Life Sciences Spokane VISION 2030: The Creation of a Health Care and Life Sciences Industry Hub

October 10, 2018

Marcelo Morales, Founder A4Ventures,
VISION 2030 Co-Chair

A Little Bit of History

- MOMENTUM ’87
  - Establish an Education Hub
  - Reinvigorate Downtown
  - Higher Education Presence
  - “Riverpoint Campus”

University District Growth

- 1996 – EWU / WSU Programs
- 2002 – EWU Health Sciences Building
- 2008 – WWAMI UW-WSU partnership
- 2009 – WSU College of Nursing
- 2010 – WSU Health Science Campus Designation
- 2013 - 2nd Year WWAMI Education
- 2013 – Pharmaceutical & Bio-medical Bldg.
- 2014 – Elson S. Floyd College of Medicine
- 2014 – UW-GU Regional Health Partnership
- 2016 – Spokane Teaching Health Clinic

GREATER SPOKANE inc.

The Vision

- World-class center for health and medical sciences education
- Life sciences research and commercialization
- Healthcare and life sciences industry growth
- Unprecedented economic impact

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VISION 2030

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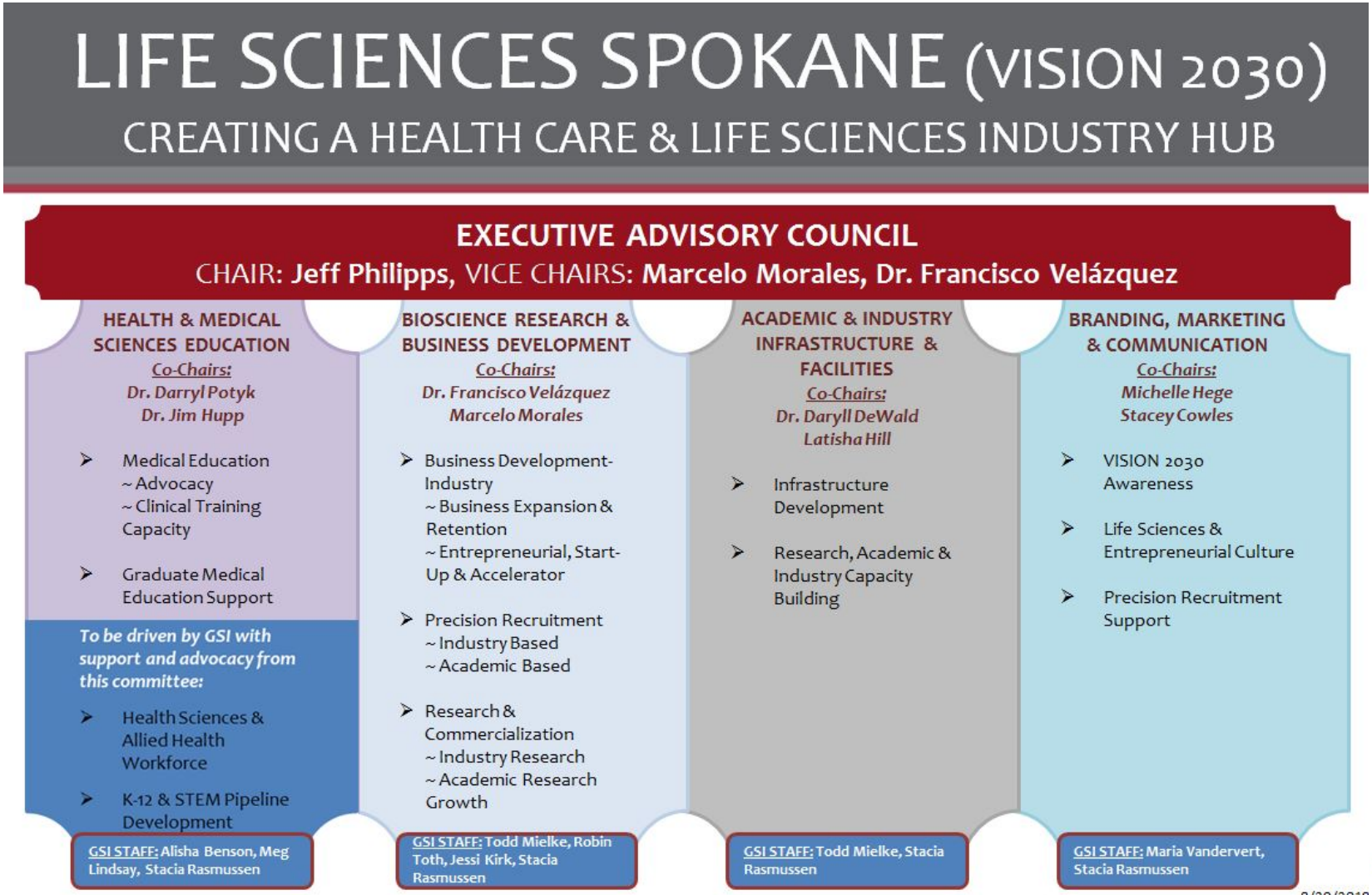
Current Structure



Our Local Higher Education Assets

…wait for it…

…wait for it…

…wait for it…

EASTERN WASHINGTON UNIVERSITY
start something big

Communication Disorders (BA, MS) ▪ Occupational Therapy (MOT) ▪ Physical Therapy (DPT) ▪ Public Health (BS, MPH) ▪ Health Services Administration (BA, Grad Certificate) ▪ Health Sciences (BS) ▪ Health Informatics (BS) ▪ Dental Hygiene (BS, MS) ▪ RIDE (Dental with UW) ▪ Pre-Nursing (BSN with WSU) ▪ Social Work (BA, MSW) ▪ Addiction Studies (BA, Graduate Certificate) ▪ Exercise Science (BS) ▪ Recreation Therapy (BA)

WASHINGTON STATE UNIVERSITY
HEALTH SCIENCES SPOKANE

Medical Degree (MD) ▪ Pharmacy (PharmD, PhD) ▪ Pre-Nursing (BSN with Whitworth and EWU) ▪ Nursing (RN, MN, RN-MN, FNP, DNP, PhD) ▪ Healthy Policy & Administration (MHPA) ▪ Nutrition & Exercise Physiology (BS, MSCPD) ▪ Speech and Hearing (BS, MS)

WHITWORTH UNIVERSITY

Athletic Training (MSAT) ▪ Pre-Nursing (BSN with WSU)

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VISION 2030

Life Sciences Spokane

UNIVERSITY of WASHINGTON

Four-Year Medical School (MD with Gonzaga) ▪ MEDEX Northwest (Physician Assistant Training, MS) ▪ RIDE (Dental with EWU) ▪ School of Medicine Family Medicine Residency Program

GONZAGA UNIVERSITY

Nursing (BSN, MSN) ▪ Nurse Practitioner (DNP) ▪ Nurse Anesthesia ▪ Practitioner (DNAP) ▪ BS Human Physiology

Community Colleges of Spokane

Pre-Major: Chiropractic ▪ Dental Hygiene ▪ Dentistry ▪ Medicine ▪ Nursing (WSU 3+1) ▪ Pharmacy (WSU Articulation Pharm-D) ▪ Respiratory Care (BAS)
Health-Related: Addiction Studies ▪ Dental Assisting ▪ Dental Auxiliary ▪ Diagnostic Medical Sonography ▪ Echocardiography ▪ Hearing Instrument Specialist ▪ Invasive Cardiovascular Technology ▪ Medical Assistant ▪ Medical Laboratory Tech ▪ Nursing ▪ Nursing Assistant/Aide ▪ Occupational Therapy Assistant ▪ Orthotic/Prosthetic Tech ▪ Pharmacy Tech ▪ Physical Therapist Assistant ▪ Radiology Technology ▪ Respiratory Care ▪ Surgical Technology ▪ Vascular Technology

Our Other Assets

- World-class health care industry & services
- Growing academic and industry research
- Competitive cost of living
- Lower cost of doing business
- Collaborative spirit

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The Road We Have Traveled

PAVING THE WAY

FOR LIFE SCIENCES SPOKANE

When you're stuck in road construction, you're seeing a project nearing completion. It may have started as an idea to solve a problem, which led to gathering and compiling resources, drawing up the design and stages of implementation, all leading up to you, sitting in a line of cars, anxious for that new road to open and reduce your commute time. Since the inception of VISION 2030, we have been collaborating with a variety of partners in the community and examining this endeavor from many angles, from education and research to business development and community health care. Here is a roadmap of our progress so far and the next steps we are taking in our goal to make Spokane a nationally recognized life sciences and health care industry hub.

COLLABORATION

GSI partnered with business and community organizations, health care systems, and academic institutions, gathered data for focused baselines, and engaged their leadership to provide strategic expertise in identifying the most critical needs and how to meet them.

FORMALIZATION

In 2014 VISION 2030, a business community initiative was established to advocate for the WWAMI medical education expansion to address a growing physician shortage and rural health care access issue, with a plan to leverage that expansion to grow a Spokane life sciences economy.

SEED

Momentum '87, a community initiative, set the stage for the development of the Riverpoint Campus with a focus on creating a collaborative, multi-institutional hub of higher education, and collaboration in downtown Spokane.

FOUNDATION

5 Universities and our Community Colleges system are co-located within the 770-acre University District, offering numerous health sciences programs in partnership with our two 4-year medical schools and the Spokane Teaching Health Clinic.

WORK PLAN DEVELOPMENT

Economic studies were reviewed, current assets and resources were inventoried, existing research and funding sources were identified, and input from the community was gathered to develop a high level work plan.

GOAL

Annual economic impact of up to a 9% increase in GDP and more than 9,000 high wage jobs

INDUSTRY GROWTH TARGETS IDENTIFIED

Areas of the life sciences where we have existing expertise and the greatest potential were identified. They include infectious disease prevention and biomaterials, research/clinical trials for cancer, diabetes, renal disease, and other metabolic syndrome diseases.

Where We Are Going; What Is Next

Continue to convene and collaborate to address priority projects that result in more physicians and rural care access, while growing additional ecosystem components to create a robust life sciences economy in the Spokane region.

- Growth of the health sciences' and medical schools' enrollment
- More graduate medical education opportunities
- Development of the K-12 STEM pipeline
- More nursing and psychology faculty
- Additional wet lab and dry lab space
- Sufficient educational clinical capacity; both teaching providers and facilities
- More affordable entrepreneurial start-up and accelerator space
- Additional academic and industry research being conducted
- Comprehensive commercialization support services and funding organizations
- Expansion and retention of existing life sciences businesses in the Spokane region
- Recruitment of new life science businesses into our area

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Questions?

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COMPARISON OF TRADITIONAL VS. FLIPPED CURRICULAR MODELS

Example of a Traditional 3-Credit Course Design (9 hrs assigned effort per week)

TIME: IN CLASS → AFTER CLASS

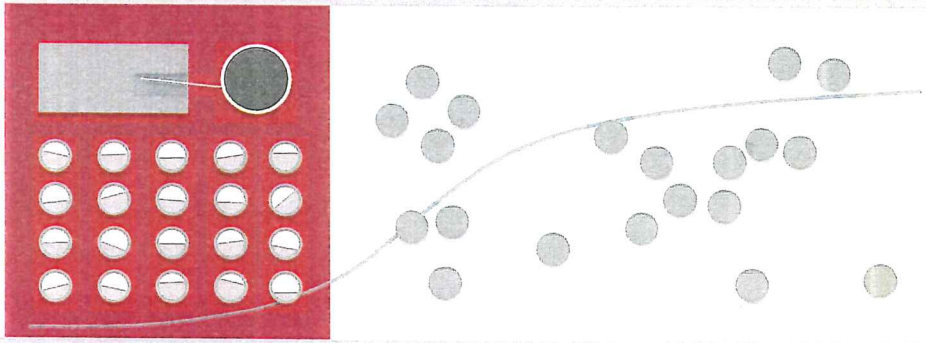
Class provides ***exposure*** to foundational knowledge

Assignments provide ***experience*** needed to integrate knowledge and demonstrate ***competency*** upon evaluation

Bloom's Taxonomy of Learning (➤ increasing cognitive complexity)
Remembering ➤ Understanding ➤ Applying ➤ Analyzing ➤ Evaluating ➤ Creating

IN CLASS
- Learners sit and listen to lectures
- Teacher is present to answer questions about lecture content
- Some Learners ask and answer questions; some do not engage
- Much of what is learned is forgotten until reviewed for homework or examination

AFTER CLASS
- Homework assignments provide Learners with the experience required for knowledge integration and deeper learning.
- Learner frustration can be high as application questions become complex while access to Teacher assistance is limited.
- Peer support is important for tackling assignments independently, but lectures do not facilitate socialization. Some learners establish supportive networks, but others remain isolated or intermittent.
- Misunderstandings can become entrenched, and only revealed at examination
- Competency established through examination



RIGID SYSTEM OF DELVERY; PASSIVE LEARNING

INEXPERIENCED LEARNERS WITH LITTLE COHESION & LIMITED ACCESS TO TEACHER ASSISTANCE; INEFFICIENT LEARNING

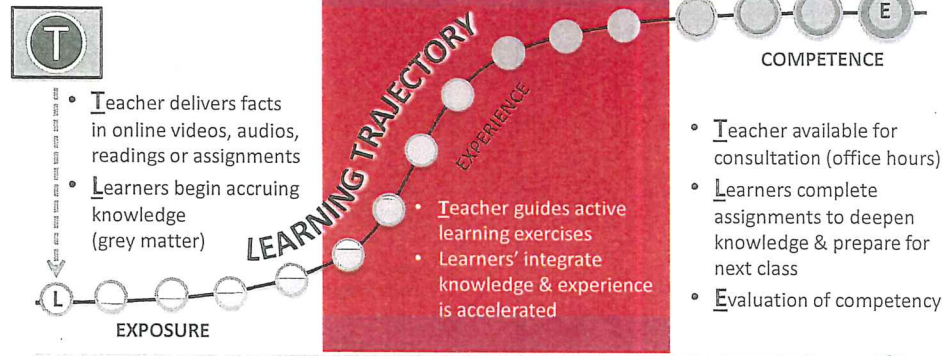
Example of our New 3-Credit Course Design (still 9 hrs assigned effort/week)

TIME: BEFORE CLASS → IN CLASS → AFTER CLASS

E-learning provides **exposure** to foundational knowledge

Class provides **experience** to integrate knowledge and collaborate

Assignments deepen learning & evaluation proves **competency**

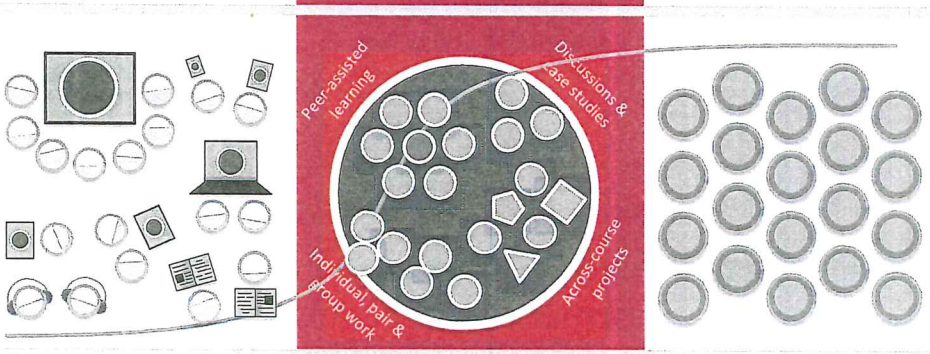


Bloom's Taxonomy of Learning (➤ increasing cognitive complexity)
Remembering ➤ Understanding ➤ Applying ➤ Analyzing ➤ Evaluating ➤ Creating

BEFORE CLASS
- Content experts create instruction materials for Learners to review
- Learners have the flexibility to watch/listen/read where/when/how suits them
- Integrated questioning aids retention, provides immediate feedback on comprehension, & helps Teachers identify where clarification is needed in class

IN CLASS
- Lectures replaced with guided tutelage: the classroom is now a place of action & experience
- Application experts lead students through independent & collaborative activities e.g. problem-solving, case-studies, discussion, projects
- Help is on hand to answer complex questions that arise during application

AFTER CLASS
- Assignments build on class activities & momentum to create even deeper learning and greater competency
- Social classroom synergizes Learner collaboration and peer support outside class
- Misunderstandings and frustrations are reduced
- Revision & evaluation assures learner competency

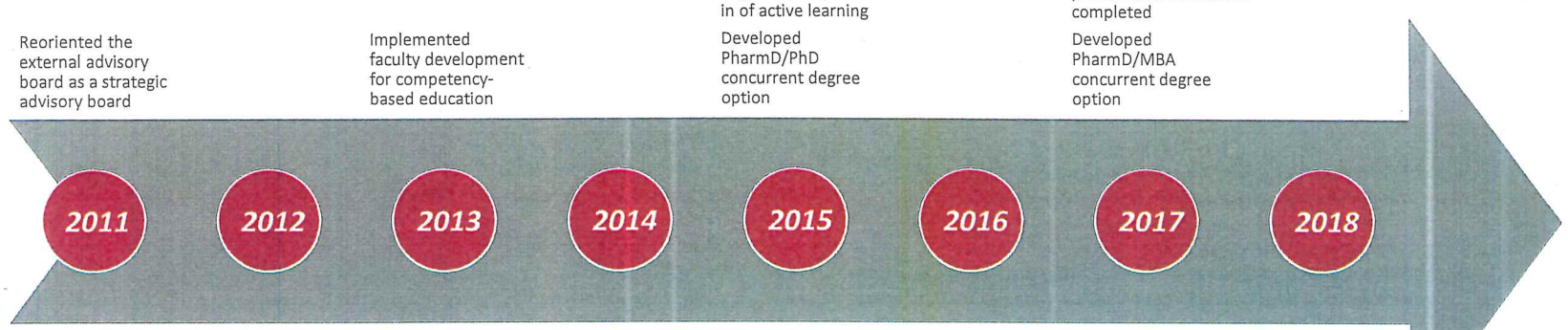


FLEXIBLE SYSTEM OF DELVERY; BLENDED LEARNING

COLLABORATIVE & ACTIVE CLASS; EXPERIENTIAL LEARNING

SYNERGIZED LEARNERS WITH COMPETENCE; DEEP LEARNING

Key initiatives and milestones



2011

Reoriented the external advisory board as a strategic advisory board

2012

Implemented peer review of teaching

2013

Created a pharmacy alumni organization

Initiated a faculty mentoring program

Implemented faculty development for competency-based education

2014

Began 3-year phase-in of competency-based curricular delivery

Created an Honors program

Obtained funding for core laboratories

2015

Established a funded alumni mentoring program

Began a stepwise increase in PharmD enrollment

PharmD program reaccredited

Launched the Yakima extension

Began 3-year phase-in of active learning

Developed PharmD/PhD concurrent degree option

2016

Established a Teaching Fellows program

Established a funded community pharmacy residency program

Launched the inaugural Trans-formation and Innovation in Pharmacy Education (TIPed) Institute

2017

Rollout of new professional curriculum completed

Developed PharmD/MBA concurrent degree option

2018

Name changed to Pharmacy and Pharmaceutical Sciences

Established the Pharmacy Practice Research Center

Designed and implemented a platform to delivery pharmacy CE world-wide

Inaugural Yakima cohort enters its final year and prepares to graduate

College of
Pharmacy and
Pharmaceutical Sciences
WASHINGTON STATE UNIVERSITY

College of Nursing

Joyce Griffin-Sobel, PhD, RN, ANEF, FAAN
Professor & Dean

Mel Haberman, PhD, RN, FAAN
Professor & Executive Associate Dean

October 10, 2018
STEM Alliance Meeting

College of Nursing

One College that functions as an integrated multi-campus system.

<u>900+ students</u>
RN-BSN
BSN
MN
DNP
PhD

Sim at 3 sites


TIME
OUT
ZONE

High Fidelity Simulation

Program of Excellence in Clinical Performance & Simulation

- Kevin Stevens, Director, PECPS, Spokane, TriCities, Yakima
- Barb Wallace, Skills lab director
- Michelle Pelchat, Simulation technician
- Sim facilitators: Laura Wintersteen, Kyra Schmidt, Corey Risse, Mikel Allen (Spokane)
- Lee Punch (TriCities)
- Linda Baumgarten (Yakima)

High Fidelity Simulation

- Students gain experience through active learning, using manikins, standardized patients, and realistic healthcare scenarios (simulations) under guidance of experienced faculty and staff.

High Fidelity Simulation

Clinical and Behavioral aspects of healthcare delivery

- Developed 15 Sims for BSN & 10 for military
- Crisis management
- Communication
- Sound clinical decision-making
- Patient safety
- Teamwork
- Leadership
- Error prevention
- Social Justice

Recent Sims offered to students

- IPE: Active Shooter SIM, (Nursing, Medicine, Pharmacy, NEP, Speech/Hearing
- IPE: Cardiac Sim, all campus disciplines

Casualty First Responder Simulation

Participants will learn how to take immediate steps to stabilize persons injured in a mass casualty incident, practicing applying a tourniquet correctly, maintaining a patent airway, stop bleeding, and improvise until help arrives. Students will work in teams to practice new skills and debrief the experience.

High Fidelity Simulation

Stats

- 450 hours simulation in Spokane per semester
- 100 each in TriCities and Yakima
- All BSN students graduate with 30 hours of Sim
- Cost: size, equipment, staffing, mission, target audience
- Each manikin is $75-90K

Standardized Patients

- Our standardized patient coordinator recruits and trains people for a variety of scenarios as different type of simulation learning.
- Medical surgical
- Mental health
- Community health
- Nursing fundamentals
- Obstetrics
- Pediatrics
- Interprofessional care

Community Partners

- WA Air National Guard Medics & Nurses
- WA Army Guard Combat Medics
- UW Medex Physician Assistance Program
- WSU Nutrition and Exercise Physiology Program
- EWU Speech and Hearing Program
- WSU Athletic Trainer Program
- Spokane Community College
- Spokane Public Health District
- WA Assoc. Nurse Anesthetists

WSU College of Nursing Simulation

https://youtu.be/rd0B9u_58K0

4:36

College of Nursing

Contact Information

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Washington State University College of Nursing

P.O. Box 1495 | Spokane, WA 99210-1495

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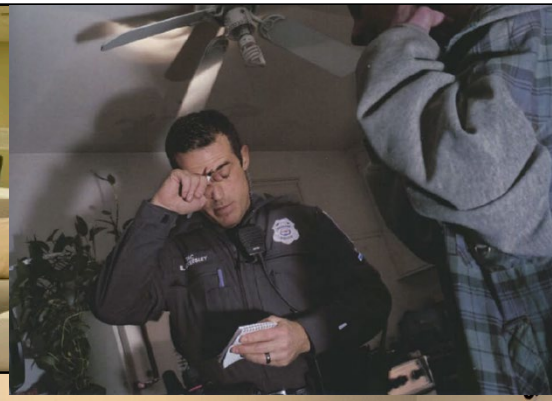
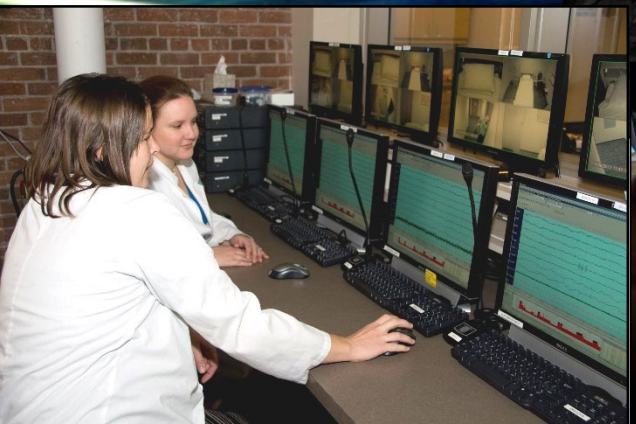
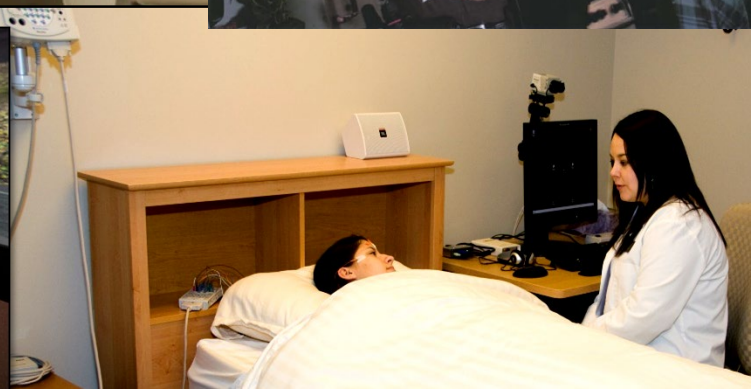
nursing.wsu.edu

Sleep and Performance Research Center
Human Sleep and Cognition Laboratory

Hans Van Dongen, Ph.D., Professor and Director
Stephen James, Ph.D., Assistant Research Professor
Kimberly Honn, Ph.D., Assistant Research Professor
Devon Hansen, Ph.D., Postdoctoral Research Fellow





What Do We Do?

- We live in a 24/7 society, where there is a need for people to be awake and at work at all hours of the day.
- Extended work hours and night and shift work compete with the biological need to sleep and with daily rhythms driven by the biological clock.
- SPRC faculty work to answer critical questions about the effects of reduced and displaced sleep on cognitive performance and health.
- We study sleep and wakefulness in people going about their everyday lives or sequestered in the laboratory.
- Our research findings are used in the real world to educate, inform policy, mitigate the effects of sleep loss, and sustain health.

Funding Agencies

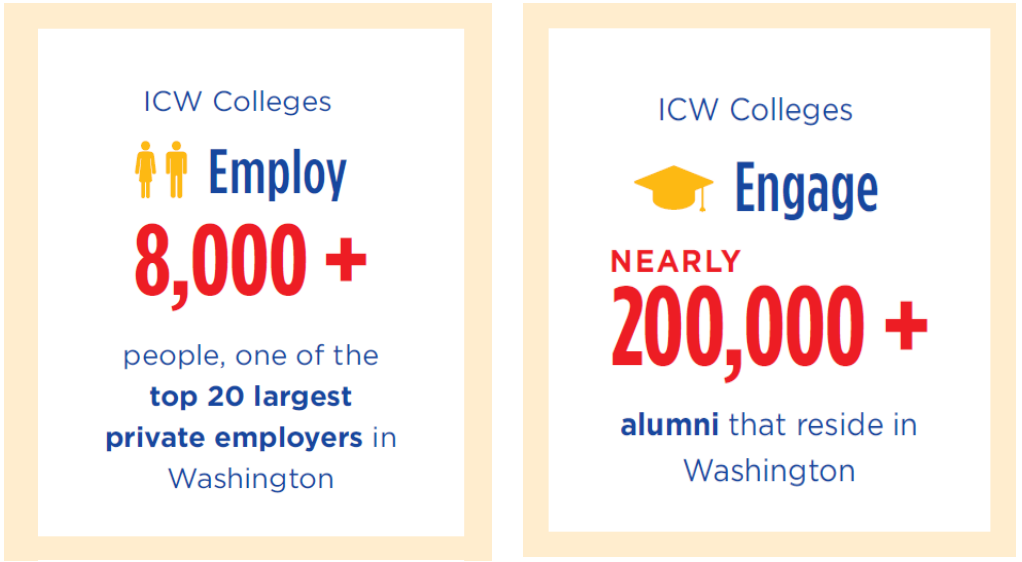
Research Outcomes

- Hours of service regulations for FMCSA
- Naval Watch Standing Schedules
- Biomathematical modeling for DOD
- Cognitive impairment in sleep disordered patients
- CDC NIOSH Law Enforcement Fatigue Management
- OR DPSST Basic Police Academy
- California Highway Patrol Vehicle Crewing
- Spokane PD Overtime Policy

Independent Colleges of Washington

Gonzaga University ★ Heritage University ★ Pacific Lutheran University ★ Saint Martin's University
Seattle Pacific University ★ Seattle University ★ University of Puget Sound
Walla Walla University ★ Whitman College ★ Whitworth University

Powering Regional Economies



ICW college expend $608M annually for payroll and benefits

Gonzaga University ★ Heritage University ★ Pacific Lutheran University ★ Saint Martin's University
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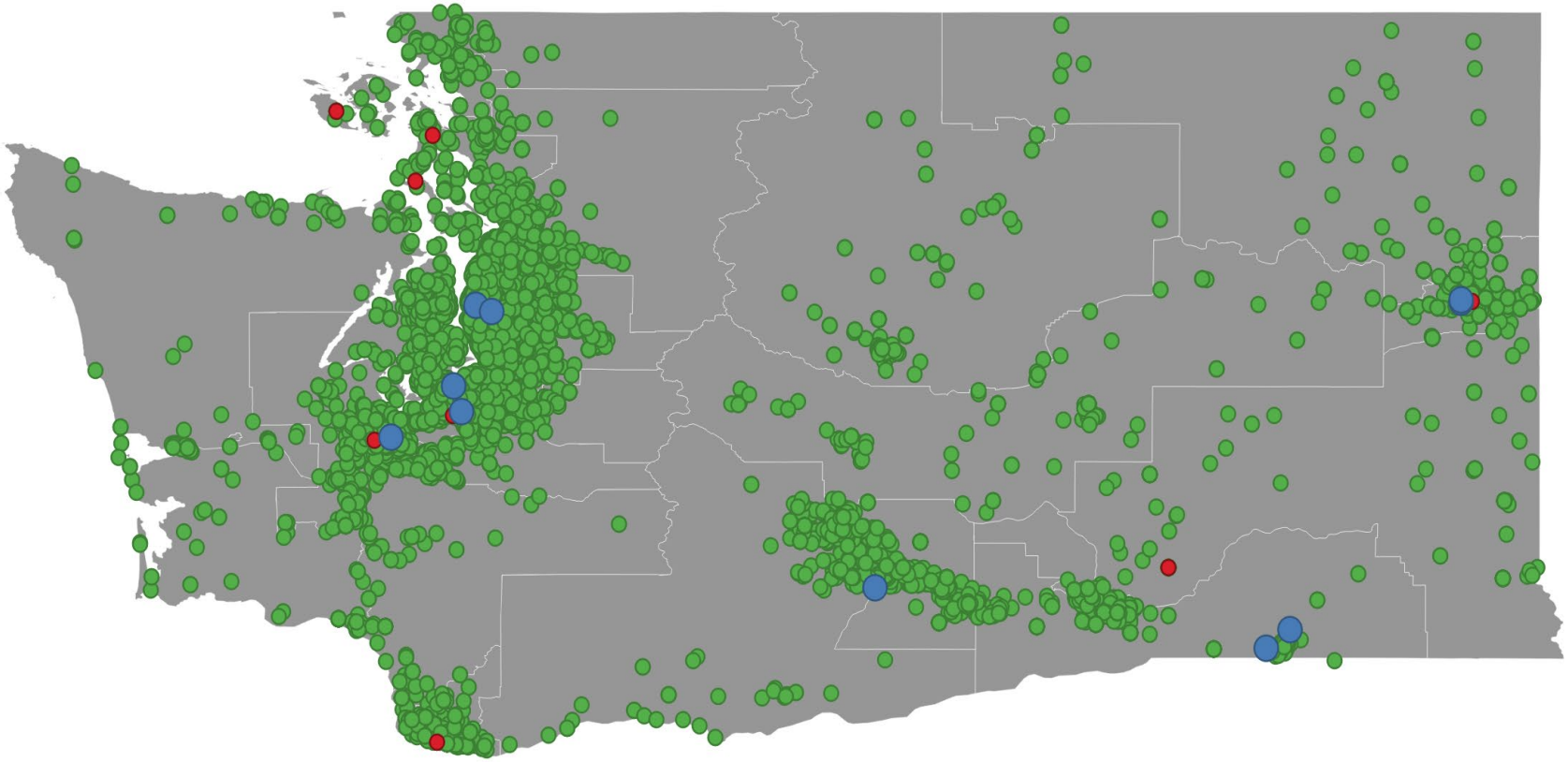
Serving Washington: Students from All Counties



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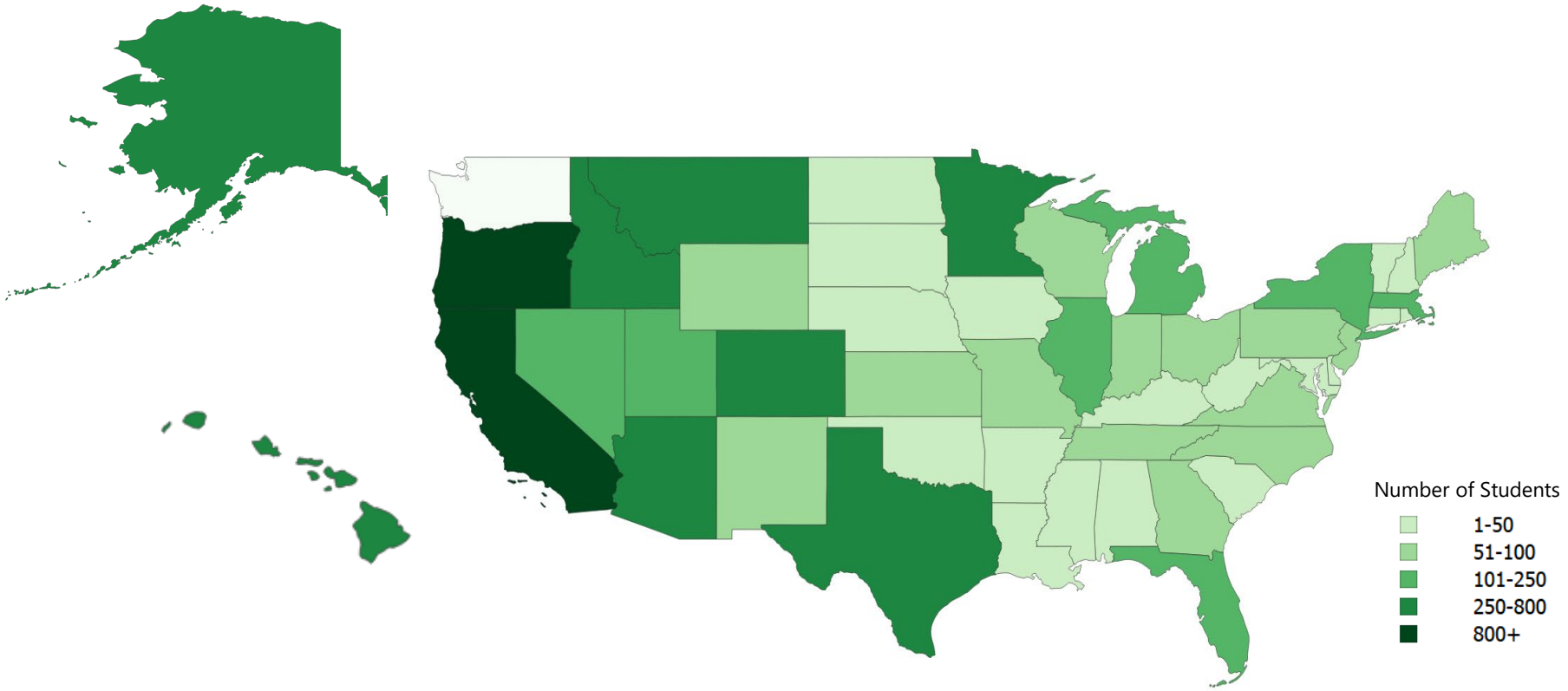
Attracting Talent from Across the Nation



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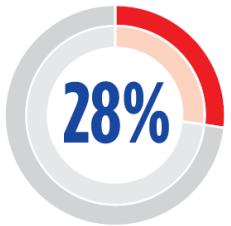
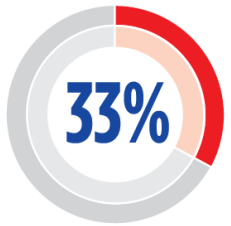
Championing Diversity

Low-Income Students



Students Above Age 25



Students of Color

Transfer Students*

*of Juniors and Seniors (transferring 45+ credits)

Source: ICW analysis of most recent Student Unit Record Data submissions.

Gonzaga University ★ Heritage University ★ Pacific Lutheran University ★ Saint Martin's University
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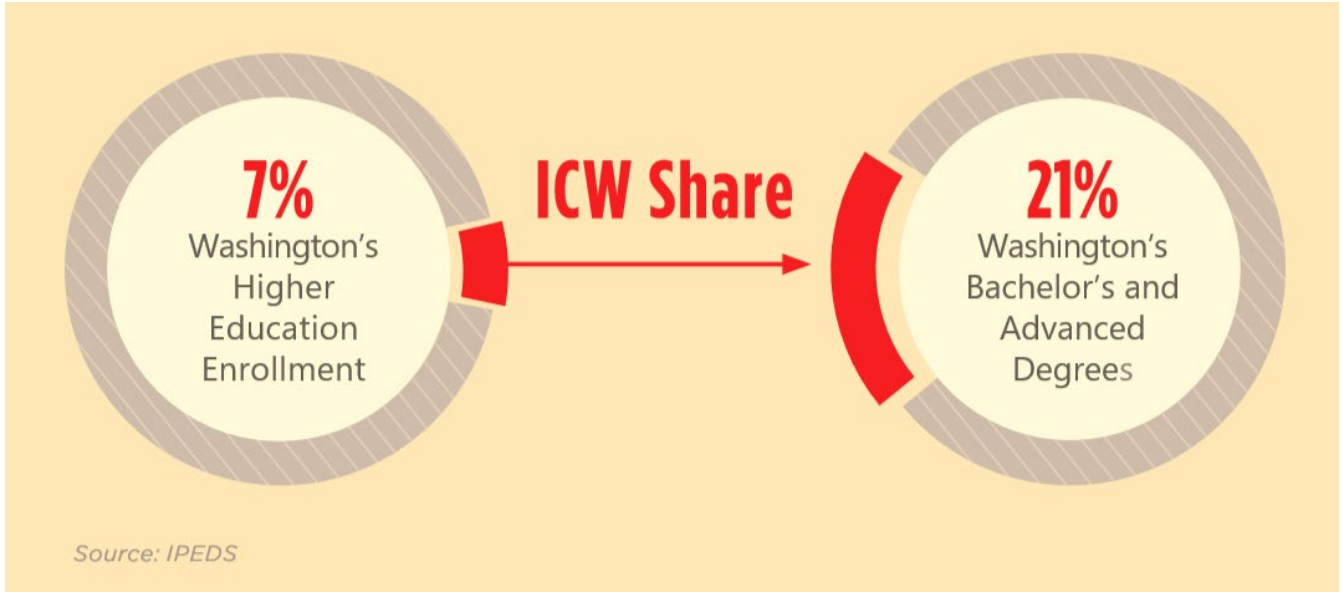
Leading Degree Completion



Washington's not-for-profit colleges consistently rank among the top 5 states in terms of degree completion:

RI	87.3%
CT	84.3%
MD	83.9%
MA	83.0%
WA	**82.8%**

Source: National Student Clearinghouse Research Center, February 2018

Cultivating Talent

Gonzaga University ★ Heritage University ★ Pacific Lutheran University ★ Saint Martin's University
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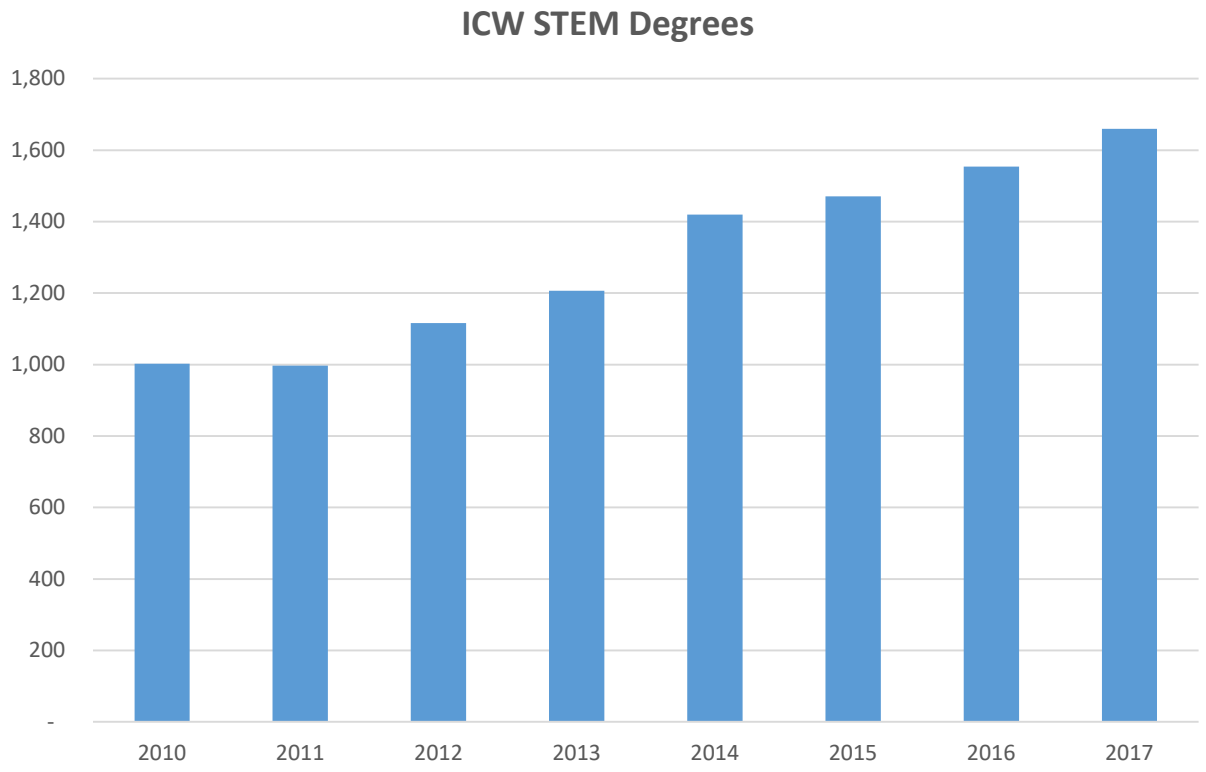
STEM Enrollment & Completions

STEM degree conferrals from ICW Colleges have grown 66% between 2010 and 2017.

Yet have remained at around 12% of all STEM degree conferrals in the state.



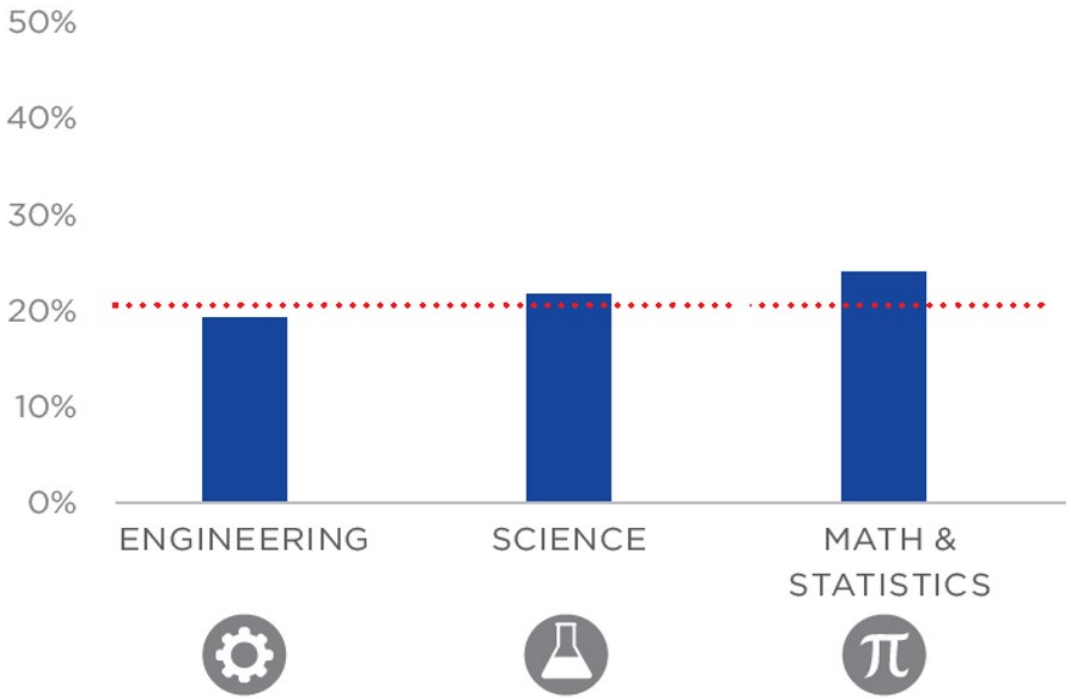
Focusing on High-Demand Fields

ICW's share of the state's bachelors and advanced STEM degrees in

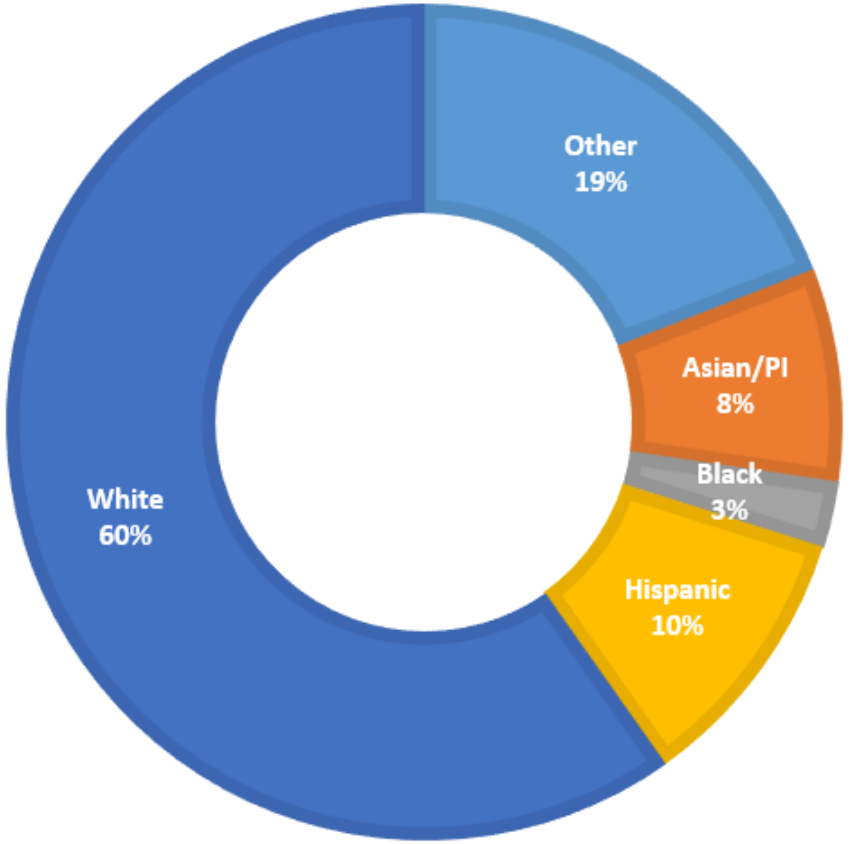
Engineering: 19%

Science: 21%

Math & Statistics: 25%



Diversifying the STEM Talent Pipeline



A Public-Private Partnership Delivering Results

Gonzaga University ★ Heritage University ★ Pacific Lutheran University ★ Saint Martin's University
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Staff of *Science in Action!*

Science Outreach Coordinator:

Jiana Stover, M.S.

Science Outreach Director:

Nancy Staub, Ph.D.

***Science in Action! GU* Student Staff:**

Sarah Cooney

Ben Gallagher

Sophia Troeh

Katelyn Orcino

Goals of *Science in Action!*

1) Cultivate K-6 student curiosity, knowledge in science and overall scientific literacy.

2) Recruit science majors into the teaching field.

3) Help pre-service teachers develop confidence to teach science.

4) Provide additional resources to our partner teachers and schools to help teach science all the time!

Science Education Outreach Programs

In the Classroom

***Science In Action!* - In The Classroom & After School**

Gonzaga's longest running science outreach program, SIA! sent over 134 undergrads into 36 Spokane classrooms & after school programs, to lead 288 hands-on, inquiry-based activities in17-18.

Bringing Research Into Classrooms

SIA! partners with Gonzaga faculty to adapt research projects into hands-on lessons.

Science In The Summer!

SIA! runs several science outreach programs on the Gonzaga campus during the summer (e.g., for high school students and pre-service teachers).

Science Education Outreach Programs

Pipeline-focused programs

Meet A Science Professor

We partner with Spokane Public Schools to bring 4th -6th graders to Gonzaga to tour science departments, meet professors, & do hands-on science. This program builds a pathway from the "classroom to college."

SIA! in Antarctica

SIA!, with an NSF-funded collaborator at the Lamont Doherty Earth Observatory, will write K-6 activities based on research field work in Antarctica. Lessons will be piloted during the Spring and Fall 2019 SIA! sessions.

STEM Educator Professional Development

The Scientist Within – Phage Hunters: An intensive, two-week professional development workshop to immerse high school teachers into inquiry-based research.

Geology of Spokane Workshop: Two day workshop for Gonzaga pre-service teachers on how to incorporate Earth Science into K-12 classrooms. Includes a field trip emphasizing the importance of place-based learning.

Science in Action! can be used to address research questions in education

FEATURE ARTICLE

Science in Action! Outreach Program Promotes Confidence in Teaching Science

RACHEL ZACK, EDWARD F. VACHA, NANCY L. STAUB

The American Biology Teacher 79:711-719. 2017.

After participating in Science in Action!

- Pre-service teachers were more confident teaching science
- Science majors were more likely to “seriously consider” a teaching career

Service Hours to *Action!*

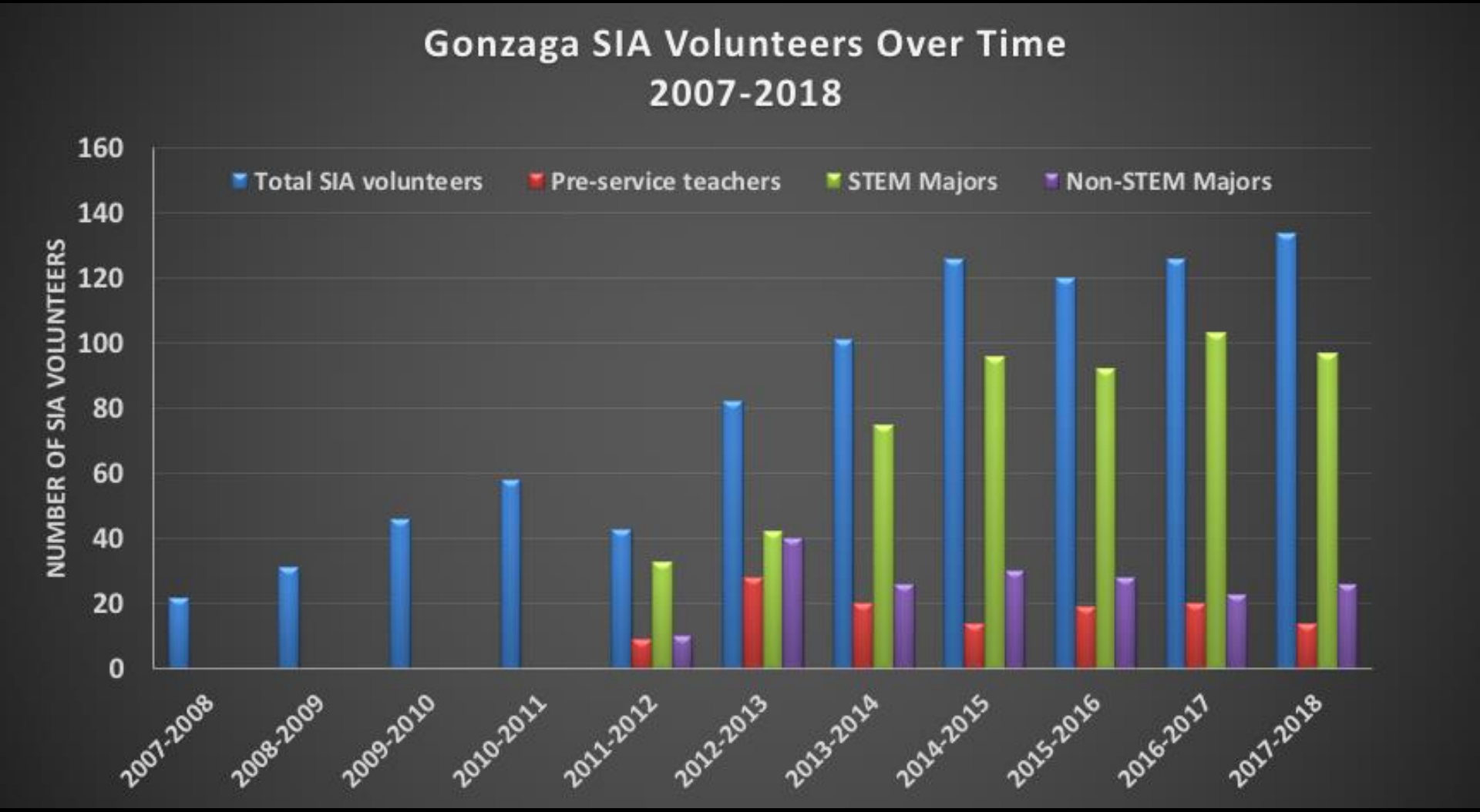
Since 2007, Gonzaga students have completed over ***17,780*** total service hours with *Science in Action!*

This translates to thousands of **K-6 students** doing hands-on, inquiry-based science in Spokane Public School classrooms…

…And hundreds of science activities that classroom **teachers** can use in the future to build and encourage science knowledge and enthusiasm!

(Cumulative totals from 2007-2018)

Growth In Program Participation

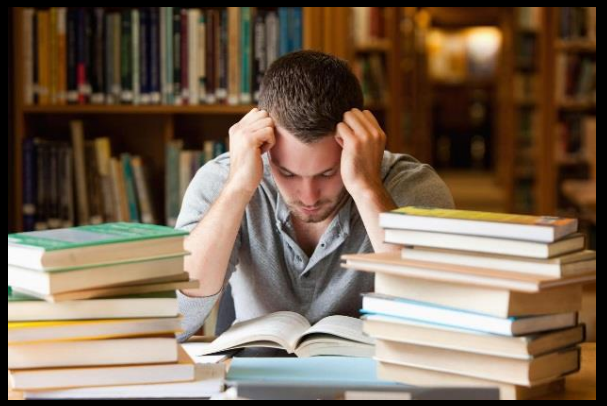


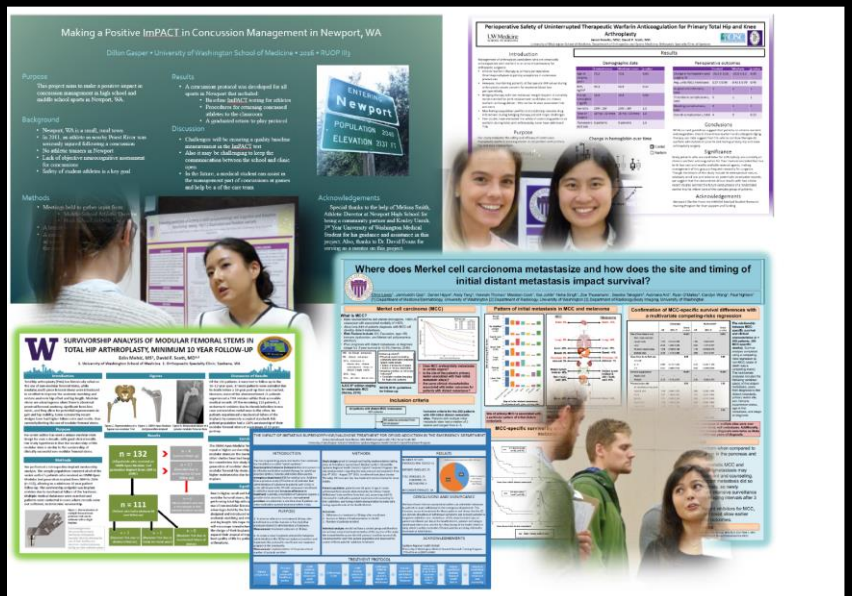
UWSOM-Spokane

- Profile of 2018 Entering Class
  - 60 students
  - 22 men, 38 women
  - Average age 25 y/o (range 21-37)
  - Mean MCAT Percentile 77; Mean GPA 3.67
  - 22 UW, 4 GU, 9 WSU, 3 Whitworth
    - others from EWU, Whitman, Central, Western, U of Puget Sound, Evergreen
  - Hometown
    - 17 from EWA (11 Spokane)
    - 22 from rural counties (Whitman, Chelan, Yakima, Kittitas, Kitsap, Clark, Skamania)
    - 38 from urban counties (Spokane, King, Snohomish, Pierce)

Applying to Medical School

- UWSOM Utilizes a Holistic Approach
  - Required Undergraduate Coursework
    - Chemistry, Biology, Physics, Humanities
    - Mean GPA = 3.67
  - MCAT
    - Revised 2015 – continues to assess science proficiency
    - New sections
      - Critical analysis and Reasoning
      - Psychological Social Biologic Foundations of Behavior
    - Mean MCAT percentile ranking = 77
  - Clinical Exposure (at least 40 hours)
    - Understanding of what it means to be a doctor
  - Service – Volunteer experience
  - Demonstration of Leadership
  - Research or Problem solving ability





UWSOM Student Research Poster Session

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Tuesday, October 23, 2018

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