

Report on Health Care Innovation in Washington State

October 2015



Overview

HEALTH CARE INNOVATION IN WASHINGTON STATE



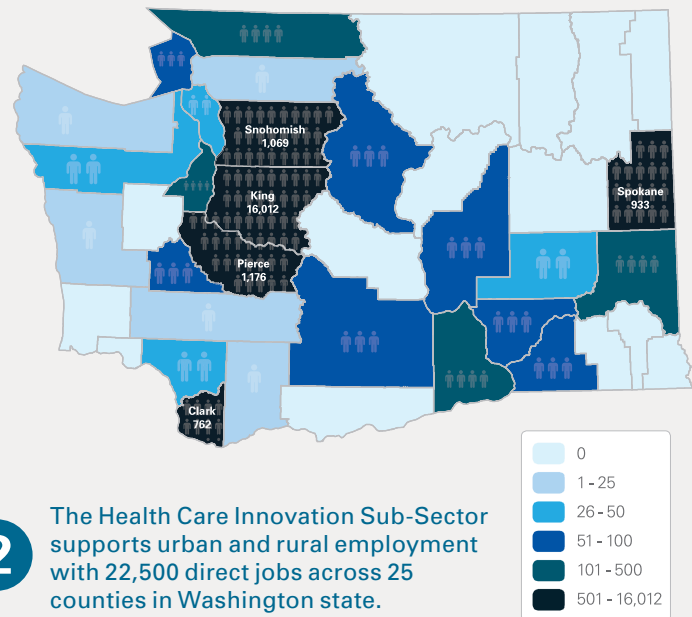
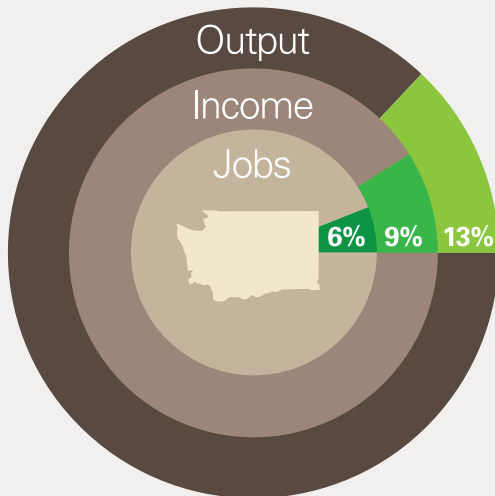
Health care is a known driver for growth in Washington, but we've identified a catalyst:

The Health Care Innovation Sub-Sector

Source: 2015 Report on Health Care Innovation in Washington State



1 The Health Care Innovation Sub-Sector is alive in Washington and making significant contributions to the state's health care economy.



2 The Health Care Innovation Sub-Sector supports urban and rural employment with 22,500 direct jobs across 25 counties in Washington state.

3 On average, the Health Care Innovation Sub-Sector workers earn 8% more than the average worker in Washington state and produce 300% more.



4 A shared focus on innovation will drive growth.



Identify



Convene



Catalyze

Cambia Grove and the Washington State Department of Commerce commissioned and collaborated with ECONorthwest to measure the economic contribution of the Health Care Innovation Sub-Sector (HCIS) in Washington state. This analysis was designed as a foundation for measuring the sub-sector and to facilitate a discussion about how cross-sector collaboration can help grow Health Care Innovation across the state of Washington.

The U.S. Health Care industry is currently in a period of transition. Cambia Grove and its partner organizations see this evolution of the industry as an opportunity for Washington state and the United States to develop new health technologies and improve clinical care so that we may achieve better care and better health at lower costs. Washington state is well-positioned to help drive this transformation by bringing together the core health care industry and health innovators.

This analysis begins the discussion about Health Care Innovation in Washington state by identifying where Health Care Innovation occurs and measuring how the sector contributes to the regional economy. From here, Cambia Grove and their partner organizations plan to convene the health care industry, key stakeholders, and the HCIS, to create and strengthen relationships across sectors to support the HCIS and promote growth.

Health Care Innovation Sub-Sector: By the Numbers

772

Firms operating in the HCIS in Washington state

25

Counties in Washington with Health Care Innovation workers

22,500

Direct jobs in the HCIS

\$2 billion

Direct compensation (wages and benefits)

\$6.8 billion

Direct output (value of goods and services produced)

\$1.6 billion

Financing raised in 2014 by HCIS firms

\$88,000

Average compensation per direct employee

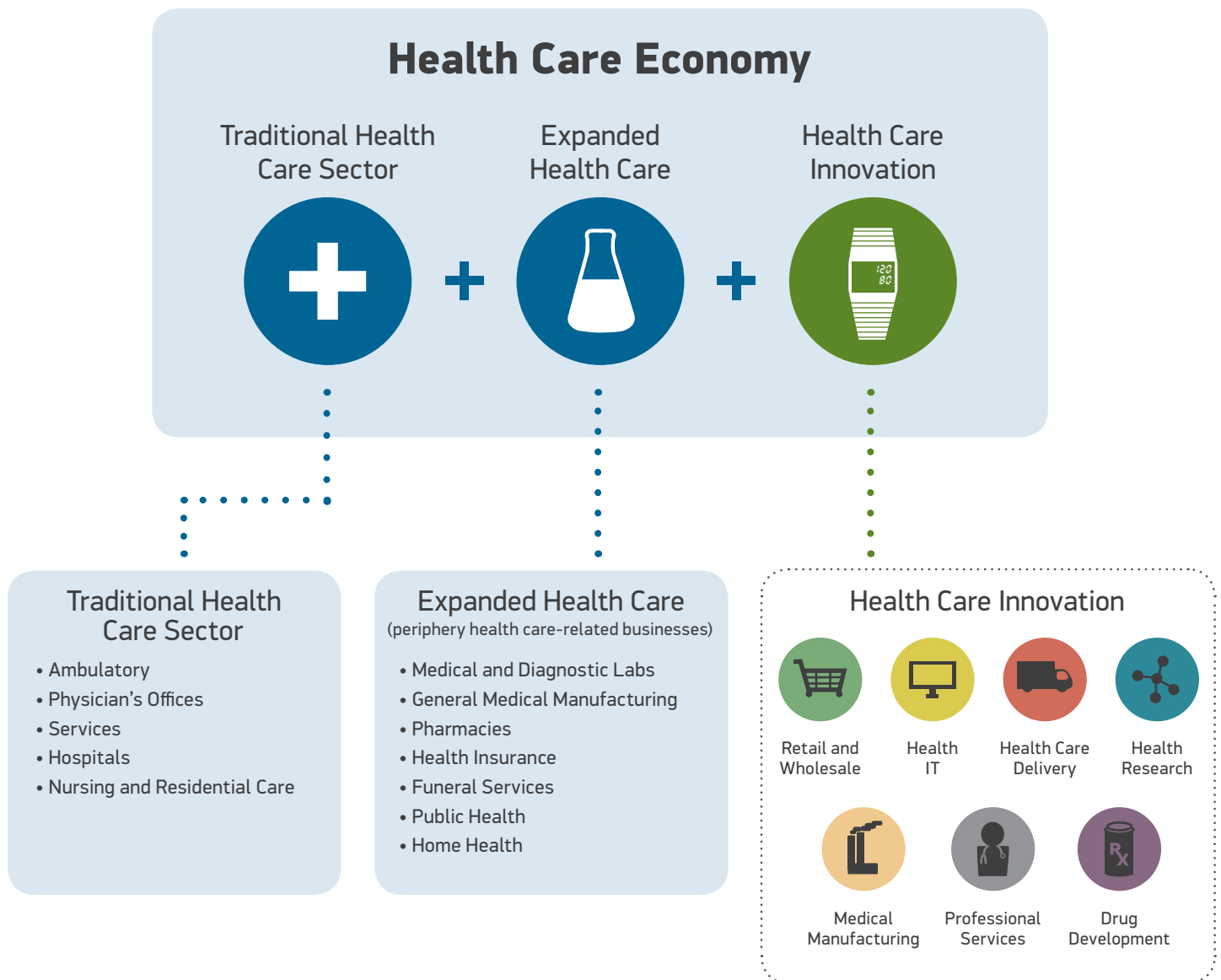
\$301,000

Output per direct worker—
3x greater than an average worker in Washington state

The Health Care Economy

Health Care Innovation activities exist within a broader definition that includes all health care related businesses—the Health Care Economy. The Health Care Economy is made up of two parts: the first is the Traditional Health Care sector as defined by the Bureau of Labor Statistics (BLS). The second is the set of periphery business that directly support the Traditional Health Care sector. While the Traditional Health Care sector captures most of the services provided by this industry, there are many businesses that support direct health care through other business activities, such as manufacturing, professional services, and research.

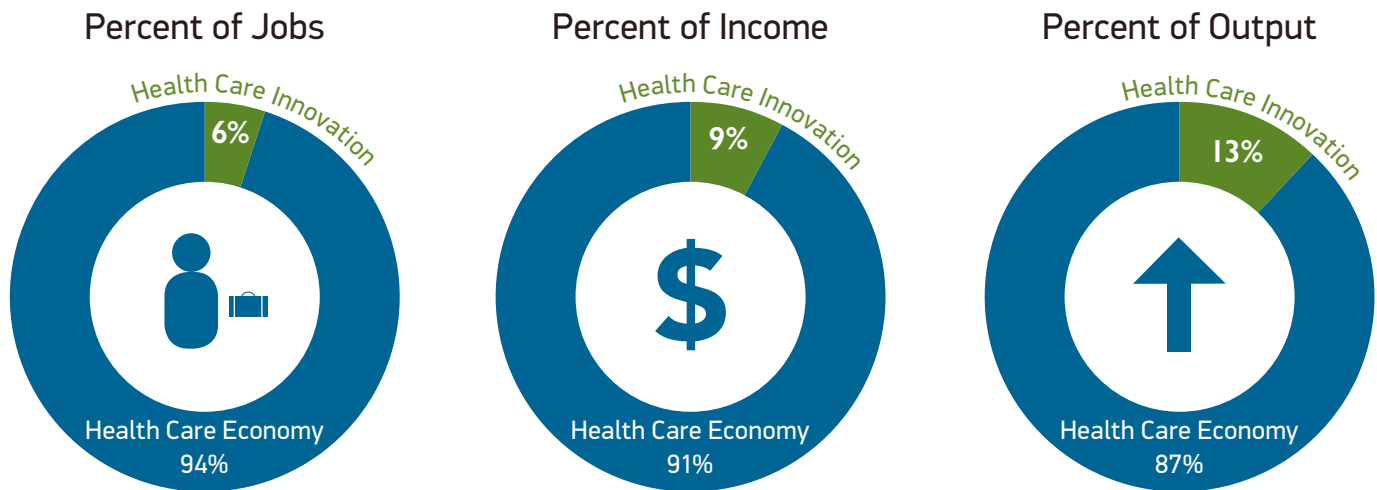
These periphery businesses, which are related to health care, but not identified as “health care” in the standard BLS definition, are the second part of the Health Care Economy. By including both the traditional and expanded definitions, the Health Care Economy measures the health care industry holistically, including healthcare innovation businesses.



The Health Care Innovation Sub-Sector

This report seeks to create a process to define and quantify a “Health Care Innovation” Sub-Sector, and then explore its presence and impact in Washington state. Although impact reports for the health care sector are available in other geographies, no known categorization of Health Care Innovation was identified. ECONorthwest was provided a custom list by Cambia Grove and Washington State Department of Commerce, which identified businesses in the HCIS. Many of these firms in this sub-sector work to develop new technologies (such as wearable technology), new business models, and to engage in core research. Many of these firms also fall into Washington state’s Life Sciences and Global Health sector, which are currently tracked by the Washington State Department of Commerce. However, global health firms are excluded from this study.

Exhibit 1. Relative Contributions of the HCIS



Source: State of Washington; IMPLAN; ECONorthwest

Exhibit 2. Direct Health Care Income and Output, Per Capita, Washington State, 2013

Economic Sector	Compensation per worker	Output per worker
Washington State Economy	\$81,456	\$101,052
Health Care Economy	\$57,673	\$130,179
Health Care Innovation	\$88,158	\$301,482

Source: State of Washington; IMPLAN, 2013; ECONorthwest
 Note: Compensation includes both wages and benefits

The Health Care Innovation Sub-Sector

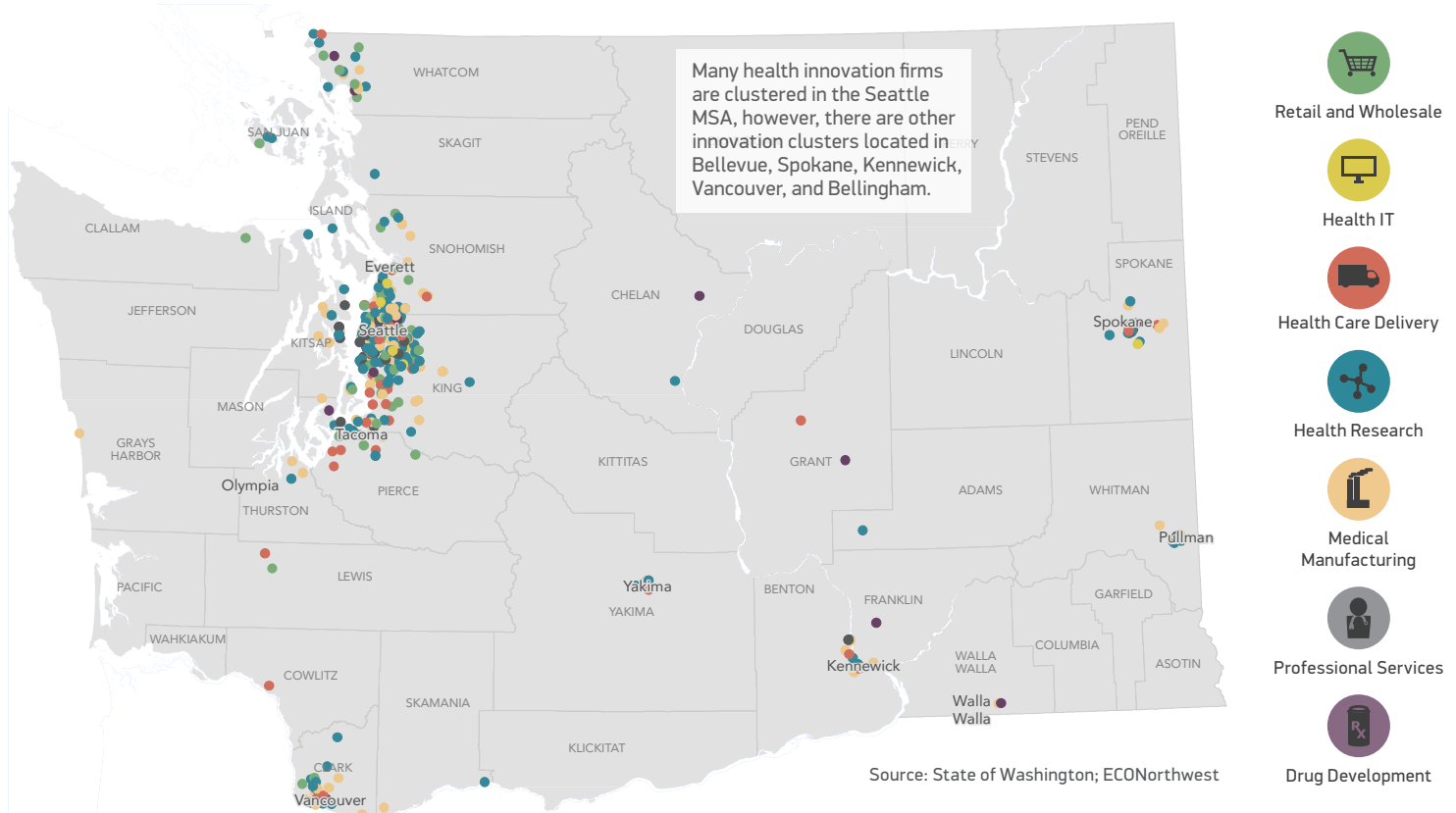
North American Industrial Classification System (NAICS) codes are not intended to accurately capture the type of innovative products being developed at these firms; they do broadly capture the type of business activities. The following categories of business activity were developed to capture Sub-Sectors within the framework of NAICS codes for the HCIS: research and development; medical manufacturing; drug development; health IT; health care delivery; and supporting medical businesses in the retail, wholesale, and professional services sectors. Exhibit 3 shows the number of Health Care Innovation firms and their employment within each of these categories. Exhibit 4 shows the general distribution of the firms, by category, across Washington state.

Exhibit 3. Firms and Employment by Innovation Category, Washington State

Category	Firms	Employment
Health Research	268	6,160
Medical Manufacturing	144	5,653
Retail and Wholesale	91	1,012
Professional Services	89	797
Health Care Delivery	88	5,756
Health IT	56	1,398
Drug Development	36	1,714
Total	772	22,489

Source: State of Washington; IMPLAN; ECONorthwest

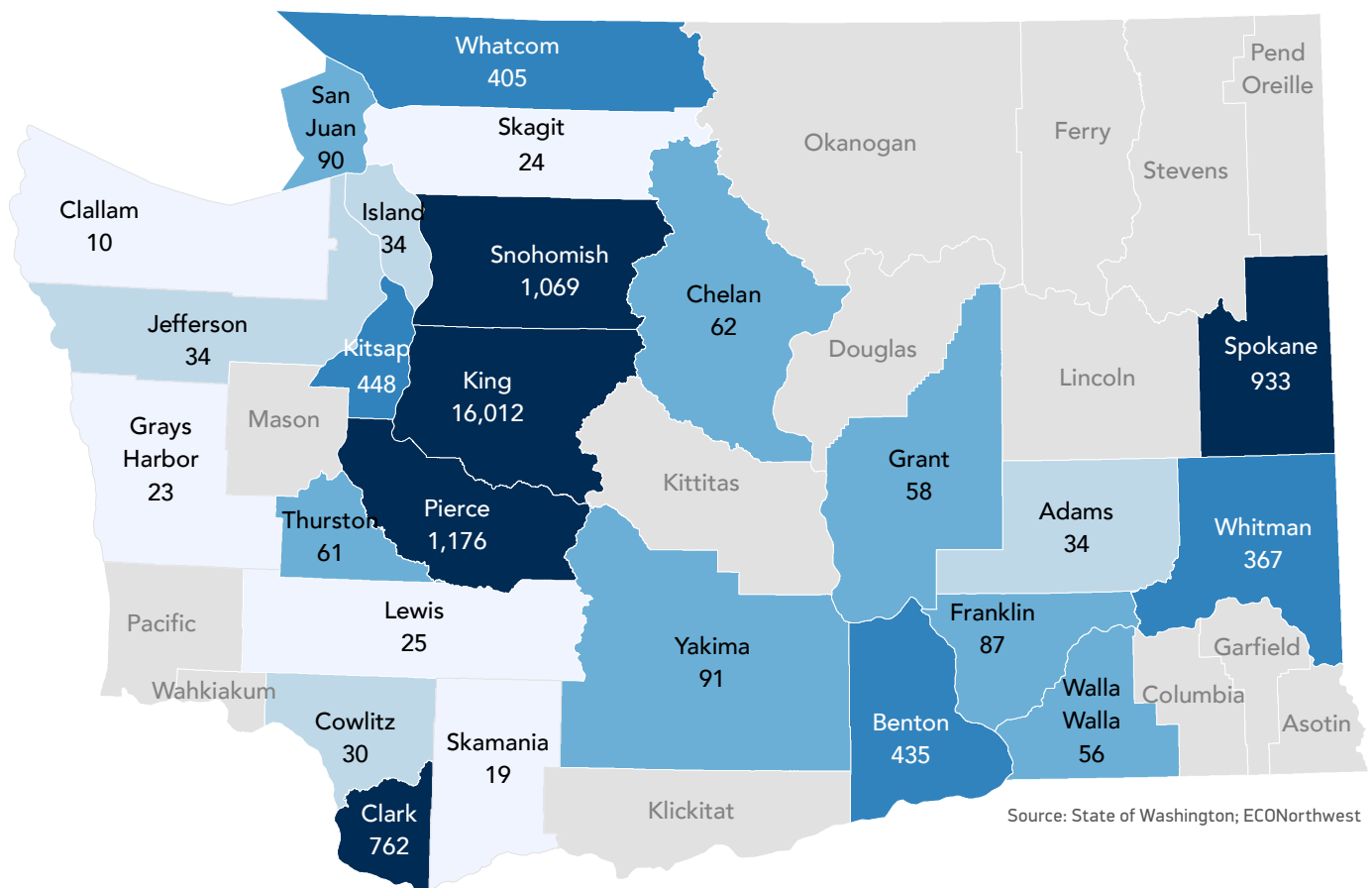
Exhibit 4. Health Care Innovation Firms in Washington State



The Health Care Innovation Sub-Sector

Cambia Grove and Washington State Department of Commerce recognize that Health Care Innovation work done within the walls of health care sector businesses, and outside sector businesses with health care innovation departments or divisions is equally important to the firms quantified in this study. Traditional data sources do not capture the subsets of larger businesses that operate in the HCIS. To overcome this deficiency, Cambia Grove and Washington State Department of Commerce developed and sent surveys to health care payers, providers, large technology firms, research organizations, and academic institutions in Washington state. The study team is still receiving responses to the survey and will include the results in future analyses. Exhibit 5 shows the prevalence of the current HCIS across Washington state as reflected by sector employment by county.

Exhibit 5. Direct Jobs in Health Care Innovation by County



Source: State of Washington; ECONorthwest

Health Care Innovation Jobs

- No Jobs
- 10 - 25
- 26 - 50
- 51 - 100
- 101 - 500
- 501 - 16,012

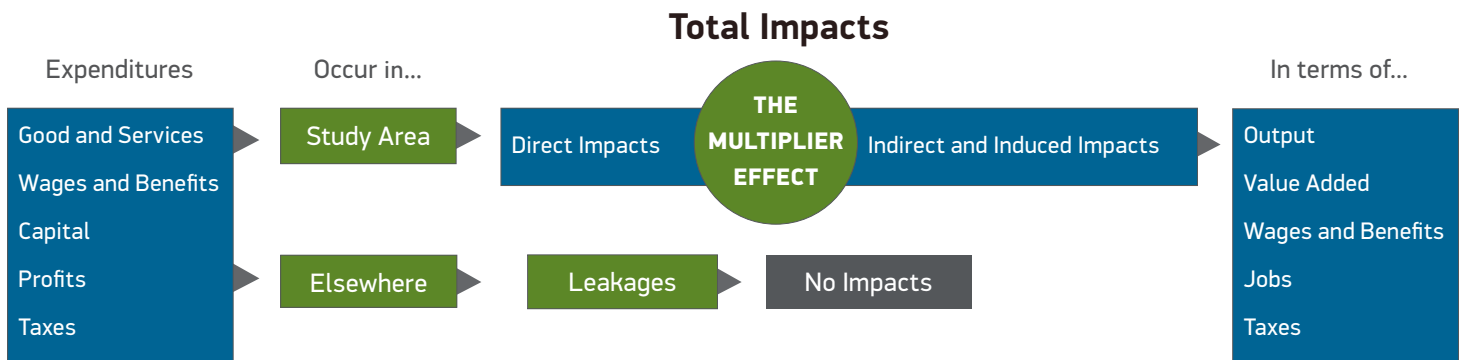
Methodology

A primary objective of this study is to identify firms that fall into the HCIS and measure that sub-sector’s contribution to Washington state’s economy. This not only provides a current “snapshot” of the sub-sector’s economic contributions, but also offers a method of tracking sub-sector growth in the state over time. While NAICS codes are the traditional method for classifying businesses, both the health care economy and the HCIS are not easily defined using this methodology alone.

ECONorthwest uses portions of NAICS codes as well as firm data to identify employment and output in the sector based upon the individual firms that are identified as falling within the subset of the larger health care economy. While this is useful for tracking the industry within Washington state, it is problematic for benchmarking against other industries within and outside of the state. Measuring individual sectors can generally be accomplished using the NAICS code classifications—in this case, individual firms were identified as portions of NAICS codes, rather than complete sectors. Because of this unique approach, figures should not be compared to other NAICS code-based estimates.

To evaluate the economic impacts of the HCIS, ECONorthwest used an input-output model to measure the gross impacts of the sub-sector’s payroll and operations expenditures as they rippled through the state economy. These impacts include direct, indirect, and induced impacts, which make up the total economic contributions of the sub-sector.

- **Direct Impacts** represent the output, employment, or income change due to the Health Care Innovation businesses’ own use of goods and services.
- **Indirect Impacts** are driven by direct expenditures, which initiate a chain of other impacts in the economy. Firms that produce goods and services must themselves purchase supply chain goods and services.
- **Induced Impacts** are generated as a result of consumer expenditures by employees directly and indirectly supported by operations of businesses associated with Health Care Innovation.



These three types of economic impacts are measured in terms of output, labor income, and employment resulting from spending in the study area:

Output represents the value of goods and services produced, and is the broadest measure of economic activity.









Labor Income consists of employee compensation and proprietary income, and is a subset of output. Employee compensation includes workers’ wages and salaries, as well as other benefits. Proprietary income (owner-operated business income) represents the payments received by small-business owners or self-employed workers. Business income would include, for example, income received by private business owners, doctors, accountants, and lawyers.

Jobs, according to IMPLAN’s methodology, are measured in terms of full-year-equivalents (FYE). One FYE job equals work over twelve months in a given industry (this is the same definition used by the federal government’s Bureau of Labor Statistics). A job can be full-time or part-time, seasonal or permanent; IMPLAN counts jobs based on the duration of employment, not the number of hours a week worked. Job impacts from operations are for one year of normal operations.

Economic Contributions

ECONorthwest conducted an exploratory analysis to identify firms working in the innovation space of the health care economy and analyzed the economic contributions that this sub-sector made to the State of Washington. Cambia Grove and Washington State Department of Commerce identified 772 firms, which comprise the HCIS in Washington state. In addition to the firm data furnished by the State of Washington, ECONorthwest also used IMPLAN economic modeling software and proprietary Quarterly Census of Earnings and Wages (QCEW) data to measure jobs, income, and economic output of the HCIS.

Exhibit 6. Total Economic Contribution of Health Care Innovation in Seattle MSA and State of Washington (2015\$)

		Direct	Indirect	Induced	Total	Multiplier
 Seattle Region	 Output	\$5,873M	\$2,422M	\$2,133M	\$10,428M	1.78
	 Income	\$1,910M	\$950M	\$759M	\$3,618M	1.89
	 Jobs	19,094	12,594	14,330	46,017	2.41
 Washington	 Output	\$6,879M	\$2,784M	\$2,443M	\$12,106M	1.76
	 Income	\$2,040M	\$991M	\$795M	\$3,826M	1.88
	 Jobs	22,489	14,841	16,662	53,992	2.40

Source: State of Washington; ECONorthwest

Exhibit 7. Economic Contribution, by Category, of Health Care Innovation in Seattle MSA and State of Washington (2015\$)

Innovation Category	Seattle Region			State		
	Direct	Indirect	Induced	Direct	Indirect	Induced
Retail and Wholesale	267	100	1443	351	122	1954
Health IT	1049	415	4001	1041	396	4088
Health Research	2447	988	13176	2659	1008	14738
Medical Manufacturing	3072	828	10691	4086	1039	14445
Professional Services	296	98	1431	343	105	1692
Healthcare Delivery	1423	695	9495	1520	709	10549
Drug Development	1873	493	5780	2106	448	6527
Total	10428	3618	46017	12106	3826	53992

Source: ECONorthwest using IMPLAN and CEW data

Financing Health Care Innovation

In addition to the economic contributions assessed by ECONorthwest, Cambia Grove, and the Washington State Department of Commerce analyzed venture capital, M&A, licensing, and public offering investment activity supporting health care innovation. The exhibits that follow provide a few different perspectives on investment in the HCIS. Exhibit 8 details venture capital funding by recipient organization type—revealing the diversity of companies (type and size) receiving venture capital in this sector. Exhibits 9 and 10 illustrate this same investment, by financing rounds. This is useful from a baseline perspective, but it also gives some insight into the maturity level of the existing Health Care Innovation firms in Washington state and the type of financing that is being secured.

Exhibit 8. Funding by Recipient Organization Type, 2014

Industry Groups	Number of Firms	Funding Amount (\$M)
Consumer Products and Services (B2C)	2	\$7
Apparel and Accessories	2	\$6.5
Health Care	39	\$1,551.8
Health Care Devices and Supplies	14	\$140.5
Health Care Services	3	\$2.3
Health Care Technology Systems	3	\$3.7
Pharmaceuticals and Biotechnology	19	\$1,405.4
Information Technology	3	\$38.9
Computer Hardware	1	\$0.9
Software	2	\$38.0
Total	44	\$1,597.2

The majority of the funding flowing into Washington state was directed to Pharmaceuticals and Biotechnology firms, which represents 88% of the capital invested in this industry.

*Only investment activity with publicly released and/or disclosed funding amounts are included.
Source: Pitchbook 2014, WBBA Life Sciences Report 2014

Exhibit 9. Funding by Financing Round, 2014

Financing Rounds	Number of Financings	Financing Amount (\$M)
Angel + Seed	11	\$20
Series A	7	\$101
Series B	6	\$197
Series C+	5	\$125
M&A + Licensing	12	\$418
Public Offering	7	\$637
R&D Donation	1	\$100
Total	49	\$1,597

*Only investment activity with publicly released and/or disclosed funding amounts are included
**If a company participated in multiple rounds, each round was counted under 'Number of Financings'
Source: Pitchbook 2014, WBBA Life Sciences Report 2014

Financing Health Care Innovation

Exhibit 10. Health Care Innovation Funding by Financing Round

