



An Innovative Approach to Biomedical Research Labor Gap Analysis

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Introduction

- United States has experienced unsustainable expansion of the biomedical research workforce
- Imbalance in number of researchers, grants, and available tenure track faculty positions; extended postdoctoral training periods; increasing age of first-time investigators receiving NIH R01 grants; and exodus of talented individuals opting for careers outside academic environments
- Dearth of accurate data available on the current and projected state of the biomedical research job market
- Challenge to devise strategies addressing these issues and to inform trainees of viable career options
- Innovative regional approach, the Economic Modeling Specialists, Inc. (EMSI) tool, and real-time job postings from Labor Insight™ to perform gap analysis in cancer research occupations in selected geographic areas
- Analysis answers questions such as:
 - *What cancer research-related occupations are in demand?*
 - *Is there a labor gap for occupations in highest demand?*
 - *What are the opportunities for skill transferability from other occupations?*
- Although this analysis concentrates on hotspots of the cancer research workforce, the methods, data sources, regions, and occupations are representative of and applicable to the broader biomedical research community

Objectives

- Develop profile of the current cancer research workforce
- Perform labor gap analysis
- Conduct career pathways/skills assessment

Methods and Data Sources

8 source occupations based on Standard Occupational Code (SOC):

- Biochemist/Biophysicists
- Medical Scientists
- Epidemiologists
- Microbiologists
- Statisticians
- Biomedical Engineers
- Natural Science Managers
- Biological Scientists (All Other)

10 Metropolitan Statistical Areas (MSAs):



Demand – supply = gap
(negative numbers mean oversupply of graduates)

Supply: Economic Modeling Systems, Inc. (EMSI)

- Demographics
- Job growth
- Wages
- Educational program completions

Demand: Labor Insight™, Burning Glass Technologies

- Job postings
- Occupational baseline skills and specialized skills

Findings

Demographics

Sex

- Close split (45-55%) in most occupations, except Biomedical Engineers (85% male)

Age

- Largest age group between 35-54 years; no looming retirement crisis based on Bureau of Labor and Statistics' projected replacement

Race and Ethnicity

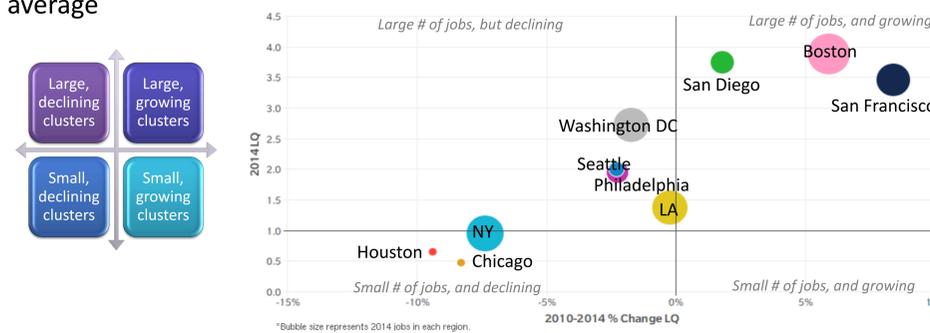
- ~60% White, 27% Asian, 6% Hispanic/Latino, 5% Black, 1.2% two or more races, 0.2% Pacific Islander or Native American
- Medical Scientists and Epidemiologists have higher percentages of Asian employees (~46%)
- Statisticians have higher percentages of Black/African American employees (9.4%)

Educational Attainment

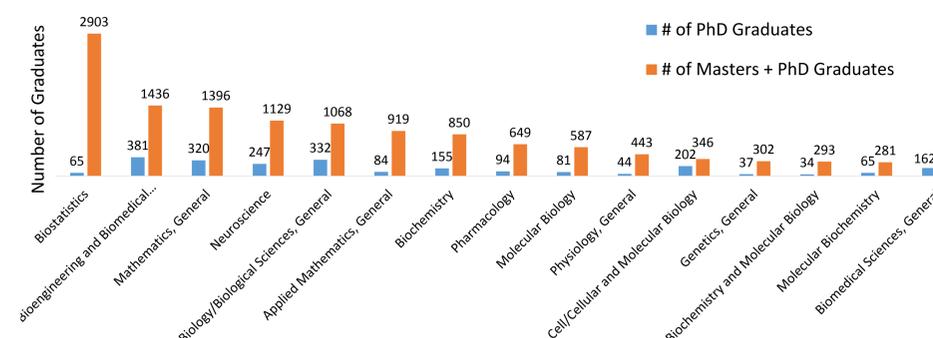
- Medical Scientists and Epidemiologists (>90%) have a Master's Degree or higher; largest proportion of doctoral or professional degree holders
- Biomedical Engineers have Bachelor's degrees; ~40% have Master's Degree or higher

Job Growth: Location Quotient

Location quotient (LQ): the density of jobs in a region compared to the national average



Supply: Graduate Program Completions



2013 Degree completions: 43,400 Bachelor's level or below
11,852 Masters
3,946 PhD

Findings, cont.

Labor Gap: All Completions

SOC	Demand	Supply	Gap
Natural Sciences Managers	1,183	24,630	-23,447
Statisticians	2,602	5,746	-3,144
Biomedical Engineers	492	2,526	-2,034
Biological Scientists, All Other	66	11,450	-11,384
Biochemists and Biophysicists	1,037	1,714	-677
Microbiologists	1,190	586	604
Epidemiologists	659	719	-60
Medical Scientists, Except Epidemiologists	30,881	11,556	19,325
Total	38,110	58,926	-20,816

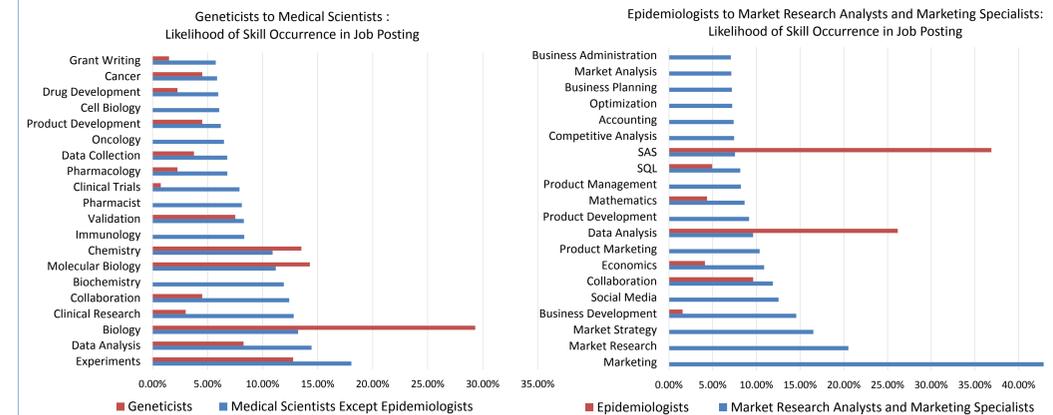
Supply: 449% growth over 10 year period (annual growth of 16.20%)

Demand: 5% growth over 4 year period (annual growth of 1.23%)

Labor Gap: Grad. Degree

SOC	Demand	Supply	Gap
Natural Sciences Managers	547	2,190	-1,643
Statisticians	1,449	2,461	-1,012
Biomedical Engineers	138	1,125	-987
Biological Scientists, All Other	15	2,189	-2,174
Biochemists and Biophysicists	538	571	-33
Microbiologists	334	314	20
Epidemiologists	381	451	-70
Medical Scientists, Except Epidemiologists	14,644	6,227	8,417
Total	18,046	15,528	2,518

Career Pathways and Skills Assessment



Given an oversupply of Geneticists, a Geneticist would need training in Cell Biology, Oncology, Pharmacy, Immunology, and Biochemistry to potentially transition to a new position as a Medical Scientist

Given an oversupply of Epidemiologists, an Epidemiologist would need training in Social Media, Business Development, Market Strategy, and Market Research to potentially transition to a career in Marketing and Marketing Analytics

Conclusions

- The use of regional-specific and skill-based supply and demand data from EMSI and Labor Insight™ for core occupations in the cancer research workforce allow for a labor gap analysis of the research workforce
- Although both labor supply and demand have grown annually, the growth of supply (degree holders in scientific disciplines relevant to cancer research) dramatically outpaces demand (job postings)
- Even though there is currently enough demand to account for supply among the core cancer research occupations in 2014, this trend portends change in coming years
- Specialized and baseline skills for re-training can be identified to facilitate career transitions