

THE VALUE OF REAL TIME LABOR MARKET INFORMATION FOR MONITORING HEALTH WORKFORCE DEMAND:

A CASE STUDY EXAMINING EMPLOYER DEMAND FOR HEALTH INFORMATION TECHNOLOGY SKILLS

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INTRODUCTION

- As the U.S. healthcare system undergoes practice transformation, workforce planners and educators need up-to-date information on skills employers demand of future workforce.
- Specifically, implementation of health IT affects the roles and skills required of the health workforce, but few data sources are available to identify the specific skills and qualifications needed.
- Real-Time Labor Market Information (RT-LMI) is an emerging data source being used to monitor employer demand by extracting data from online job ads.

WHAT IS RT-LMI?

- Real-Time Labor Market Information (RT-LMI) refers to a method by which an automated process extracts data on a regular basis from online job ads and attempts to remove duplicate ads.
- RT-LMI is limited to what is listed in job ads, but at minimum tends to include: job title, company, geographic information, and job description. These fields can be used to classify variables such as industry, occupations, key words, and education and training requirements.
- RT-LMI data may provide information that is not readily available from other data sources, such as the skills and roles required by employers, trends in specific geographic locations or very current data.

QUESTION, DATA AND METHODS

Study Question: What is the value and limitations of RT-LMI for monitoring health workforce demand for health IT skills and roles among health professionals?

Data Source: U.S. 2015 online job ads classified “health and medical” by the job search engine company LinkUp.¹

Methods:

- UW team, with input from external experts, developed coding and parsing process to define key variables of interest – occupation and health IT skills.
- Text search of job title and job description fields to identify occupations requiring health IT skills from our list of search terms.

SAMPLE AND HEALTH IT SKILLS SEARCH TERMS

Figure 1. Number of Records with Selected Healthcare Occupations and Health Information Technology Skill in 2015

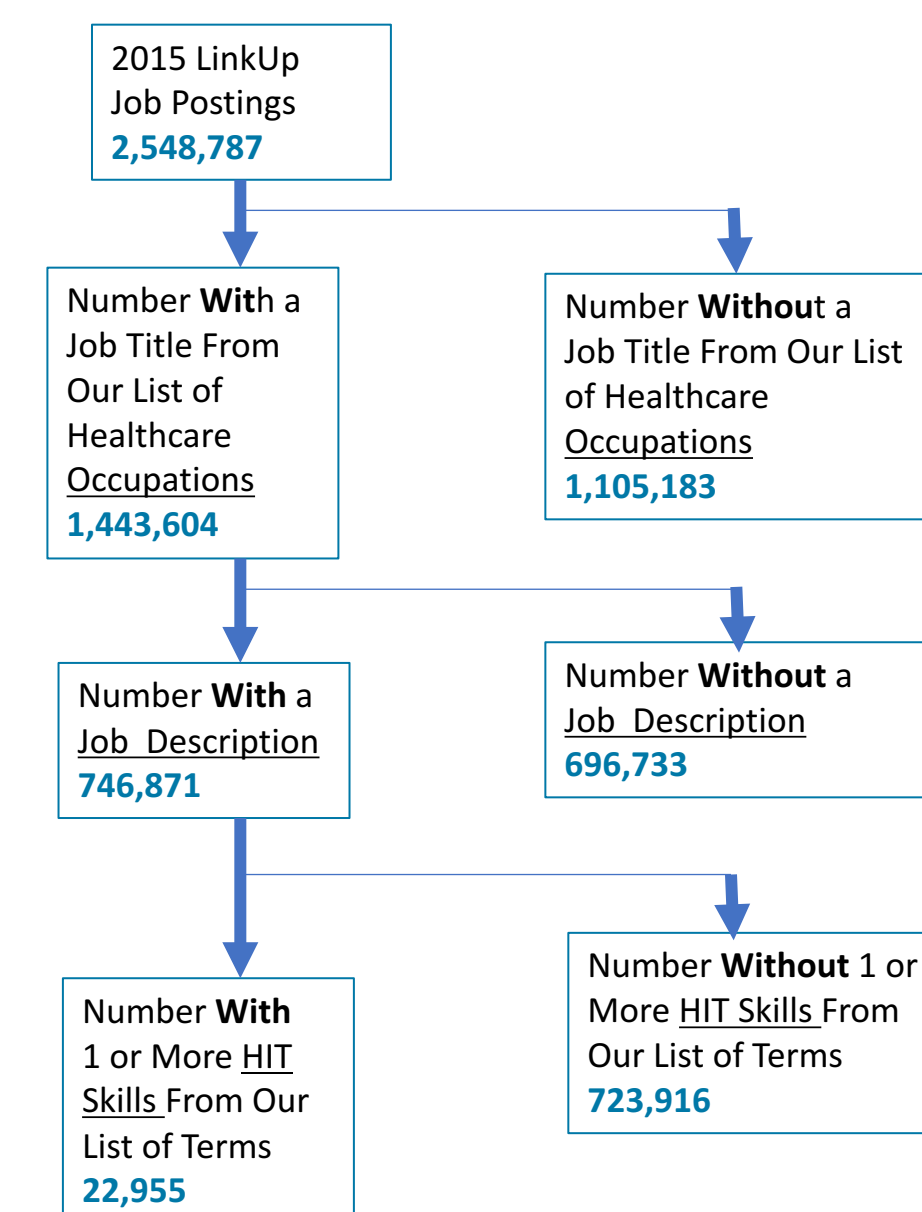


Figure 2. Health Information Technology Domains and Corresponding Search Terms

HIT Skills Domain	Search Term	HIT Skills Domain	Search Term
Hea = Health IT (General)	Health information	Har = Hardware & Network Support	Technical support
	Health information technology		Informatics
	Health information management		Population health
	Health IT		Report builder
	HIT*		Health information exchange
App = Application Support	Information technology	Inf = Informatics	HIE*
	IT*		Certified professional in health information and management systems
	Application specialist		Certified associate in health information and management systems
	Electronic health record		HL7
	EHR*		Health level 7
	Personal health record		continuity of care document
	Software support		direct messaging
	application manager		patient portal implementation
	application analyst		patient portal administration
	implementation specialist		Analytics
Dat = Database Management	EHR specialist	Ana = Analytics	Data analysis
	computerized physician order entry		Data analytics
	clinical decision support		Projective analysis
	Data management		Projective analysis
Pri = Privacy and Security	Data aggregation		Predictive analysis
	Data security		Predictive analysis
	Cyber security		Predictive analysis
	Information security		Predictive analysis
	risk analysis	*All letters capitalized and spaces before and after exact phrase	

KEY FINDINGS

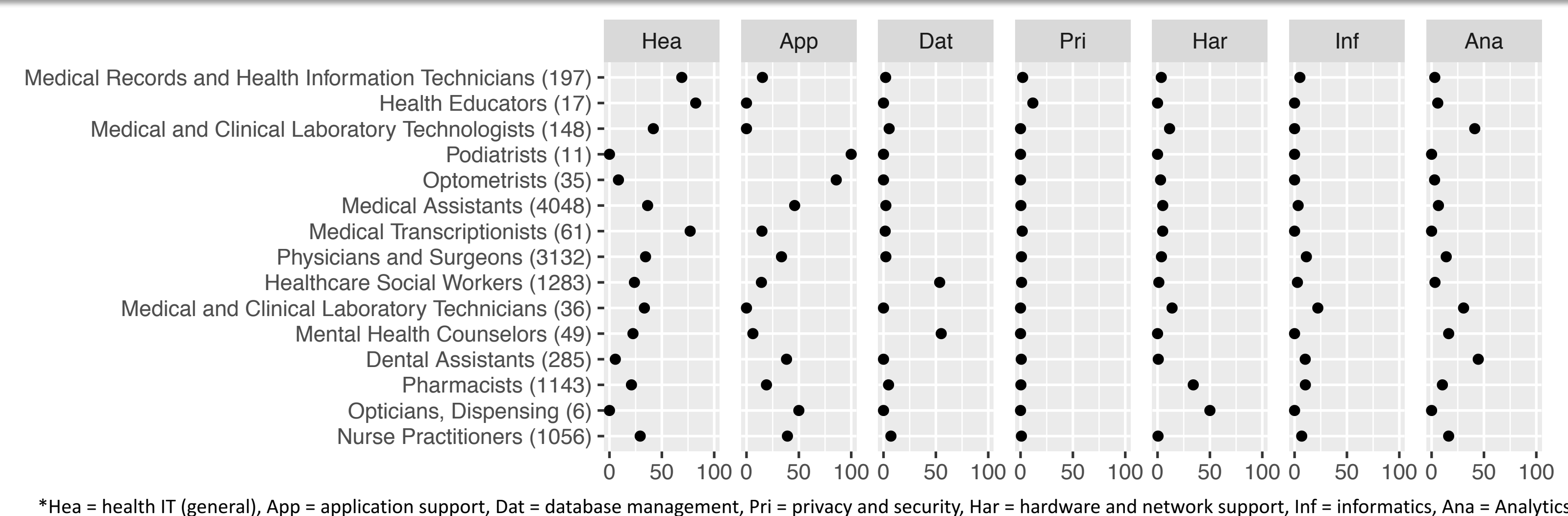
- Over **1.4 million** records had one or more of the occupations from our designated healthcare occupation terms.
 - **Approximately half** had a job description that could be used to search for skills required by the employer.
- The percentage of records with a job title and a job description that referenced a specific health IT skill varied greatly by occupation, with most occupations having **fewer than 10%** of records containing a health IT skill from our list of search terms.
- Occupations with **highest percentage** of job ads that referenced a specific health IT skill were: **1)** medical records & health information technicians (60.4% of records); **2)** health educators (19.5%); **3)** medical & clinical laboratory technologists (17.0%); **4)** podiatrists & optometrists (13.0%); **5)** medical assistants (12.1%).
- “**Health IT (general)**” domain was most commonly identified (37.7% of records).
 - “**Privacy and security**” (e.g., data security, cyber security, and risk analysis) was the least common domain (0.5% of records).

Table 1: Top 15 Occupations for Which Health Information Technology Skills Were Identified

Occupation	Records with at Least 1 HIT Skill	Total Number of Records with Occupation Title	Percent of Records With At Least 1 HIT Skill*	Percent of Job Ads Identifying This Occupation**
Medical Records and Health Information Technicians	197	326	60.4	0.03
Health Educators	17	87	19.5	0.01
Medical and Clinical Laboratory Technologists	148	873	17	0.10
Podiatrists	11	84	13.1	0.27
Optometrists	35	270	13	0.04
Medical Assistants	4,048	33,471	12.1	4.01
Medical Transcriptionists	61	547	11.2	0.06
Physicians and Surgeons	3,132	29,995	10.4	4.06
Healthcare Social Workers	1,283	15,151	8.5	2.04
Medical and Clinical Laboratory Technicians	36	544	6.6	0.06
Mental Health Counselors	49	741	6.6	0.11
Dental Assistants	285	4,675	6.1	0.64
Pharmacists	1,143	19,323	5.9	2.44
Opticians, Dispensing	6	103	5.8	0.01
Nurse Practitioners	1,056	19,759	5.3	2.73

*Denominator is the number of job ads with a job title and a job description. Each job ad could contain multiple occupations or multiple HIT skills (N = 873,209)
**Denominator is the number of job ads with a matching occupation in the job title (N = 1,443,604)

Figure 3. For Records Containing HIT Search Terms, Percentage of Records Falling Within Each HIT Domain*, by Occupation (N=Records with at least 1 HIT Skill, Top 15 Occupations Shown)



*Hea = health IT (general), App = application support, Dat = database management, Pri = privacy and security, Har = hardware and network support, Inf = informatics, Ana = Analytics

CONCLUSIONS

- The patterns found in this study suggest that healthcare employers are requesting a range of health IT skills across occupations, including many allied health professions.
- Caution is required when using RT-LMI, and more work is needed to refine the data mining process.
 - Coding process requires several iterations to ensure coding structure has content and face validity.
 - Subject matter expertise is needed to establish initial coding structure required to correctly classify records.
- RT-LMI should not be considered a replacement for traditional labor market data or other occupation/ industry specific surveys, but rather a complement.
- While continuing work is needed to improve the use of RT-LMI, knowing how RT-LMI best informs health workforce planning is valuable to ensure that current and future health workforce have the training and education they need to succeed.

References

- LinkUp Job Search Engine. <http://www.linkup.com>. Accessed 12/8/2016.

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