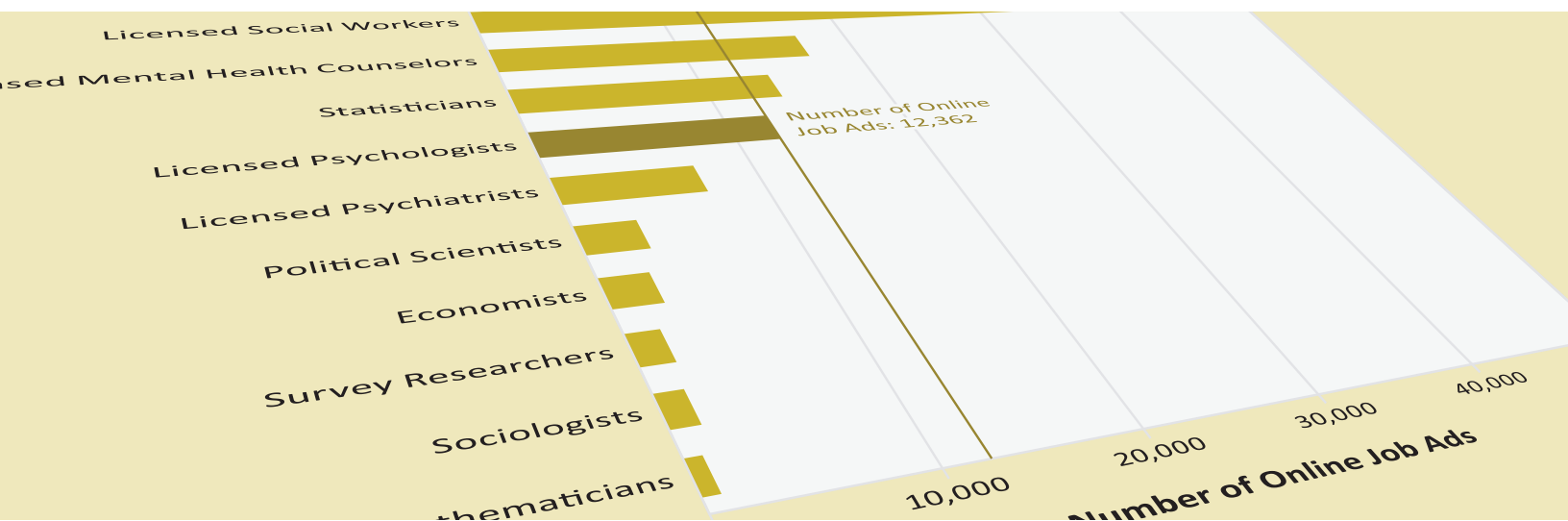


2014 Online Job Advertisements for Licensed Psychologists

American Psychological Association
Center for Workforce Studies

Luona Lin, M. Cameron Hatcher, Karen Stamm, and Peggy Christidis
January 2016



AMERICAN
PSYCHOLOGICAL
ASSOCIATION



CWS
CENTER FOR
WORKFORCE
STUDIES
AMERICAN PSYCHOLOGICAL ASSOCIATION

Recommended citation: American Psychological Association (2016). *2014 Online Job Advertisements for Licensed Psychologists*. Washington, DC: Author.

This report describes research and analysis conducted by staff members of the American Psychological Association's Center for Workforce Studies. It does not constitute official policy of the American Psychological Association.

The authors thank Howard Kurtzman and Jaime Diaz-Granados for valuable input on previous drafts of this report.

The American Psychological Association's Center for Workforce Studies is responsible for the collection, analysis and dissemination of information relevant to the psychology workforce and education system. Through the use of surveys, federal statistics and data mining, the Center gathers information about the profession of psychology, including its scientific and educational communities, practitioners, and psychologists working in the public interest.

For questions regarding this report, please contact the APA Center for Workforce Studies at cws@apa.org or 1-800-374-2721 (extension 5980)

Table of Contents

Executive Summary	1
Introduction	2
1. Overview	3
2. Geographic Distribution	6
3. Employers	9
4. Qualifications.....	10
Conclusion	12
Appendix	13
1. BGT Methodology	13
2. Limitations of BGT Data	13
3. Technical Documentation.....	14
References	22

Table of Tables and Figures

Table 1. Major Position Titles from Online Job Advertisements Seeking Licensed Psychologists, 2014.....	3
Table 2. States and Cities with the Highest and Lowest Location Quotients, 2014	8
Figure 1. The Types of Positions in Online Job Advertisements for Licensed Psychologists, 2014.....	4
Figure 2. The Numbers of Online Job Advertisements for Licensed Psychologists and Other Occupations, 2014	5
Figure 3. Distribution of Online Job Advertisements for Licensed Psychologists, 2014	6
Figure 4. Distribution of Online Job Advertisements for Licensed Psychologists, per 100,000 Population, 2014.....	7
Figure 5. Industry Composition of Online Job Advertisements for Licensed Psychologists, 2014	9
Figure 6. Experience Qualifications Specified in Online Job Advertisements for Licensed Psychologists, 2014.....	10
Figure 7. Top 10 Skills in Online Job Advertisements for Licensed Psychologists, 2014	11

Executive Summary

This report describes the characteristics of online job advertisements for licensed psychologists in the United States to better understand the demand for psychologists in the nation. The data used in this report were obtained from Burning Glass Technologies, a leading developer of online labor market data. Major findings include:

In 2014, there was a total of 12,362 online job ads seeking licensed psychologists.

Approximately 1,030 new job ads for licensed psychologists were advertised online each month. For every 100,000 population, there were 3.9 online job ads for licensed psychologists.

Most of the online job ads were located in the most populous states and cities near the coasts. However, when looking at the concentration of online job ads relative to the population, the highest per capita number of online ads were found in states and cities located in central areas of the nation.

The majority of online job ads for licensed psychologists were in the “Health Care and Social Assistance” industry, followed by those in “Public Administration” and “Educational Services.” The Department of Veterans Affairs posted the most online job ads seeking licensed psychologists in 2014.

The top skills in demand for licensed psychologists were research, communication, writing, organizational skills, and supervisory skills.

Introduction

This report provides an overview of the online job advertisements for licensed psychologists in the United States in 2014. It describes the types of positions, geographic distribution, employers, and qualifications specified in the online job ads for licensed psychologists. Through the analysis of online job ads, the report provides key information on the demand for licensed psychologists in the nation.¹

The data in this report were obtained from Burning Glass Technologies (BGT). BGT compiles online job ads from more than 40,000 web sources and maintains an interactive database of online job ads. In each online job ad, BGT parses up to 70 different data elements including job title, location, employer name and industry, as well as education, experience, and skill qualifications.

The online job ads for licensed psychologists used in this report included those *seeking* psychologists, clinical psychologists, counseling psychologists, school psychologists, neuropsychologists, clinical neuropsychologists, and industrial-organizational psychologists in the year 2014. Only job ads with keywords “license,” “licensed,” “licensure,” or “license-eligible” were included in this report.²

1. The Bureau of Labor Statistics (BLS) uses job openings as a demand-side indicator of labor shortages (i.e., the unmet demand for labor). BLS defines a “job opening” as a specific position such that employers are actively recruiting via advertisements to fill that available position. With this statistic, it is possible to paint a more complete picture of the labor market. (*Job Openings and Labor Turnover Survey*, 2002).

2. Occupation titles were based on O*NET codes/classifications. Due to technical limitations, job ads that did not require licensure but “preferred” licensed psychologists were included; job ads for psychologists that required licenses other than a psychologist license were also included (e.g., social work license). See technical documentation and discussions on limitations in the Appendix.

1. Overview

In 2014, BGT identified 12,362 online job advertisements for licensed psychologists in the United States. Approximately 1,030 new job ads for licensed psychologists were advertised online each month. For every 100,000 population, there were 3.9 online job ads for licensed psychologists. For every 100,000 online job ads, there were 65.4 seeking licensed psychologists. The major position titles that appear in the job ads seeking licensed psychologists are presented in Table 1.

Table 1. Major Position Titles from Online Job Advertisements Seeking Licensed Psychologists, 2014

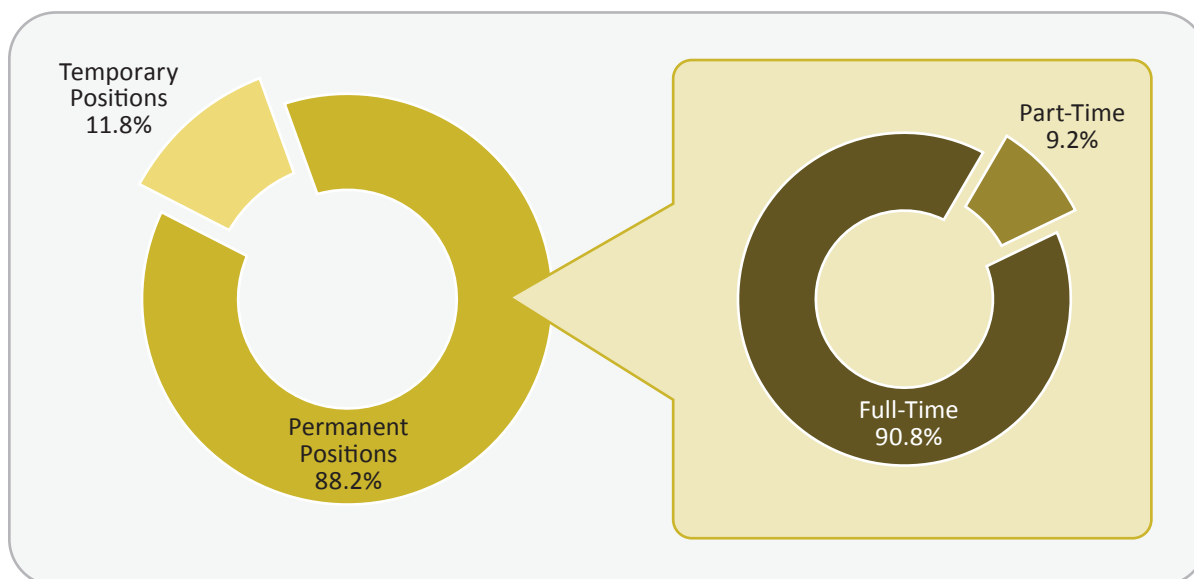
Major Position Titles from Online Job Ads Seeking Licensed Psychologists
Behavior Analyst/Specialist
Child/Pediatric Psychologist
Clinical Psychologist
Counseling Psychologist
Director of Psychology
Educational Diagnostician
Forensic Psychologist
Law Enforcement Psychologist
Medical Psychologist
Neurologist
Neuropsychologist
Psychologist
Psychologist Assessment Manager
Psychologist Evaluator
Psychologist Supervisor
Psychology Associate
Psychology Faculty
Psychology Post-Doctoral Resident/Fellow
Psychology Technician
Psychology Program Manager
Psychometrist/Psychometrician
Psychotherapist
Research Psychologist
School Psychologist
Therapist

Source: Labor Insight by Burning Glass Technologies.

Note: Position titles are listed in alphabetical order. This list only includes the major position titles that appear in online job ads for licensed psychologists; position titles with very small numbers of job ads were not included. Accurate numbers of job ads for each title were not available.

Of the job ads that specified type of position, most were permanent positions and only a small portion (11.8%) were temporary positions. Approximately 20.1% of the online job ads did not specify the type of position.³ Most of the permanent positions were classified as full-time positions and less than ten percent of the permanent positions were classified as part-time positions. See Figure 1 for illustration.

Figure 1. The Types of Positions in Online Job Advertisements for Licensed Psychologists, 2014



Source: Labor Insight by Burning Glass Technologies.

Note: The pie chart on the left represents the percentages of online job ads for licensed psychologists that were specified as either permanent or temporary positions. Job ads that did not specify type of position (20.1% of all online job ads for licensed psychologists) were excluded. The pie chart on the right illustrates the employment status (full-time or part-time) of *permanent positions* for licensed psychologists as specified in the online job ads.

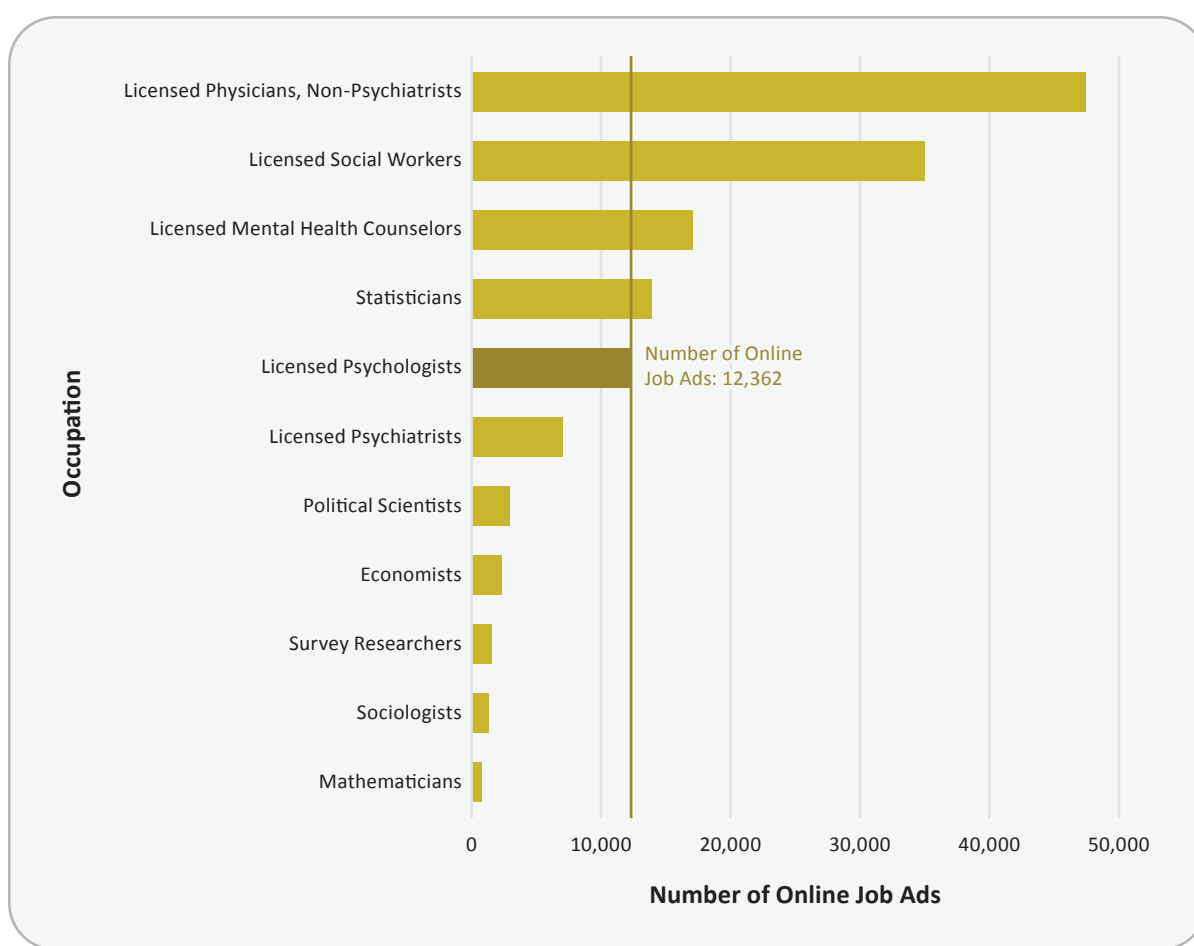
Of the job ads with specified sources, 33.8% were from “employer sites,” 49.6% were from “job boards,” and 16.5% were from “staffing agencies.”⁴ Approximately 2.8% of the online job ads had unspecified sources.

3. Data elements (e.g., industry, employer, employment status, etc.) in the online job ads are considered “unspecified” when: 1) a job posting did not advertise for a particular job characteristic or 2) BGT’s algorithms were unable to classify and code a particular job characteristic for that job posting. See Limitations of BGT Data for more information regarding unspecified data elements in the online job ads.

4. “Employer sites” are websites where specific employers post their job openings; “job boards” are paid-for websites where job ads are posted for multiple employers, locations, and job types; “staffing agencies” are staffing firms or intermediary recruiting agencies. See Technical Documentation for details.

Figure 2 is a comparison between the number of online job ads for licensed psychologists and the numbers of online job ads for other occupations in 2014. Compared to most other healthcare occupations or social service occupations (“Physicians, Non-Psychiatrists” at 47,344; “Social Workers” at 35,095; and “Mental Health Counselors” at 17,044), the number of job ads for licensed psychologists was considerably lower. In contrast, the number of online job ads for licensed psychologists was substantially higher than those for other social science occupations. Job ads for “Political Scientists” (3,070), “Economists” (2,349), “Survey Researchers” (1,576), and “Sociologists” (1,370) were all less than a quarter of those for licensed psychologists.⁵ Such differences in number of job ads may reflect different sizes of workforce across occupations.

Figure 2. The Numbers of Online Job Advertisements for Licensed Psychologists and Other Occupations, 2014



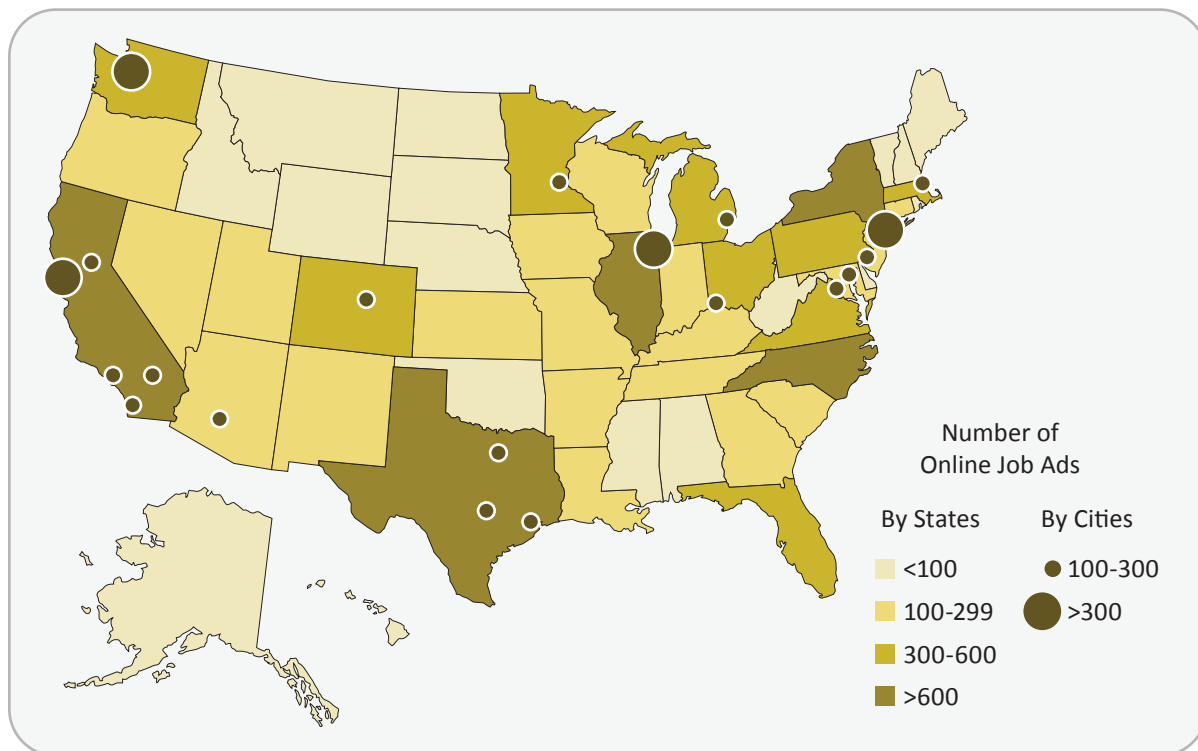
Source: Labor Insight by Burning Glass Technologies.

5. See Technical Documentation on the methods used to retrieve the numbers of job ads for different occupations.

2. Geographic Distribution

Figure 3 illustrates the distribution of online job ads for licensed psychologists by state and city. The states and cities with larger numbers of job ads for licensed psychologists in 2014 tended to be highly populated and were located in coastal areas. The states with the highest numbers of job ads for licensed psychologists were California (1,683), Texas (690), New York (647), Illinois (624), and North Carolina (611). The cities with the highest numbers of job ads for licensed psychologists were New York City (572), Chicago (481), San Francisco (380), Seattle (333), and Los Angeles (290).

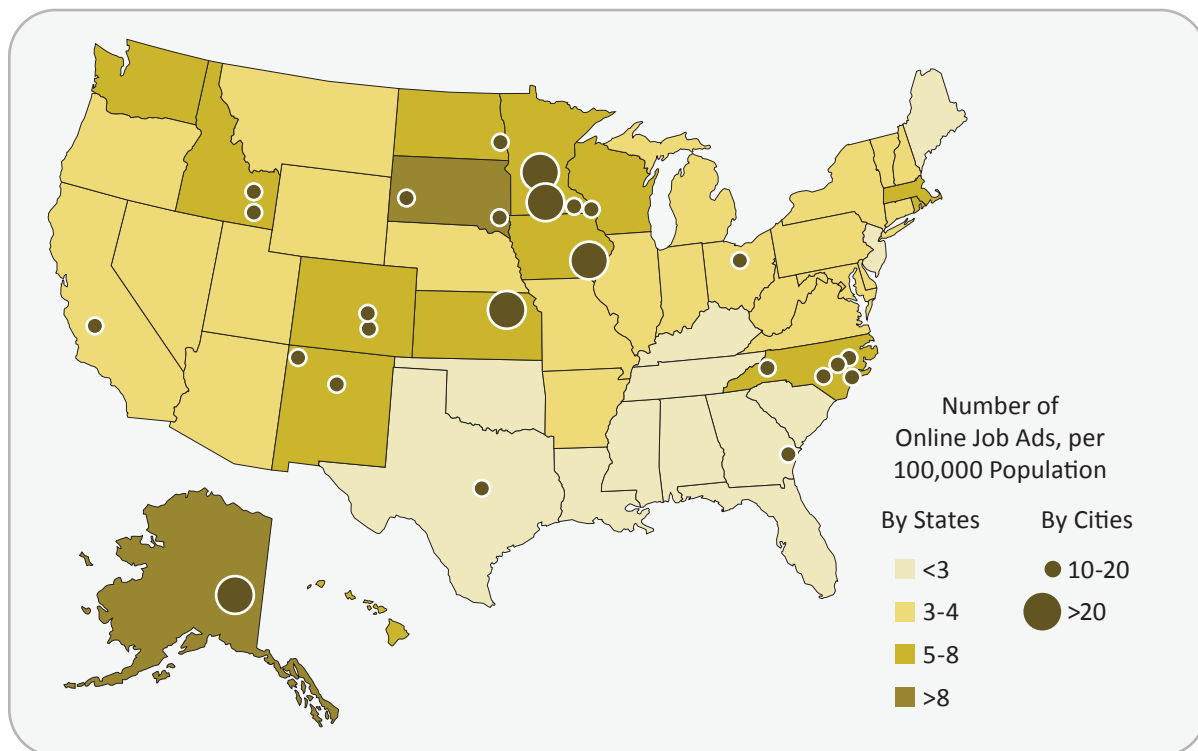
Figure 3. Distribution of Online Job Advertisements for Licensed Psychologists, 2014



Source: Labor Insight by Burning Glass Technologies; Topologically Integrated Geographic Encoding and Referencing (TIGER) State Map and MSA Map from U.S. Census Bureau.

When controlling for population, the states and cities with the highest concentration of job ads for licensed psychologists were less populous and tended to be located in the central areas of the nation. As Figure 4 illustrates, the states with the highest numbers of online job ads for licensed psychologists *per 100,000 population* were Alaska (12.8), District of Columbia (9.7), South Dakota (8.4), North Dakota (7.8), and Colorado (7.4). The cities with the highest numbers of online job ads for licensed psychologists *per 100,000 population* were Fairbanks, AK (49.3); Manhattan, KS (37.7); Mankato, MN (29.4); St. Cloud, MN (28.1); and Iowa City, IA (26.2).

Figure 4. Distribution of Online Job Advertisements for Licensed Psychologists, per 100,000 Population, 2014



Source: Labor Insight by Burning Glass Technologies; 2014 Population Estimates from U.S. Census Bureau; Topologically Integrated Geographic Encoding and Referencing (TIGER) State Map and MSA Map from U.S. Census Bureau.

The location quotient (LQ)⁶ is another commonly used metric that can be used to analyze the geographic distribution of online job ads for licensed psychologists. LQ is a measure of the concentration of online job ads for licensed psychologists in a location relative to its employed population in relation to the national average. A higher LQ implies that licensed psychologists in a given location have better prospects of finding a job online compared to other locations in the country. For example, Chicago had an LQ of 1.2 in 2014, which indicates that the concentration of online job ads for licensed psychologists in Chicago was 20% higher than the national average. Conversely, Houston had an LQ of 0.4 in 2014, which indicates that the concentration of online job ads for licensed psychologists in Houston was 60% lower than the national average.

6. The LQ metric is commonly used by economists, as well as federal agencies such as the Bureau of Labor Statistics as a way to identify and support unique industries in a given region and to determine an area's distribution of employment. See Technical Documentation for the location quotient formula.

Table 2 lists the states and cities with the highest and lowest LQs in 2014. The LQ results are similar to the results from the number of job ads per 100,000 population. This overlap suggests that the locations with more job ads for licensed psychologists in relation to population had highly favorable job markets for licensed psychologists. In particular, the concentrations of job ads for licensed psychologists in Alaska and New Mexico were both at least twice the level of the national average. In contrast, cities in Florida including Orlando, Tampa, and Miami had the lowest concentrations of job ads and were among those cities with the least favorable job markets for licensed psychologists.

Table 2. States and Cities with the Highest and Lowest Location Quotients, 2014

States with the Highest LQs	States with the Lowest LQs	Cities with the Highest LQs	Cities with the Lowest LQs
Alaska (3.2)	Alabama (0.2)	Fairbanks, AK (12.2)	Orlando, FL (0.3)
New Mexico (2.0)	Georgia (0.5)	Hinesville, GA (8.8)	Atlanta, GA (0.3)
South Dakota (1.9)	Tennessee (0.5)	Hanford, CA (8.3)	Houston, TX (0.4)
Washington (1.8)	Mississippi (0.5)	Manhattan, KS (8.0)	Tampa, FL (0.4)
Colorado (1.8)	Florida (0.6)	Mankato, MN (6.4)	Miami, FL (0.4), Raleigh, NC (0.4)*

Source: Labor Insight by Burning Glass Technologies.

Note: LQ values are in parentheses. States and cities with numbers of online job ads for licensed psychologists less than 20 were excluded from this table.

*Raleigh, NC had the same estimated LQ as Miami, FL.

3. Employers

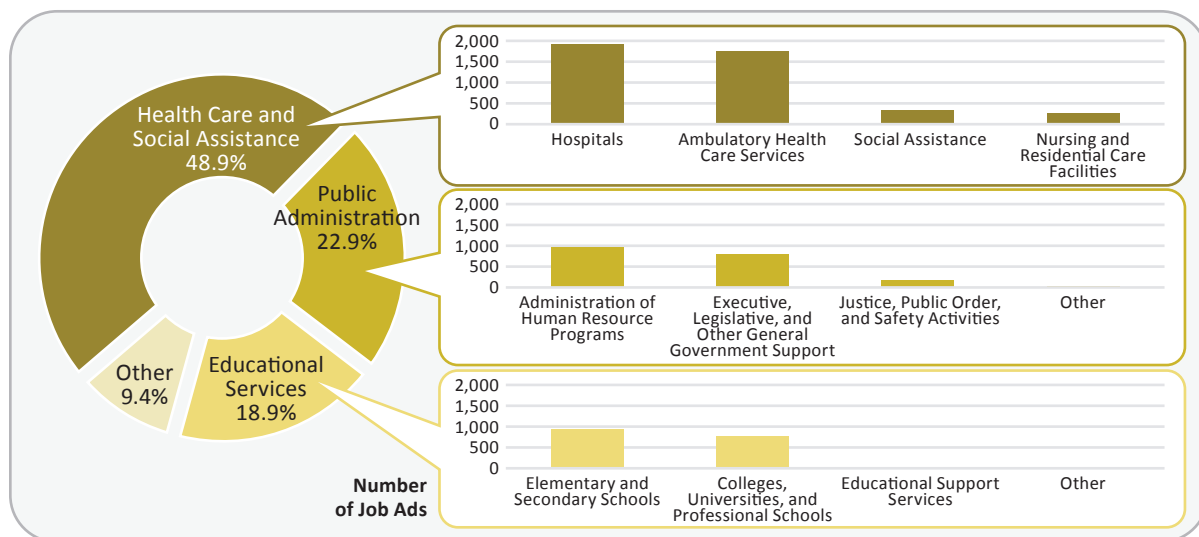
In 2014, the employers who posted the highest numbers of online job ads seeking licensed psychologists were the Department of Veterans Affairs (860), Kaiser Permanente (278), the U.S. Army Medical Corps (185), MedOptions (153), and Corizon (121).⁷ Approximately 25.3% of the online job ads did not specify employer information.

Industries

Of the online job ads with specified industry sector information, about half were in the “Health Care and Social Assistance” industry, 22.9% were in “Public Administration,” 18.9% were in “Educational Services,” and 9.4% were in other industry sectors.⁸

Approximately 15.7% of the online job ads for licensed psychologists did not specify industry information. See Figure 5 for a complete breakdown of the most common industries of the online job ads for licensed psychologists.

Figure 5. Industry Composition of Online Job Advertisements for Licensed Psychologists, 2014



Source: Labor Insight by Burning Glass Technologies.

Note: Online job ads without specified industry information (15.7% of the job ads) were excluded from this graph. Totals may not sum to 100% due to rounding.

7. The U.S. Department of Veterans Affairs provides patient care and federal benefits to veterans and their family members. Kaiser Permanente is an integrated managed care association that combines a nonprofit insurance plan with its own hospitals and clinics. The U.S. Army Medical Corps is a non-combat specialty branch of the U.S. Army Medical Department comprised of commissioned medical officers that represent all specialties of civilian medicine. MedOptions provides behavioral health services to nursing and assisted living facilities and hires multidisciplinary teams of psychiatrists, psychologists, etc. to improve elderly mental health services. Corizon provides mental healthcare services in U. S. correctional facilities.

8. BGT categorizes employers into different industry sectors based on the North American Industry Classification System (NAICS). Other industry sectors include “Finance and Insurance,” “Professional, Scientific, and Technical Services,” “Manufacturing,” etc. See detailed categorization in Technical Documentation.

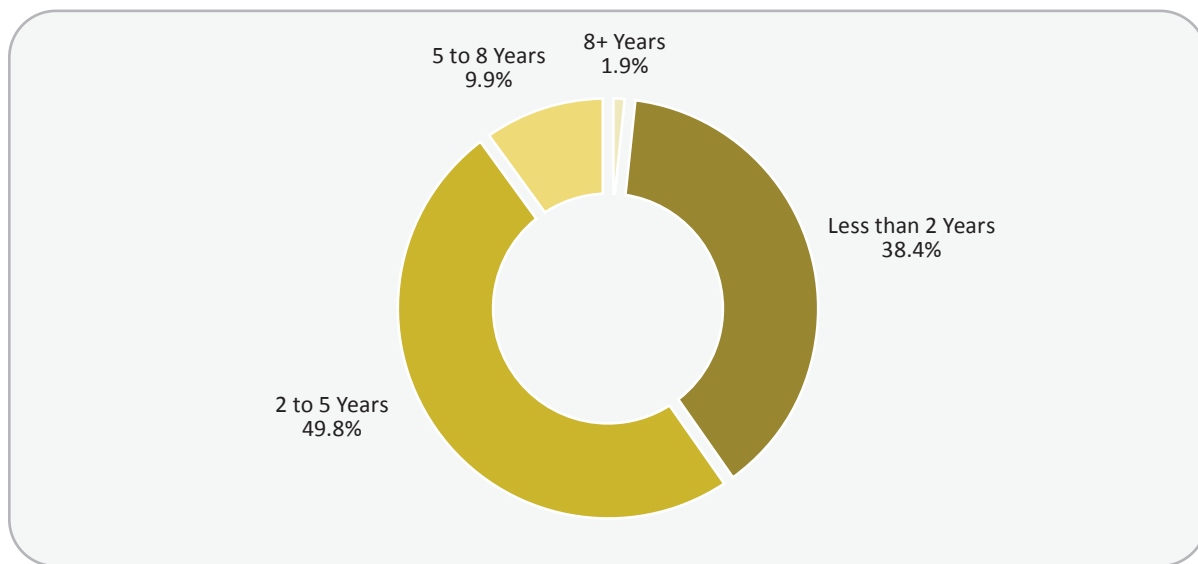
4. Qualifications

The majority of the online job ads for licensed psychologists in 2014 specified certain education, skill, or experience qualifications.⁹

Of the online job ads that specified an education qualification, 97.8% required a graduate or a professional degree. Of all the online job ads for licensed psychologists, 30.4% did not specify an education qualification.

Of the online job ads that provided experience qualification information, 61.6% specified more than 2 years of professional experience, 11.8% specified more than 5 years of experience, and 1.9% specified more than 8 years of experience. Approximately 55.9% of the online job ads for licensed psychologists did not specify experience qualifications. See Figure 6 for illustration.

Figure 6. Experience Qualifications Specified in Online Job Advertisements for Licensed Psychologists, 2014



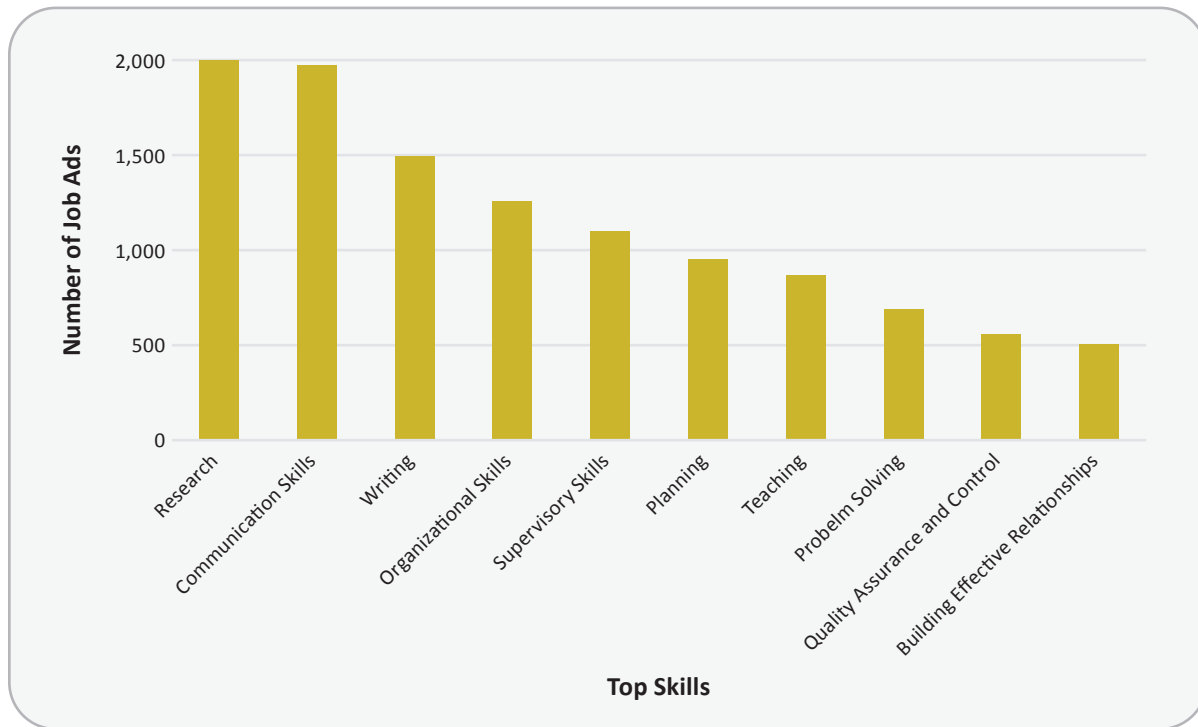
Source: Labor Insight by Burning Glass Technologies.

Note: Approximately 55.9% of the online job ads for licensed psychologists did not specify experience qualification information and were not included in this figure.

9. Qualifications refer to the education level, experience, and skills that were specified in the job ads as desired or required for the candidate to qualify for the advertised position. Definition and taxonomy of education, experience, and skill qualifications were from BGT. See Technical Documentation for details.

Figure 7 provides a list of the top skills in demand as specified in the online job ads for licensed psychologists in 2014. The top skills in demand (i.e., the most frequently cited skill qualifications in the online job ads) for licensed psychologists were research, communication, writing, organizational skills, and supervisory skills. Microsoft Excel, Microsoft PowerPoint, Microsoft Word, C++, and SPSS were the top software skills in demand for licensed psychologists. Approximately 30.2% of the online job ads did not specify skill qualifications.

Figure 7. Top 10 Skills in Online Job Advertisements for Licensed Psychologists, 2014



Source: Labor Insight by Burning Glass Technologies.

Note: Approximately 30.2% of the online job ads did not specify skill qualifications.

Conclusion

In 2014, there were 12,362 job advertisements for licensed psychologists in the United States according to BGT. Most of the online job ads were located near the coasts. When comparing the number of online job ads relative to the population, the top cities were located in central areas of the nation. Of the online job ads with industry sector data available, about half were in the “Health Care and Social Assistance” industry. Among the top demanded skills for licensed psychologists were research, communication, writing, organizational skills, and supervisory skills.

BGT provides an innovative, timely, and useful data source to help understand labor demand. Nonetheless, online job ads data only provide one piece of the puzzle. Future research can benefit from the use of online job ads data in conjunction with traditional labor market data to present a more comprehensive snapshot of the demand of the psychology workforce.

For example, the characteristics of mental illness in a population are expected to affect the need for psychological services and are therefore related to the demand for psychologists. Future research will be needed to examine this relationship through the use of online job ads data as well as data on population mental illness. In addition, analyses on both the “unmet demand” (i.e., online job ads for psychologists) and the “excess supply” (i.e., unemployed psychologists) may have policy implications to promote a labor market equilibrium. Furthermore, unmet labor demand affects wage levels; therefore, future studies on the salaries in the field may also use online job ads as one of the proxies for determining psychologists’ salary levels.

APA’s Center for Workforce Studies will further explore the potential of online job ads data to analyze the psychology workforce.

Appendix

This section discusses Burning Glass Technologies (BGT) methodology and the limitations of BGT data, and contains technical documentation of this report.

1. BGT Methodology

BGT searches more than 40,000 web sources and aggregates job advertisement information into one interactive comprehensive database. Data are parsed for specific elements (e.g., job title, education requirements, skills, etc.) and are cleaned using an algorithm designed to eliminate duplicate job ads. The data collection process consists of three stages.

1. “Spidering:” Online job ads from a fixed pool of websites are tracked and collected with pre-programmed algorithmic search engines.
2. “Extraction and Parsing:” The information in job ads are extracted, parsed, and coded into data elements. BGT relies on a contextual algorithm that is able to code data variables for each individual job ad. Semantic analyses and text mining inferences are used to contribute to the reported data elements for each job ad.
3. “De-duplication:” To clean identical job ads from its database, BGT de-duplicates job ads based on parsed data elements (e.g., location, employer, job title, etc.) with the use of several algorithms that are designed to focus on the content and sentence structure of each individual job ad. A 60-day timeframe is used to identify duplicates.

2. Limitations of BGT Data

One of the major limitations of BGT data is that online job ads are partially representative of the labor market and the demand for labor. Not all job openings are advertised online; position openings can be advertised through other means (e.g., personal connections or emails). Moreover, online job ads may not always reflect available job openings as a job position can be filled before the job ad is posted online. One online job ad may also reflect multiple job openings, as employers may use one job ad to hire multiple people for the same position.

Additionally, although BGT’s data are de-duplicated, duplicate postings could be missed for some specific employers. Some online job ads from employers such as the U.S. Air Force are created for recruitment purposes and are not indicative of individual job openings. Currently, BGT claims a 90% accuracy rate in deduplication and identification of actual online job ads.

Furthermore, BGT data cannot be used to study longitudinal changes in the online labor market for licensed psychologists. BGT continuously adds new web sources of online job ads, which renders samples of job ads from different time periods incomparable. There were also large numbers of unspecified data elements (e.g., industry, employer, employ-

ment status, etc.) that were either 1) not advertised in the job ad, or 2) not classified by BGT algorithms. Lastly, although BGT provides a maximum of 500 original job ads for each search, complete micro-level data (i.e., raw data at the level of each individual job ad, as opposed to summary data) for each search are currently not available through BGT. These limitations present difficulties in developing a complete picture of the online labor market for licensed psychologists.

3. Technical Documentation

The specific methods used to retrieve data from BGT, as well as the variable taxonomy used in this report are documented as follows:

Type of Position was defined as the basic terms of agreement outlined in a work contract with regard to the status of the advertised position. BGT categorizes “type of position” as follows:

- Temporary
- Permanent

Note: “Intern” was also considered a “type of position” but was not included in this report as none of the job ads for licensed psychologists were classified “intern” positions.

Employment Status was defined by the duration of an average work week for an advertised position. BGT categorizes “employment status” as follows:

- Full-time: more than 35 hours a week
- Part-time: at least 15 hours a week, but less than 35 hours a week

Source of job ads was defined as the medium through which employers advertise an open position online. BGT categorizes the “source” of online job ads as follows:

- Job board: “Job boards” are paid-for websites (e.g., online newspaper sites, industry associations, etc.) where job ads are posted for multiple employers, locations, and job types (e.g., Indeed, USAjobs, etc.).
- Employers Sites: “Employer sites” are websites where specific employers post their job openings (e.g., General Electric, Microsoft, etc.).
- Staffing agencies: “Staffing agencies” are staffing firms or intermediary recruiting agencies that post online job ads (e.g., Kelly staffing, Manpower staffing, etc.).

Occupations

Occupations in BGT are derived from the Occupational Information Network (O*NET) classification system used by federal statistical agencies. The following section documents the search criteria that were used to retrieve job ads data for licensed psychologists and for other occupations.

Licensed Psychologists: To identify “job ads for licensed psychologists,” the following criteria were used:

1. Occupation (based on O*NET codes): Broad Group 19-3030 = “Psychologists,” which includes the following detailed occupations:
 - 19-3031 = “Clinical, Counseling, and School Psychologists.”
 - 19-3031.01 = “School Psychologists;”
 - 19-3031.02 = “Clinical Psychologists;” and
 - 19-3031.03 = “Counseling Psychologists.”
 - 19-3032 = “Industrial-Organizational Psychologists.”
 - 19-3039 = “Psychologists, All other.”
 - 19-3039.01 = “Neuropsychologists and Clinical Neuropsychologists.”
2. Keywords: “license,” “licensed,” “licensure,” and “license-eligible.” Job ads that did not contain these words were excluded.

Note: Job ads that did not require licensure but instead “preferred” licensed psychologists were included; job ads for psychologists that required licenses other than a psychologist license (e.g., social work license) were also included. These job ads cannot be excluded from the sample of online job ads for licensed psychologists due to technical limitations in using keywords to filter online job ads data in BGT’s search query.

Education requirements were not included as a search criterion due to the large number of job ads with unspecified education requirements; approximately 30.4% of online job ads for licensed psychologists did not specify an education requirement. However, the keywords “license,” “licensed,” “licensure,” and “license-eligible” served as controls for education requirements because the vast majority of licensed psychologists have a doctoral degree.

Due to data limitations, the online job ads identified with the search query were only for licensed psychologists. Most job ads were for health service psychologists such as clinical, counseling, and school psychologists. Psychologists who worked as “research psychologists” or “psychology professors” may be under-represented in this sample due to BGT’s adoption of O*NET categorization. “Research psychologists” are not recognized by O*NET as an occupation, and O*NET’s categorization of “psychology professors” collapses under a different category: “Postsecondary Teachers.” BGT’s search functions do not currently

permit the use of separate keywords for mutually exclusive occupations within the same search query, which would allow for a combined search of all psychologists where “license” keywords would only be used for health service psychologists. The unavailability of micro-level data also creates difficulty for conducting separate searches and then summing the job ads for different occupations together. Occupation categories can potentially overlap with each other because BGT may classify one job ad under different occupation categories.

Licensed Physicians, non-Psychiatrists: To identify “job ads for licensed physicians, non-psychiatrists,” the following criteria were used:

1. Occupation (based on O*NET codes): under Broad Group 29-1060 = “Physicians and Surgeons,” the following detailed occupations were included:
 - 29-1061 = “Anesthesiologists;”
 - 29-1062 = “Family and General Practitioners;”
 - 29-1063 = “Internists, General;”
 - 29-1064 = “Obstetricians and Gynecologists;”
 - 29-1065 = “Pediatricians, General;”
 - 29-1067 = “Surgeons;” and
 - 29-1069 = “Physicians and Surgeons, All Other.”
2. Keywords: “license,” “licensed,” “licensure,” and “license-eligible.” Job ads that did not contain these words were excluded.

Licensed Social Workers: To identify “job ads for licensed social workers,” the following criteria were used:

1. Occupation (based on O*NET codes): Broad Group 21-1020 = “Social Workers,” which includes the following detailed occupations:
 - 21-1021 = “Child, Family, and School Social Workers;”
 - 21-1022 = “Healthcare Social Workers;”
 - 21-1023 = “Mental Health and Substance Abuse Social Workers;” and
 - 21-1029 = “Social Workers, All Other.”
2. Keywords: “license,” “licensed,” “licensure,” and “license-eligible.” Job ads that did not contain these words were excluded.

Licensed Mental Health Counselors: To identify “job ads for licensed mental health counselors,” the following criteria were used:

1. Occupation (based on O*NET codes): under Broad Group 21-1010 = “Counselors,” the following detailed occupation was included:
 - 21-1014 = “Mental Health Counselors.”
2. Keywords: “license,” “licensed,” “licensure,” and “license-eligible.” Job ads that did not contain these words were excluded.

Statisticians: To identify “job ads for statisticians,” the following criterion was used:

- Occupation (based on O*NET codes): Broad Group 15-2040 = “Statisticians.”

Licensed Psychiatrists: To identify “job ads for licensed psychiatrists,” the following criteria were used:

1. Occupation (based on O*NET codes): under Broad Group 29-1060 = “Physicians and Surgeons,” the following detailed occupation was included:
 - 29-1066 = “Psychiatrists.”
2. Keywords: “license,” “licensed,” “licensure,” and “license-eligible.” Job ads that did not contain these words were excluded.

Political Scientists: To identify “job ads for political scientists,” the following criterion was used:

Occupation (based on O*NET codes): under Broad Group 19-3090 = “Miscellaneous Social Scientists and Related Workers,” the following detailed occupation was included:

- 19-3094 = “Political Scientists.”

Economists: To identify “job ads for economists,” the following criterion was used:

- Occupation (based on O*NET codes): Broad Group 19-3010 = “Economists.”

Survey Researchers: To identify “job ads for survey researchers,” the following criterion was used:

- Occupation (based on O*NET codes): Broad Group 19-3020 = “Survey Researchers.”

Sociologists: To identify “job ads for sociologists,” the following criterion was used:

- Occupation (based on O*NET codes): Broad Group 19-3040 = “Sociologists.”

Mathematicians: To identify “job ads for mathematicians,” the following criterion was used:

Occupation (based on O*NET codes): Broad Group 15-2020 = “Mathematicians.”

Additional Note: Online job ads from the U.S. Air Force were excluded as they did not reflect specific job openings. Instead, these ads encouraged people to explore possible job

openings in the U.S. Air Force. Online job ads from the U.S. Air Force were excluded from the following occupations:

- Licensed Psychologists
- Licensed Physicians, non-Psychiatrists
- Licensed Social Workers
- Licensed Mental Health Counselors
- Licensed Psychiatrists

Geography

Cities: “Cities” in this report were based on the most recent delineations of Metropolitan Statistical Areas (MSAs) released by the U.S. Census Bureau in February 2013.

Location Quotient: The Location Quotient for geographic location i :

$$\text{Location Quotient}_i = \frac{\left(\frac{\text{Number of job ads for licensed psychologists in location } i}{\text{Employed population in location } i} \right)}{\left(\frac{\text{Number of job ads for licensed psychologists in the nation}}{\text{Employed population in the nation}} \right)}$$

Industry

“Industry” was defined as a group of establishments (employers) that produce similar products or provide similar services. BGT’s industry categorization was based on the North American Industry Classification System (NAICS). NAICS is the standard industry classification used by Federal statistical agencies in classifying business establishments. NAICS uses a numbering system up to a four-digit code, from broad to specific industry groups. The industry taxonomy is documented as follows (with NAICS codes in parenthesis):

Health Care and Social Assistance (62):

- “Ambulatory Health Care Services” (621)
 - “Offices of Physicians” (6211)
 - “Offices of Dentists” (6212)
 - “Offices of Other Health Practitioners” (6213)
 - “Outpatient Care Centers” (6214)
 - “Medical and Diagnostic Laboratories” (6215)

- “Home Health Care Services” (6216)
- “Other Ambulatory Health Care Services” (6219)
- “Hospitals” (622)
 - “General Medical and Surgical Hospitals” (6221)
 - “Psychiatric and Substance Abuse Hospitals” (6222)
 - “Specialty (except Psychiatric and Substance Abuse) Hospitals” (6223)
- “Nursing and Residential Care Facilities” (623)
 - “Nursing Care Facilities (Skilled Nursing Facilities)” (6231)
 - “Residential Intellectual and Developmental disability, Mental Health, and Substance Abuse Facilities” (6232)
 - “Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly” (6233)
 - “Other Residential Care Facilities” (6239)
- “Social Assistance” (624)
 - “Individual and Family Services” (6241)
 - “Community Food and Housing and Emergency and Other Relief Services” (6242)
 - “Vocational Rehabilitation Services” (6243)
 - “Child Day Care Services” (6244)

Public Administration (92):

- “Executive, Legislative, and Other General Government Support” (921)
 - “Executive, Legislative, and Other General Government Support” (9211)
- “Justice, Public Order, and Safety Activities” (922)
 - “Justice, Public Order, and Safety Activities” (9221)
- “Administration of Human Resource Programs” (923)
 - “Administration of Human Resource Programs” (9231)
- “Administration of Economic Programs” (926)
 - “Administration of Economic Programs” (9261)
- “Space Research and Technology” (927)
 - “Space Research and Technology” (9271)
- “National Security and International Affairs” (928)
 - “National Security and International Affairs” (9281)

Educational Services (61):

- “Educational Services” (611)
 - “Elementary and Secondary Schools” (6111)
 - “Junior Colleges” (6112)
 - “Colleges, Universities, and Professional Schools” (6113)
 - “Technical and Trade Schools” (6115)
 - “Educational Support Services” (6117)

Other Industry Sectors: other industry sectors with employers posting job ads for licensed psychologists are:

- “Agriculture, Forestry, Fishing, and Hunting” (11)
- “Mining, Quarrying, and Oil and Gas Extraction” (21)
- “Utilities “ (22)
- “Construction” (23)
- “Manufacturing” (31-33)
- “Wholesale Trade” (42)
- “Retail Trade” (44-45)
- “Transportation and Warehousing” (48-49)
- “Information” (51)
- “Finance and Insurance” (52)
- “Real Estate and Rental and Leasing” (53)
- “Professional, Scientific, and Technical Services” (54)
- “Management of Companies and Enterprises” (55)
- “Administrative and Support and Waste Management and Remediation Services” (56)
- “Arts, Entertainment, and Recreation” (71)
- “Accommodation and Food Services” (72)
- “Other Services (except Public Administration)” (81)

Qualifications

Education Qualification was defined as the highest degree an individual has completed as *required* for a candidate to qualify for the advertised position. BGT categorizes levels of minimum education requirements as follows:

- High school or vocational training
- Associate's degree
- Bachelor's degree
- Graduate or professional degree

Experience Qualification was defined as the minimum number of years prospective employees have spent working in a related area that are *desired or required* for a candidate to qualify for the advertised position. This particular data element does not specify the kinds of experiences (e.g., post-doctoral, pre-doctoral, internship, etc.) that may be required for licensed psychologists to qualify for certain positions. BGT categorizes levels of minimum education requirements as follows:

- Less than 2 years
- 2 to 5 years
- 5 to 8 years
- 8+ years

Skill Qualification was defined as the expertise *desired or required* for a candidate to qualify for the advertised position. The top skills in demand are those that were most frequently specified in the online job ads.

References

- Burning Glass Technologies. (2015). *Labor Insight* [Online analytic application]. Retrieved from <http://laborinsight.burning-glass.com/jobs/us#/>
- Burning Glass Technologies. (2015). *Labor Insight* [Presentation slides].
- U.S. Bureau of Labor Statistics. (2013). *Job Openings and Labor Turnover Survey: What is JOLTS?* Retrieved from <http://www.bls.gov/jlt/jltwhat.htm>
- U.S. Census Bureau. (2013). *Principle cities of metropolitan and micropolitan statistical areas*. Retrieved from <http://www.census.gov/population/metro/data/def.html>
- U. S. Census Bureau. (2014). *Annual estimates of the resident population: April 1, 2010 to July 1, 2014*. Retrieved from <https://www.census.gov/popest/data/metro/totals/2014/CBSA-EST2014-alldata.html>
- U. S. Census Bureau. (2014). *Annual estimates of the resident population: April 1, 2010 to July 1, 2014*. Retrieved from <https://www.census.gov/popest/data/state/totals/2014/index.html>
- U.S. Census Bureau. (2014). *Topologically integrated geographic encoding and referencing metropolitan statistical area / micropolitan statistical area shape file*. Retrieved from <ftp://ftp2.census.gov/geo/tiger/TIGER2014/CBSA/>
- U.S. Census Bureau. (2014). *Topologically integrated geographic encoding and referencing state and equivalent shape file*. Retrieved from <ftp://ftp2.census.gov/geo/tiger/TIGER2014/STATE/>