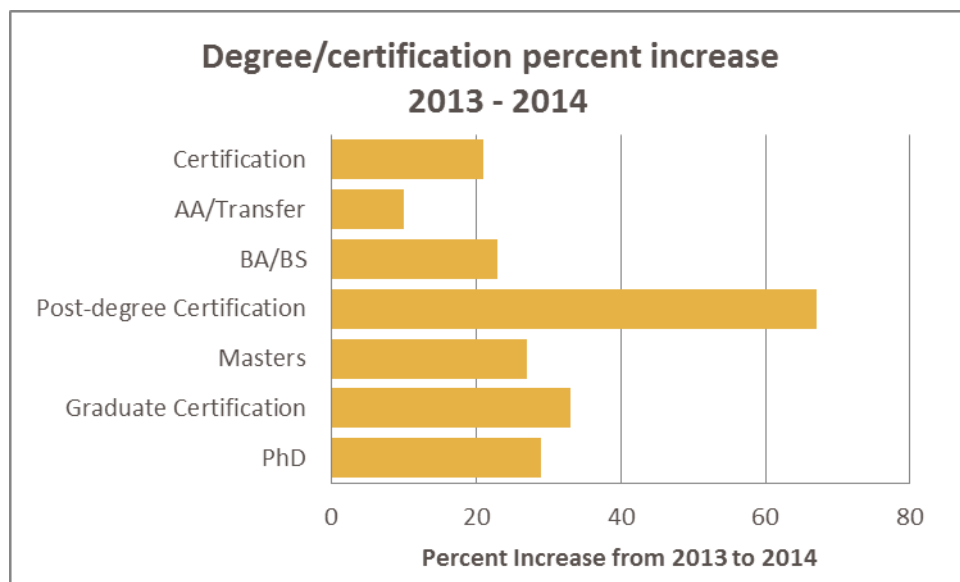
**Degree/certification percent increase
2013 - 2014**

Figure 7

However, the degree with the highest increase in number of HIT programs offered is at the Master's degree level. This has held true for the last three iterations of the inventory (Figure 8).
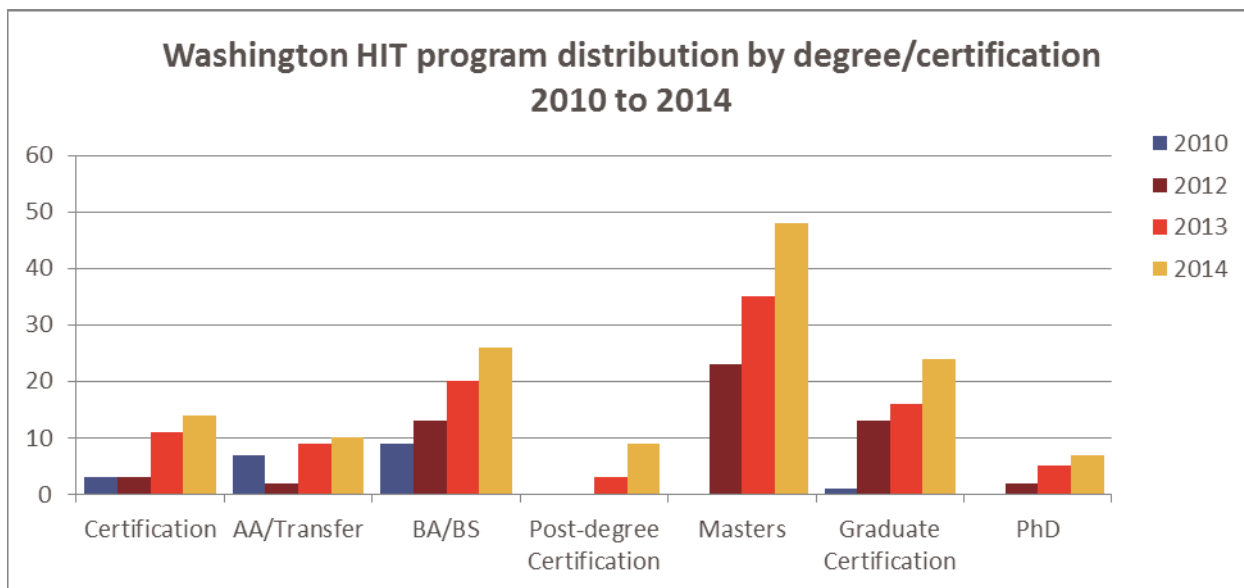
Washington HIT program distribution by degree/certification 2010 to 2014

Degree/Certification	2010	2012	2013	2014
Certification	3	3	11	14
AA/Transfer	7	2	9	10
BA/BS	9	13	20	26
Post-degree Certification			3	9
Masters		23	35	48
Graduate Certification	1	13	16	24
PhD		2	5	7

Figure 8

Online Delivery Mode is Most Prevalent

When both the Online and the Online Only Modes are added together, all degree and certification categories are now delivered more often online than in any other way. PhD programs are the only type of degree that has roughly equal On Campus and Online programs. Master's degree programs have the most online offerings. Three program degree types are delivered more via Online Only mode than in any other way: Post-degree Certification, Master's degree, and Graduate Certification (Figure 9).
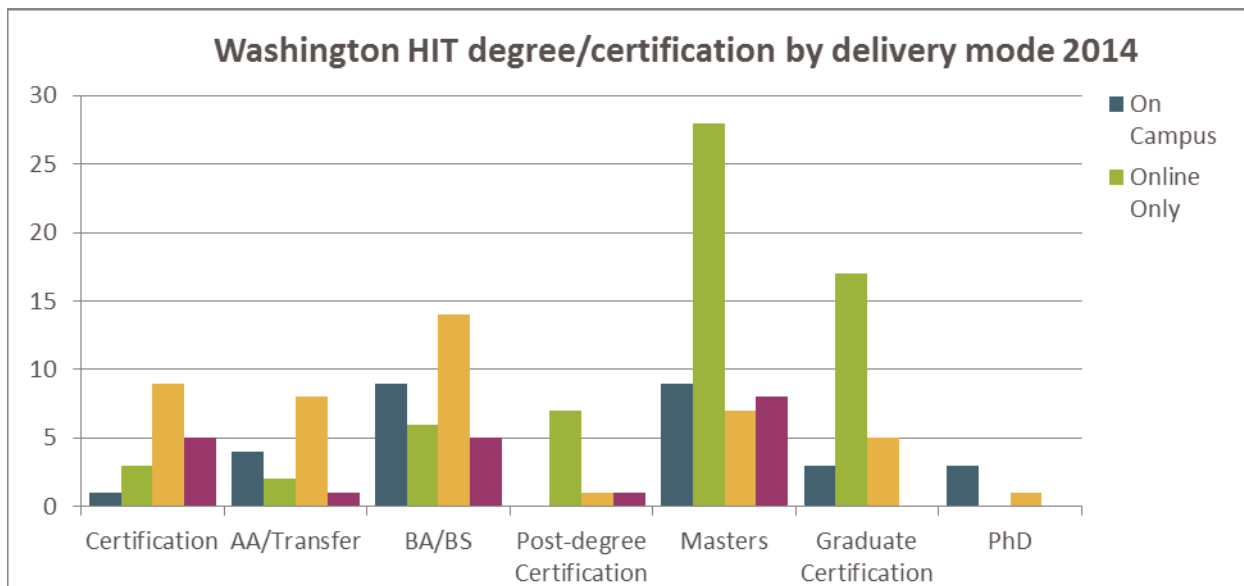
Washington HIT degree/certification by delivery mode 2014

Degree/Certification	On Campus	Online	Online Only	(fourth)
Certification	1	3	9	5
AA/Transfer	4	2	8	1
BA/BS	9	6	14	5
Post-degree Certification		7	1	1
Masters	9	28	7	8
Graduate Certification	3	17	5	
PhD	3		1	

Figure 9

Each year of the inventory has seen an increase in Online Only modes of delivery, with the other modes fluctuating year to year (Figure 10).
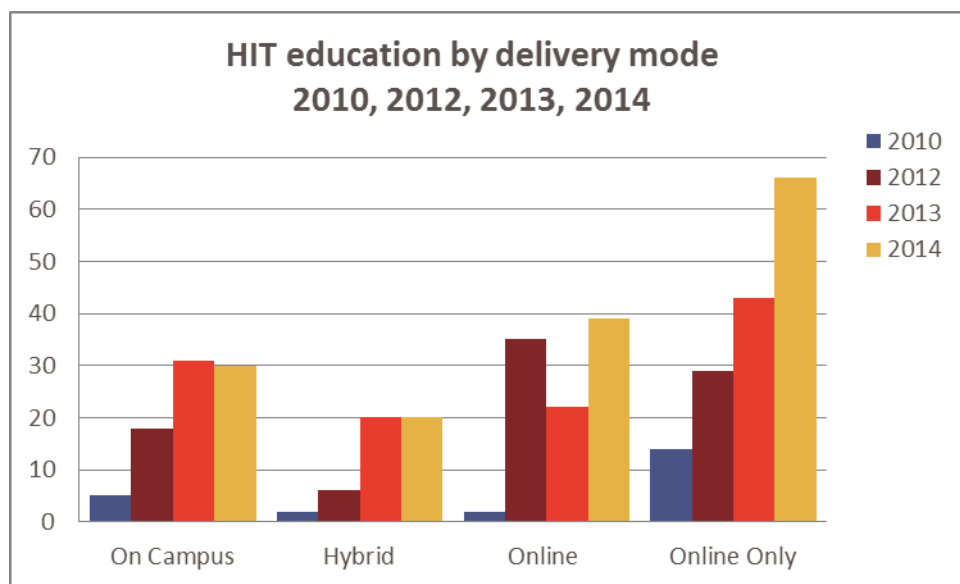

Figure 10

Program Cost

Average cost of HIT degrees and certifications vary widely. The inventory this year has done more than ever before to include all the same variables (such as books and fees) in each cost calculation for every program. However, in some cases, the full information was not available and is affected by variables impossible to calculate, such as number of prerequisites based on experience and prior education, or duration of program based on credit load taken over time. According to these calculations and recognizing the limitations, PhD and Bachelor's degrees have the highest average cost per degree (Figure 11).

The Average cost of a degree or certificate in a health information technology field varies by approximately $40,000 between the certificate level and the PhD degree level.
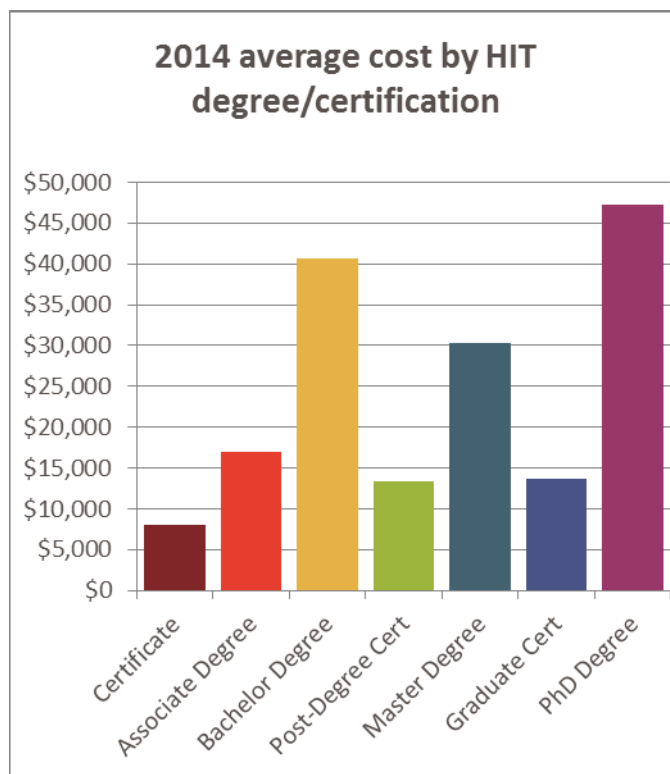

Figure 11

The cost of program completion is widely variable from institution to institution in some qualification areas and is more consistent in others. The variation between the lowest and highest costing programs in each qualification area is shown below. When looking at the graph above and the one below, it becomes clear that qualification levels that are high in average cost and high in variation in cost would be most fruitful to compare for the highest value for the lowest price, such as at the Bachelor Degree level (Figure 12).
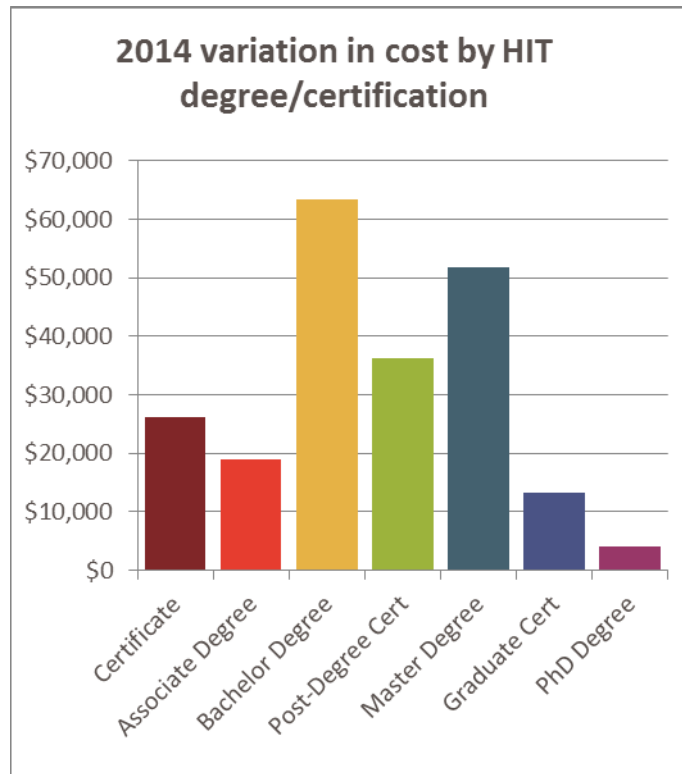

Figure 12

HIT Management is Most Prevalent Career Content

This year's inventory analysis includes categorization of 2013 and 2014 HIT education programs by content most relevant to specific skill sets for six broad HIT Career categories: Health Care Administration, Informatics (which includes primarily Analytics content), Biomedical, HIT Management, Nursing and Clinical.

The highest number of education programs for 2014 are in the HIT Management category, with a close second in Informatics (Analytics). All categories increased from last year except HIT Nursing career content. The category that grew the most since last year was HIT Management programs (Figure 13).
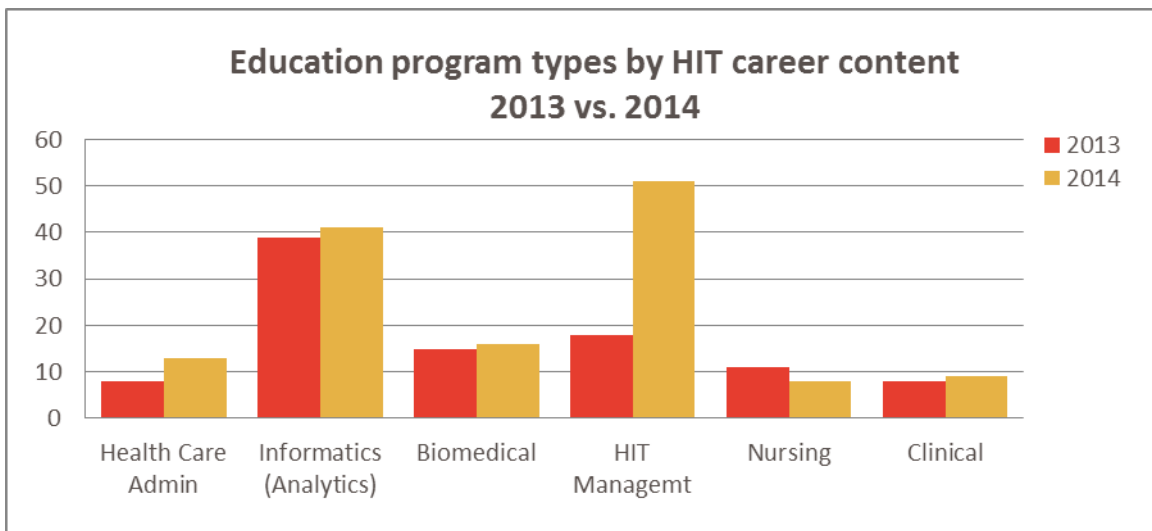

Figure 13

This year's programs are largely divided between the top three HIT career types: HIT Management, Biomedical, and Informatics (Figure 14).
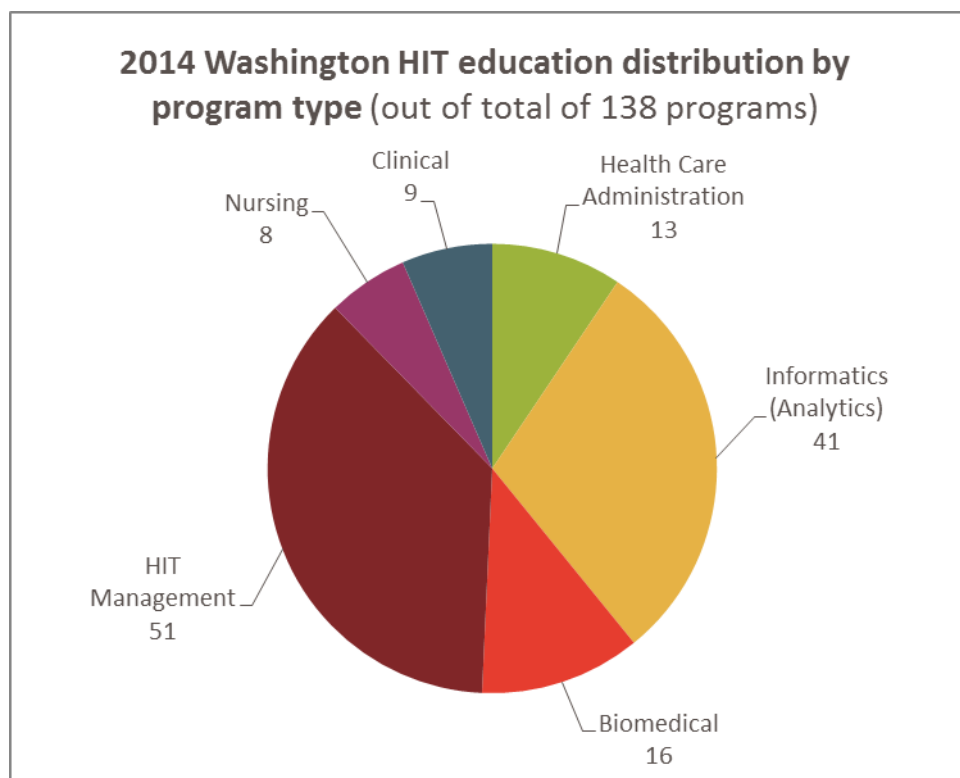

2014 Washington HIT education distribution by program type (out of total of 138 programs)

- Clinical: 9
- Nursing: 8
- Health Care Administration: 13
- Informatics (Analytics): 41
- HIT Management: 51
- Biomedical: 16

Figure 14

Summary

This analysis of the WHIIEC Health Information Technology Educational Resources Inventory provides the opportunity for creating a baseline of data from which to observe meaningful change over time in the areas reported in this online searchable database. In its present form, this tool is uniquely useful to further discussion between HIT Industry and Educators in pursuit of effective workforce training and responsiveness to rapidly evolving demands of health care in the United States. From this analysis of the four years of this Inventory, it is clear that programs have grown in number, particularly at the masters and postmasters levels. It is also clear that the range of programs has increased – potentially being responsive to the increasing interest in care integration and increasing need for data on which to evaluate health care success.

Next steps include adding more sophisticated reporting of programs, such as percentage of successful graduations and employment rates after completion. Another area of potentially useful inquiry would be to relate the results of this metadata about HIT education with similar overviews of HIT employment such as the WHIIEC Employers Needs Assessment.