

Biomedical and Health Informatics: Careers and Opportunities for Graduate Study

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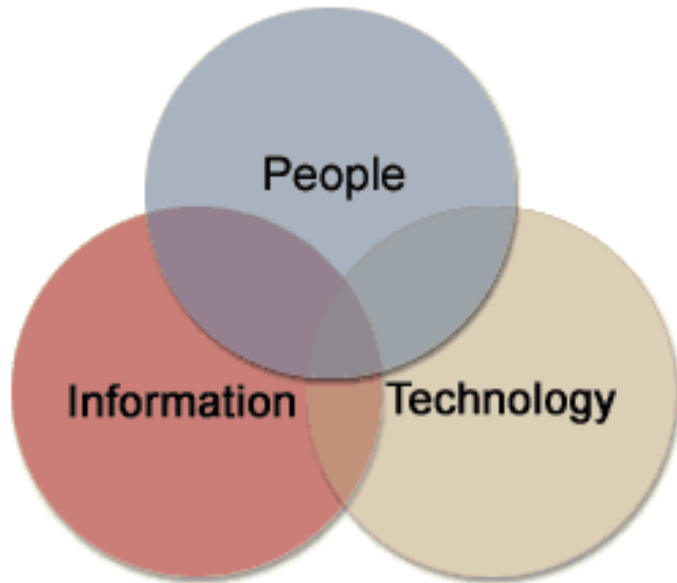
Outline

- William Hersh, MD, Program Director
- Shannon McWeeney, PhD, Director of Bioinformatics & Computational Biology Track
- Aurora Blucher, PhD candidate and U of Portland alumna

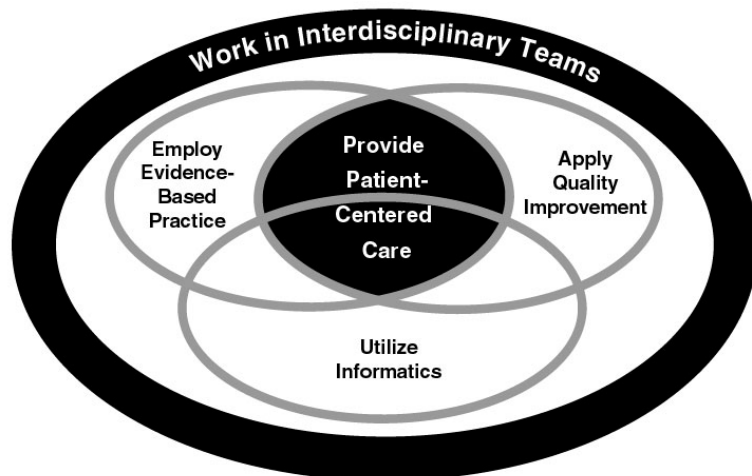
What is biomedical and health informatics (Hersh, 2009)?

- I get asked this so often that I keep a Web site
 - <http://www.billhersh.info/whatis/>
- And a blog
 - <http://informaticsprofessor.blogspot.com>
- *Biomedical and health informatics (BMHI)* is the field concerned with the optimal use of information, often aided by technology, to improve individual health, healthcare, public health, and biomedical research

Other views of informatics

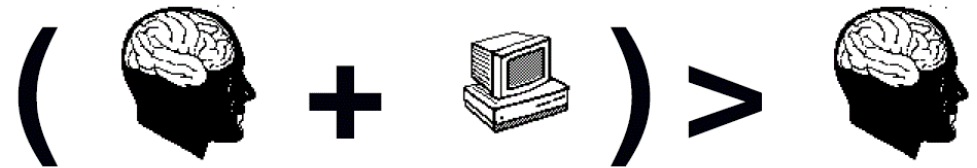


Overlap of Core Competencies for Health Professionals



Fundamental Theorem
(Friedman, 2009)

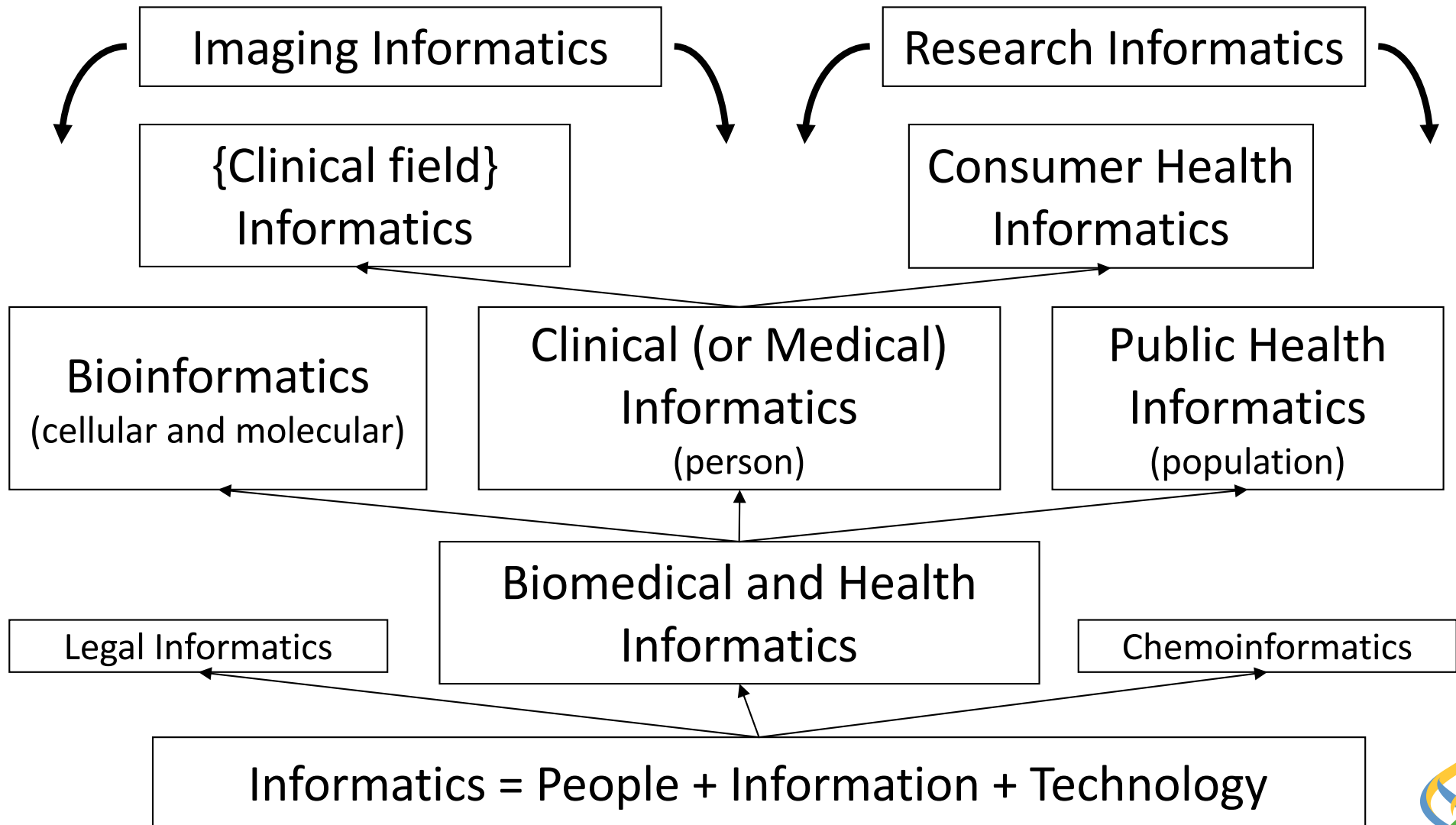
Goal of informatics is:



Goal is not



Many subareas of informatics



(Hersh, 2009; adapted from Shortliffe, 2006)

Programming an electronic health record is simple, right?

Vista CPRS in use by: Doctor,One (BROKERSERVER)

File Edit View Tools Help

SEVEN,INPATIENT **3E S 3E-100-4** Primary Care Team Unassigned
 666-00-0807 Mar 09,1945 (65) Provider: DOCTOR.ONE Attending: Doctor.Two

Flag VistaWeb Postings
 Remote Data A

Active Problems Depression *Tachycardia Hypertrophy (BENIGN) OF PROSTATE WITHOUT URINARY OBSTRUCTION *Phlebitis And Thrombophlebitis Of Femoral Vein (DEEP) Graves' Disease	Allergies / Adverse Reactions Pet Hair Keflex	Postings Allergies
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Active Medications No Active Medications Found	Clinical Reminders Depression Screening PC Nutritional Screening Influenza Vaccine Pneumococcal vaccine (Pneumovax)	Due Date Dec 07,08 DUE NOW DUE NOW DUE NOW
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Recent Lab Results No Orders Found.	Vitals T 98.6 F Aug 20,2010 11:30 (37.0 C) P 68 Aug 20,2010 11:30 R 24 Aug 20,2010 11:30 BP 194/88 Aug 20,2010 11:30 HT 70 in Aug 20,2010 11:30 (177.8 cm) WT 199 lb Aug 20,2010 11:30 (90.3 kg) PN 0 Aug 20,2010 11:30 POX 98 Aug 20,2010 11:30 BMI 28.61 Aug 20,2010 11:30	Appointments/Visits/Admissions Aug 03,10 09:00 Endocrine Inpatient Appointment Jul 23,10 08:00 Inpatient Stay 3e North Jul 15,10 13:00 General Medicine Action Required Jul 01,10 14:00 General Medicine Action Required Jun 20,10 13:00 General Medicine Action Required Jun 10,10 10:00 General Medicine Action Required May 24,10 13:00 Inpatient Stay 3e North May 20,10 08:00 General Medicine Action Required May 18,10 08:00 General Medicine Action Required May 10,10 15:00 General Medicine Action Required
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Cover Sheet Problems Meds Orders Notes Consults Surgery D/C Summ Labs Reports

But programming is actually the easy part

- Mixing IT with clinical workflow has been difficult
- Some health IT has had safety issues
- Financial benefits do not always accrue to those who pay
- Many issues with privacy and security, which go beyond healthcare
- Larger problems in healthcare organization and financing make change difficult

Informatics is also essential for modern biomedical research

- Embodied in the National Institutes of Health (NIH) Roadmap to accelerate biomedical research discovery (<http://commonfund.nih.gov>)
 - *Today's biomedical researcher routinely generates ... billions of bytes of data. ... What researchers need are computer programs and other tools to evaluate, combine, and visualize these data. In some cases, these tools will greatly benefit from the awesome strength of supercomputers or the combined power of many smaller machines in a coordinated way but, in other cases, these tools will be used on modern personal computers and workstations.*

OHSU to pioneer digital health innovation for the benefit of patients nationwide

October 03, 2017 Portland, Oregon



OHSU has been awarded two grants totaling \$62 million from the National Center for Advancing Translational Sciences, part of the National Institutes of Health, to support the use of health data, algorithms and information systems to bridge basic science and clinical research.

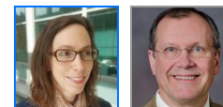
The newly awarded grant provides OHSU with \$25 million over five years to establish and lead the new National Center for Data to Health, or CD2H, which aims to foster collaboration across more than 50 premier medical research institutions within the prestigious Clinical and Translational Science Awards, or CTSA, network.

Downloads

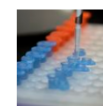


Melissa Haendel, Ph.D.

Melissa Haendel, Ph.D., co-director of the NCATS-funded Biomedical Data Translator. (OHSU)



Related



Translational research institute at OHSU receives \$37 million



INFORMATICS PROFESSOR

THIS BLOG MAINTAINS THE THOUGHTS ON VARIOUS TOPICS RELATED TO BIOMEDICAL AND HEALTH INFORMATICS BY DR. WILLIAM HERSH, PROFESSOR AND CHAIR, DEPARTMENT OF MEDICAL INFORMATICS & CLINICAL EPIDEMIOLOGY, OREGON HEALTH & SCIENCE UNIVERSITY.

FRIDAY, NOVEMBER 3, 2017

Why Pursue a Career in Biomedical and Health Informatics?

There are an ever-growing number of career opportunities for those who enjoy working with data, information, and knowledge to improve the health of individuals and the population in the field of *biomedical and health informatics*. This field develops solutions to improve the health of individuals, the delivery of healthcare, and advancing of research in health-related areas. Jobs in informatics are highly diverse, running the spectrum of the highly technical to those that are very interpersonal. All are driven, however, by the goal of using data, information, and knowledge to improve all aspects of human health [1, 2].

WILLIAM HERSH



<http://www.billhersh.info/>



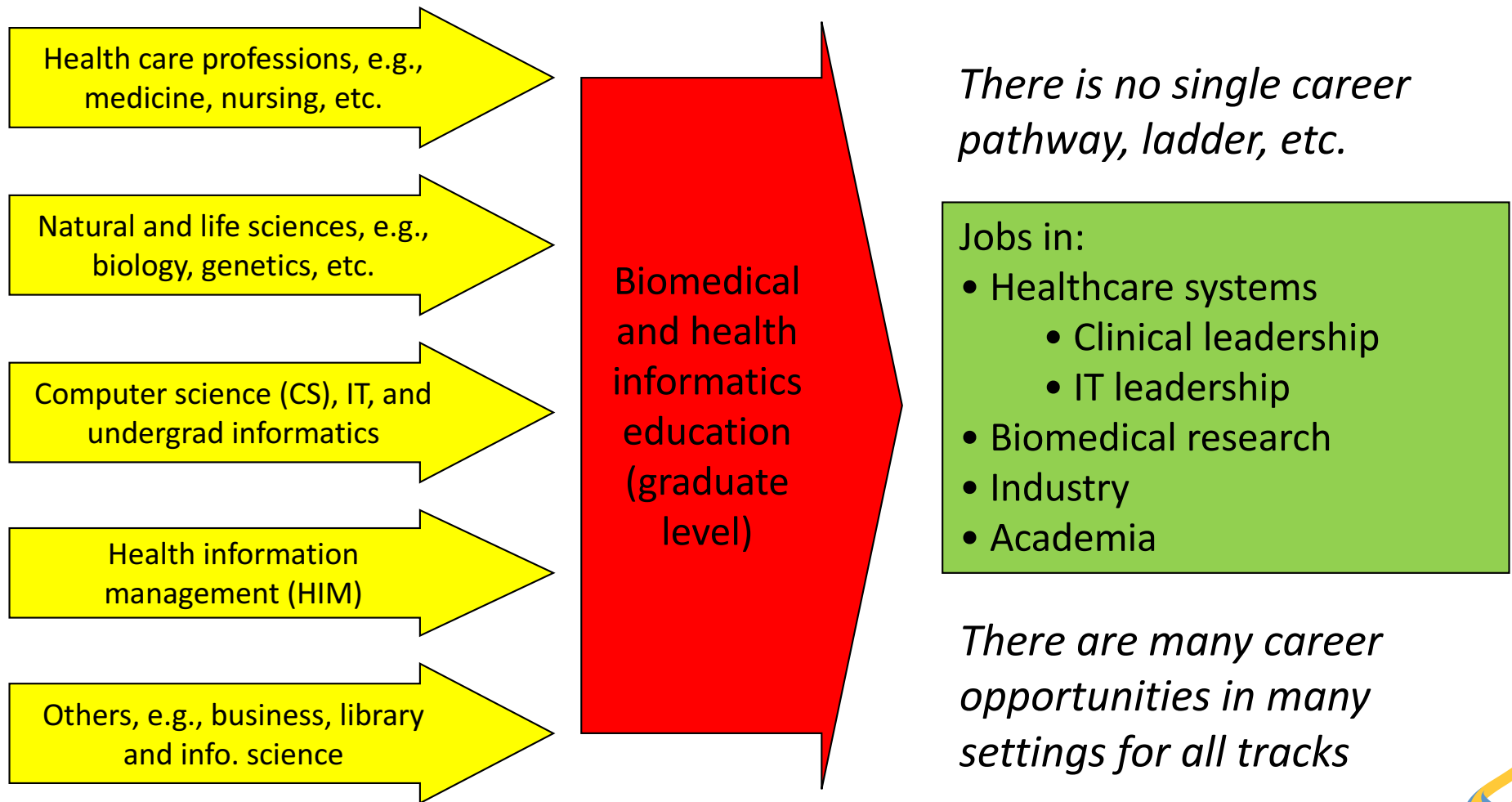
<https://informaticsprofessor.blogspot.com/>

Many opportunities for informatics careers

- Most prevalent in clinical informatics (in healthcare settings), but plenty of other opportunity in other areas of informatics
 - Bioinformatics – leading and assisting computational analysis of genomics and related technologies
 - Clinical and translational research – using informatics to aid biomedical research
 - Public health – using information to protect the public and promote health
 - Consumer health – helping the general population maintain and improve health
 - Imaging informatics – using images for biomedical research, clinical care, etc.

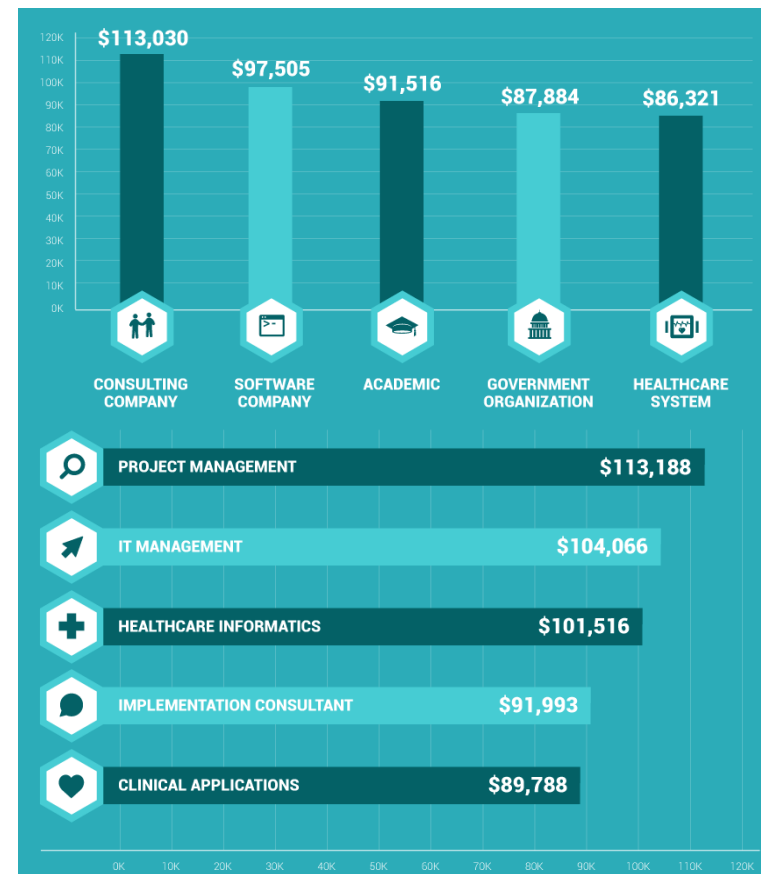
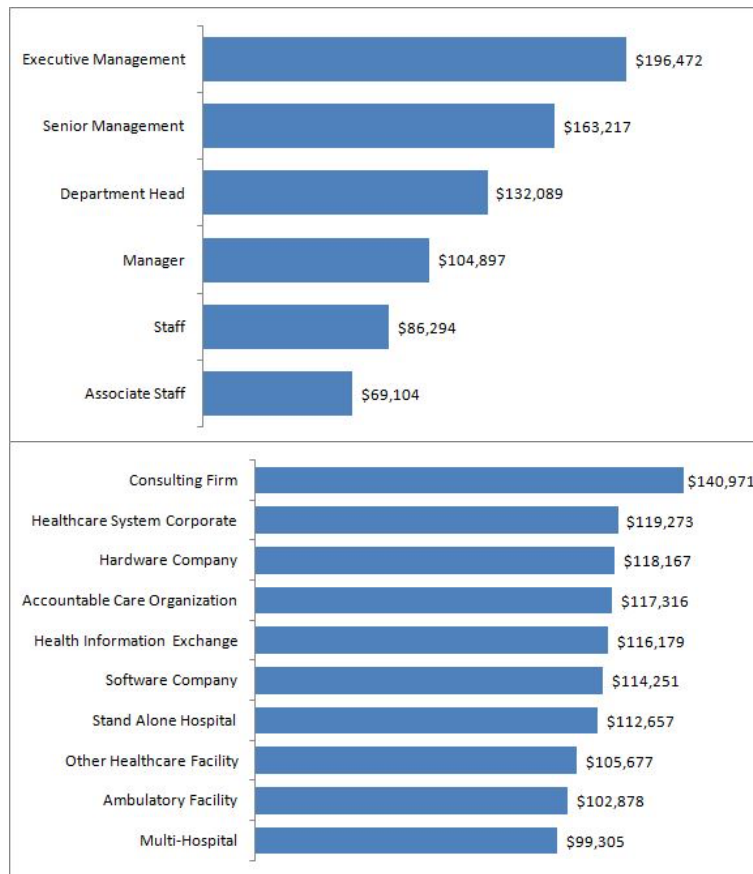


Career pathways have diverse inputs and outputs (Hersh, 2009)



Show me the money: how much do informatics professionals make?

- HIMSS compensation survey (2015) and HealthITJobs.com (2016) for health IT
- Salaries vary by level, region, experience, organizational size and type
- Even higher for some: physicians, academics, and advanced data science/analytics



Graduate study at OHSU

<http://www.ohsu.edu/informatics>



Degrees/Certificates Awarded 1998-2017 (666 people)			
Degree/Certificate	Total	BCB	CI
Doctor of Philosophy	24	6	18
Master of Biomedical Informatics	206	14	192
Master of Science	88	17	71
Certificate Program	420	0	420
Total	738	37	701

International students from: Argentina, Singapore, Egypt, Israel, Saudi Arabia, Zimbabwe, Thailand, China, and other countries

Track	Degree/Certificate	PhD	MS	MBI	Grad Cert
Clinical Informatics		On-campus	On-campus	On-campus	On-campus
			On-line	On-line	On-line
Bioinformatics and Computational Biology		On-campus	On-campus		