AGRICULTURAL JOB MARKET REPORT

MARCH 2024

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EXECUTIVE SUMMARY

PURPOSE

Purdue University's Department of Agricultural Economics started collecting data on agricultural job postings during the summer of 2021. This data is collected every four weeks, and this report represents an overview of the agricultural job market over time. The data extends from June 2021 to March 2024. The Agricultural Job Market Report provides a measurement of the current state of the job market and discussions on any trends or changes.

ABOUT THIS REPORT

Google's job search engine pulls job postings from thousands of job boards. These job boards can be company-specific or common job posting sites like LinkedIn and Glassdoor. On Google's job search engine, LinkedIn is the most popular job board for agricultural jobs found in the data.

JOB TRENDS

Agricultural Job postings were collected 27 times between March 23, 2022, and March 20, 2024. On average, there are 2776 new job openings every four weeks. There were 3017 new job openings on Google between February 21, 2024, and March 20, 2024. Current job openings have increased for three months in a row. Postings per Opening decreased after two collections of increases. Over one-third of job openings were in the Midwest.

SALARY

The average agricultural job salary since February 2022 is $48,197. On March 2, 2024, jobs in economics, lending and finance, and research are among the highest-paying jobs in agriculture. Additionally, jobs in the Northeast had the highest average salary among the geographical regions, but remote jobs had higher average salaries.
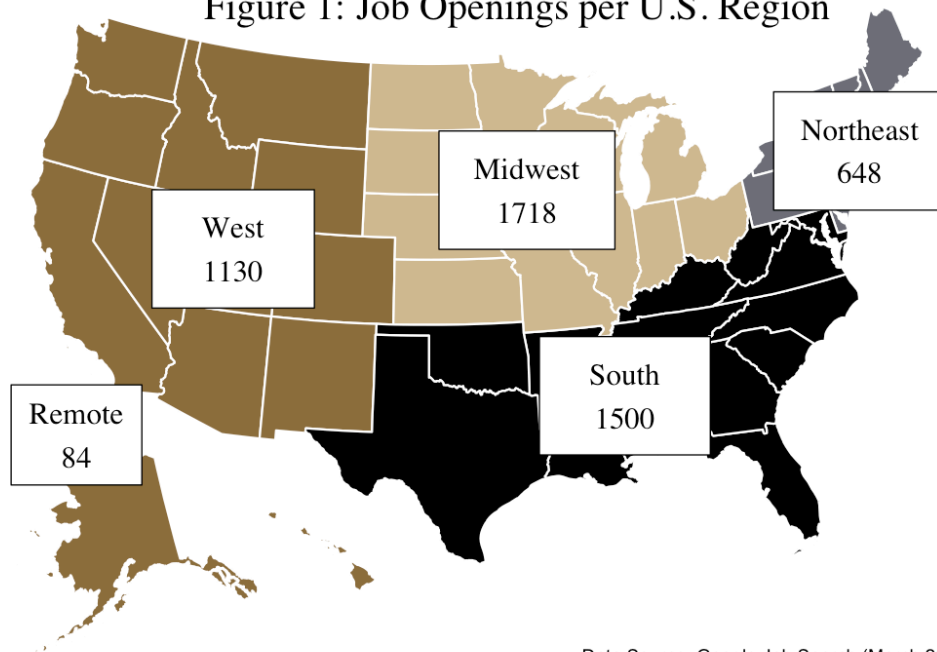
DESCRIPTION ANALYSIS

Experience is mentioned in the description of 95% of agricultural jobs, making it the most common requirement on March 20, 2024. The most common job openings are lending and finance, natural resources, and engineering.

JOB POSTINGS & OPENINGS

In the report, "job posting" refers to any separate occurrence of a job advertisement for an individual job. Any representation of a single specific job opportunity of a company will always be phrased as a "job opening." Some companies have existing career pages on their website but continue to post to job boards, like LinkedIn and ZipRecruiter. Companies post to multiple job boards to cast a wider net for potential hires.

Figure 1 illustrates the number of job openings for each region of the United States. There were 5341 job postings for 5080 unique jobs on March 20, 2024. The most job openings were in the Midwest and South. Over one-third of all job openings were in the Midwest. Relative to the collection on February 21, 2024, jobs in the South, Northeast, and Remote jobs increased. The number of job openings in the Midwest and West decreased. The ranking of regions in terms of total job openings was the same in the two most recent collections.
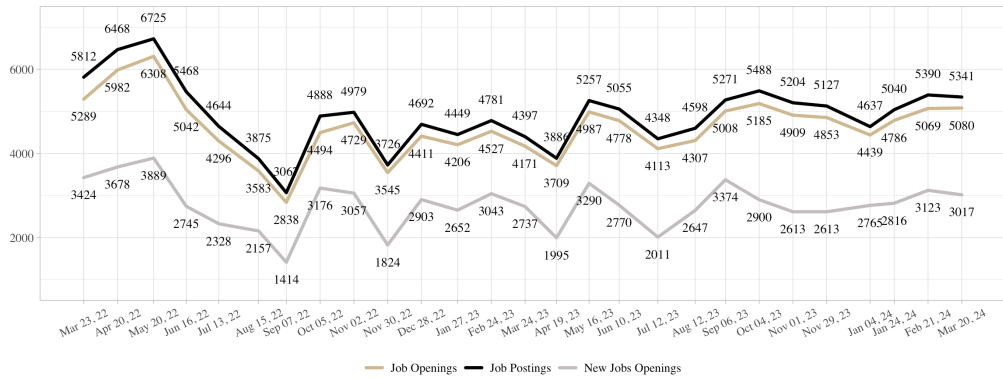

Figure 1: Job Openings per U.S. Region

Northeast
648

Midwest
1718

West
1130

South
1500

Remote
84

Data Source: Google Job Search (March 2024)

JOB TRENDS

Figure 2 represents job postings collected every four weeks from March 23, 2022, to March 20, 2024. On average, there were 2776 new openings present every four weeks. New postings have been above this two-year average for the past three collection periods. Between February and March, the number of new jobs decreased for the first time since October to November 2023.

On average, there were 4616 job openings at each collection date. On March 20th, there were 5080 unique job openings. Job openings have now increased over the past three scrapes. Between March 23, 2022, and September 7, 2023, the range of job openings was 2838 to 6308. Job openings since October 5, 2023, have had less variability, ranging from 3545 to 5185. The two-year average number of job postings in each period was 4912. The long-term trend closely followed the number of job openings.
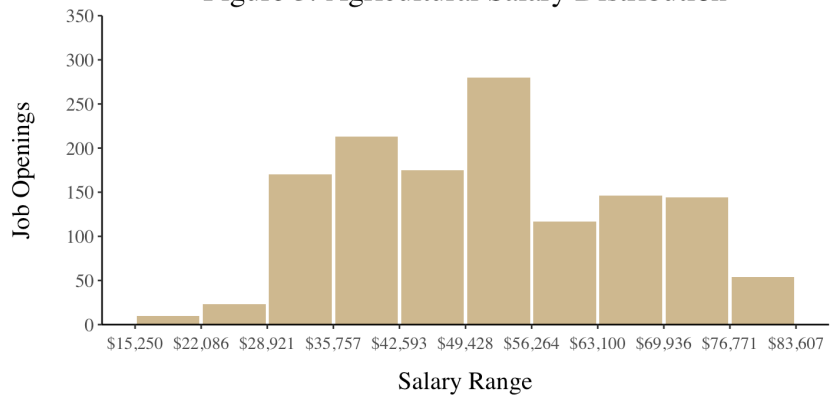

Figure 2: Agricultural Jobs

Data Source: Google Job Search (March 2022 - March 2024)

SALARY

The national median salary computed for the last 24 months was $45,677/year. The average salary was $48,197/year. It is important to note that only 18% of job openings included salary information. Figure 3 illustrates the salary distribution among agricultural job openings for February of 2024. According to ZipRecruiter, the national average salary for agricultural-related jobs is $47,483/year.

Figure 3: Agricultural Salary Distribution

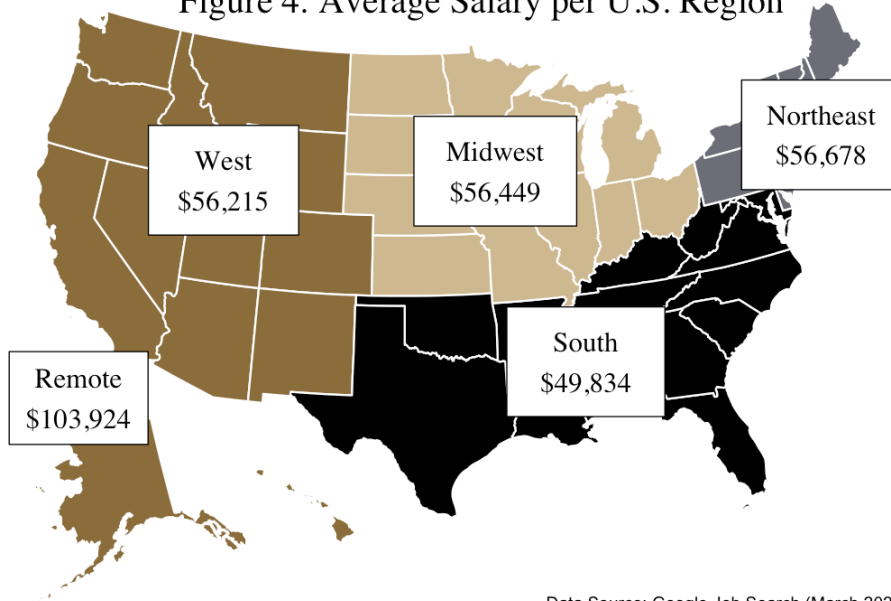Data Source: Google Job Search (March 2024)

SALARY BY SUBSECTOR

The distribution of salaries varies across the different subsectors of agricultural jobs, as shown in Table 1. Jobs in economics ($57,264/year), lending and finance ($56,963/year), and research ($56,776/year) have the highest average salary. Food Science jobs had the lowest average salary ($49,686/year). It is important to note that jobs can fall into multiple subsectors. It is also possible that specific subsectors exclude salaries more often or have outlier salaries.

Table 1 Job Salary by Subsector	Average Salary	Median Salary
Academic	$52,202	$52,500
Economics	$57,264	$55,000
Education	$53,946	$51,654
Engineering	$55,517	$55,000
Sales	$54,100	$51,362
Agronomy	$55,610	$55,000
Animal Science	$53,895	$51,654
Farming	$54,930	$51,654
Food Science	$49,686	$47,894
Lending and Finance	$56,963	$52,351
Natural Resources	$56,770	$55,000
Research	$56,776	$55,000
Google Job Search (March 2024)		

SALARY BY REGION

Average salaries vary by region. Figure 4 illustrates the variation in average salaries across the U.S. Fully remote jobs have an average salary of $103,924/year. The Northeast has the highest average regional salary in job postings at $56,678/year, followed by the Midwest at $56,449 /year. The third highest average salary by region is the West at $56,215/year, followed by the South at $49,834/year. Relative to the average regional salaries on February 21, 2024, Average salaries in the South, West, Northeast, and for remote jobs were elevated, and average salaries in the Midwest were lower.

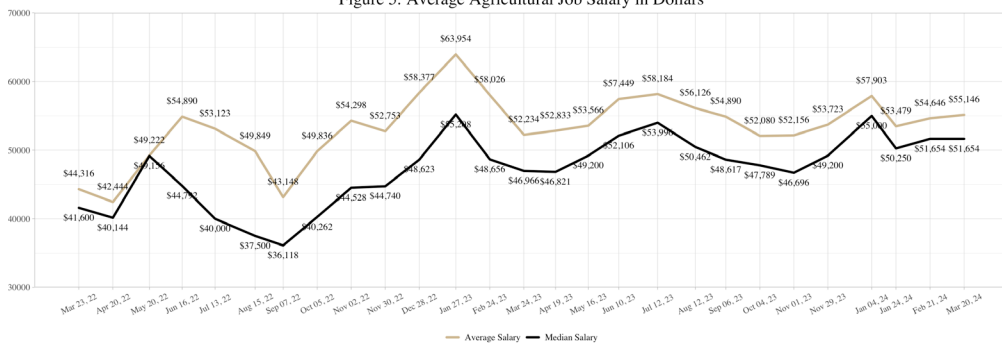
Figure 4: Average Salary per U.S. Region

West $56,215

Midwest $56,449

Northeast $56,678

Remote $103,924

South $49,834

Data Source: Google Job Search (March 2024)

SALARY TRENDS

The average and median salary for observed agricultural jobs over the past two years are depicted in Figure 5. Most recently, the average reported salary for agricultural jobs was $55,146, and the median reported salary was $51,654. The median salary is the same as February 21st, and the average salary is slightly elevated. Relative to March 2023, the average and median salaries are both higher. Neither average nor median salaries have decreased for two straight collections.

Figure 5: Average Agricultural Job Salary in Dollars

Data Source: Google Job Search (March 2022 - March 2024)

DESCRIPTION ANALYSIS

INDUSTRY SUBCATEGORY

The data can be grouped by keywords mentioned within job descriptions. Based on company type or job responsibilities, it is possible for a job to fit in multiple different subcategories. For example, if a job on a farm requires feeding animals and operating machinery, it would be both animal sciences and farming. Table 2 reports the percentage of job openings that include each word or some variation. The top three subcategories are lending and finance, natural resources, and engineering. Academic jobs are the least common job type.

Table 2 Industry Subsector	Job Openings that Mention
Academic	3.00%
Ag Education	45.20%
Agronomy	39.50%
Animal Science	23.40%
Economics	38.70%
Engineering	59.20%
Farming	55.20%
Food Science	23.80%
Lending and Finance	77.90%
Natural Resources	67.60%
Research	56.90%
Sales	54.80%
Google Job Search (March 2024)	

REQUIRED SKILLS

Table 3 shows the average percentage of mentions for specific job requirements. Experience is required by 95% of jobs, while over 50 percent of jobs also require leadership, education, and communication. The required skills and experiences are found across multiple different subsectors of agricultural jobs. Throughout the data collection, experience has always been the most common requirement. The percentage of jobs that require education increased from 40% to 80% from March 2022 to March 2023 but has remained between 70% and 80% since then.

Table 3 Requirements	Job Openings that Mention
Communication	69.22%
Critical Thinking	21.83%
Data	47.65%
Education	77.21%
Experience	95.36%
Leadership	84.93%
Microsoft	40.31%
Programming	10.17%
Public Speaking	40.24%
Quantitative	41.02%
Remote Work	21.18%
Teamwork	44.3%
Travel	46.23%
Google Job Search (March 2024)	

DESIRED EDUCATION

Table 4 reports the percentage of job postings in agriculture that mention each desired level of education by applicants. To be included, the educational term must be explicitly written in a job description. A job can mention multiple levels of education. Generally, a low share of agricultural jobs indicates a required education.

Table 4 Desired Education	Job Openings that Mention
High School	21.44%
Associates	6.18%
Bachelors	28.85%
Masters	16.68%
PhD	13.72%
Google Job Search (March 2024)	

According to Table 4, a bachelor's degree, the most cited requirement, is mentioned in 28.85% of agricultural job postings. Desired education has increased over the past two years.

JOB BENEFITS

Key terms related to job benefits are in Table 5. These include the broad terms benefits, diversity, equal opportunity, tuition reimbursement, and 401(K). In the same way companies may not post salaries with online listings, they may also not report all the relevant benefits. These numbers should serve
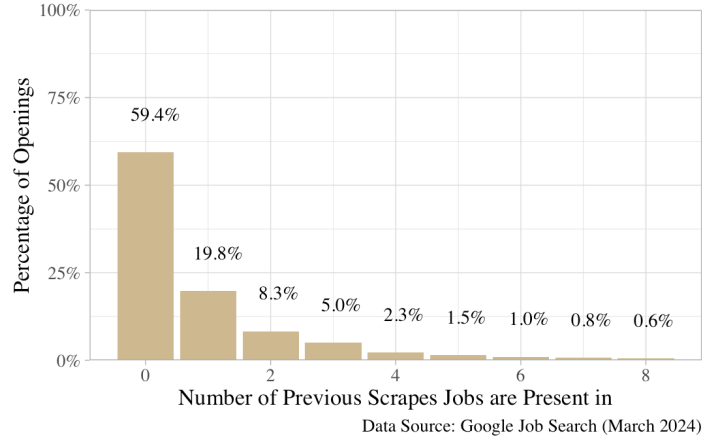
Table 5 Benefits	Job Openings that Mention
401(K)	6.76%
General Benefits	64.91%
Diversity	18.29%
Equal Opportunity	92.08%
Remote	21.18%
Google Job Search (March 2024)	

as guides to understand what is being displayed in job descriptions but are unlikely to fully capture the benefit packages offered by agricultural employers. We can see that 65% of agricultural job postings use some general terms of benefits in the description, but few reference specific benefits such as 401(K) and tuition reimbursement. Additionally, 92% of jobs included mention of equal opportunity. These levels of mentions have maintained relative stability throughout data collection.

DURATION ON JOB MARKET

The amount of time a job opening is listed can be an indicator of how fast agricultural jobs are filled and how long agricultural employers search for potential candidates. Figure 6 shows the duration current job openings have been on the market. 59.4% of agricultural jobs were not present in the prior scrape. Only 12.5% of jobs have been present for more than two previous collections. On average, job openings present on March 20th were older than those present on February 21st.
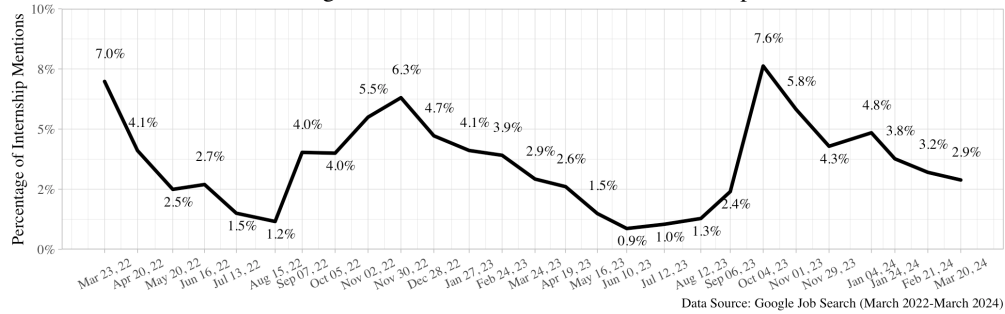
Figure 6: Percentage of Job Openings by
Duration on Job Market

Data Source: Google Job Search (March 2024)

NEW INTERSHIP OPENINGS

Internships are often filled by current college students looking to gain experience for their future careers or meet a degree requirement. As a result, these types of job openings often follow the academic calendar. Figure 7 shows the percentage of new jobs that mention internship between February 2022 and February 2024. Internship mentions are cyclical, increasing in the fall as companies seek students to employ and slowly decreasing as the summer positions are filled. On March 20, 2024, 2.9% of new jobs were internships, as new internships continue to fall from the peak in October 2023.

Figure 7: New Jobs that Mention Internships

Data Source: Google Job Search (March 2022-March 2024)

APPENDIX

DATA COLLECTION

For this research, data was collected through Google's job search engine utilizing an Application Programming Interface (API) provided by SerpApi. The data collected for the report includes job title, company name, description, salary (if posted), posting date, and original job board site name.

Not all online job postings appear on Google's job search engine and as a result the data discussed in the report should be treated as a sample of job openings existing within the agriculture industry. Indeed.com, the number 1 job site in the world, does not share job posting data with Google. Google's job search engine represents only a fraction of jobs posted online. Job postings can be posted on multiple job boards such as LinkedIn, Glassdoor, as well as company websites that allow Google's Cloud Talent Solution to analyze their job postings and display them on Google's job search engine.

Job postings that are available on Google's job search engine are curated to best fit the search terms of the user. The data in this report was collected using a general search term of "agriculture". Data presented in this report could impose bias that is specific to Google's job search engine data. Although possible, we believe the data collected is valuable for industry employers as a metric for comparing company hiring to the agricultural industry. Therefore, this report is an analysis of Google's data and is not fully representative of the agricultural job market.

Note that not all online job postings appear on Google's job search engine. Job postings can be posted on multiple job boards such as LinkedIn, Glassdoor, as well as company websites that allow Google's Cloud Talent Solution to analyze their job postings and display them on Google's job search engine. Job postings that are available to Google's Cloud Talent Solution are curated to best fit the search terms of the user. For this study, the search term included: "agriculture." This allows for a broad variety of jobs to be collected that exist within the agricultural job market. The data discussed in this report represents all job postings in the United States collected from Google's job search engine from June 2021 to November 2022. Google's job search engine is a conglomerate of multiple online job boards. Within the data, no jobs were collected from Indeed.com. Indeed.com does not allow Google access to their job board unlike other popular job sites. Google must be granted access to a

company's job posting before advertising on Google's job search engine. Many job openings appear on multiple job boards at a given time to get more advertising to potential employees.

Google's job search engine hosts thousands of job boards' data. Due to the immense amount of job boards available, job advertising is a competitive market. Companies seeking premium talent should post to the more popular job boards which produce more traffic.

DESCRIPTION ANALYSIS

From the data, each job posting has a description. Text mining was used to pull information from these descriptions, and it is possible to quantify the amount of mentions of specific characteristics. We were able to extract salary if not already mentioned, subsector information, requirements, and education. The categories were found using the "bag of words" technique. A list of words was created to represent any similar phrases and synonyms that represent a characteristic of interest. For example, quantitative skills would be marked as appearing in a job posting if terms appear in the description such as "quantitative", "analysis", "prediction", "mathematics", and "statistics." These terms are represented as nouns, verbs, and adjectives to catch all forms of context that might be represented in written language. Descriptions are then searched to evaluate if any of these terms were mentioned. If a term was mentioned once or more, the description was tallied as mentioning those specific characteristics.

Industry Subsector	Word List
Academic	Company name must contain "college", or "university" and Description must contain "professor", "dean", "adjunct", "tenure", "chair", "post doc", "postdoc", "faculty", "lecture", or "instructor"
Ag Education	"ag ed", "ag teacher", "agricultural teacher", "ag education", "agriculture education", "agricultural education", "educator", "teach", "teacher", "class", "classroom", "ffa", "4-h", "4h", "ag teacher", "teaching", "extension educator", "future farmers of america", "ext agent", or "extension"
Agronomy	"crop adviser", "agronomy", "agronomist", "corn", "soybeans", "soil", "seed", "crop", "grain", "cultivation", "greenhouse", "irrigation", "appraiser", "horticulture", "fertilizer", "pesticide", "fungicide", "herbicide", "applicator", "sprayer", or "botanist"
Animal Science	"animal", "veterinarian", "veterinary", "sheep", "cattle", "dairy", "swine", "pig", "pork", "beef", "livestock", "breed", "poultry", "equestrian", "horse", "bovine", "ranch", "farrowing", "feedlot", "grazing", "dairies", "milking", "egg gatherer", "herdsman", or "herdsperson"
Economics	"economic", "economist", "econometric", "statistician", "risk", "commodity", "price", "pricing", "policy specialist", "policy analyst",
Engineering	"ag systems management", "agricultural systems management", "asm", "engineer", "mechanic", "diesel", "equipment", "service tech", "service manager", "maintenance tech", "production tech", "electrical tech", "precision tech", "repair", "construction", "mechan", "weld", "precision", "digital ag", or "technology"
Farming	"farming", "farmhand", "planting", "plant", "harvest", "harvester", "farm", "forage", "combine", or "farmer"
Food Science	"food science", "food production", "meat packing", "butcher", "food distribution", "food handling", "food processes", "food product", "meat", or "produce"
Lending and Finance	"loan", "credit", "lender", "lending", "bank", "finance", "tax", "investment", "budget", "financial", "insurance", "account", "underwriter", "audit", or "collateral"
Natural Resources	"conservation", "wildlife", "environment", "environmental", "ecosystem", "forest", "tree", "raw materials", "nature", "energy", "pollution", "renewable", "fire", "climate", "natural", "sustainable", "resources", "surveyor", "fish", "microbiologist", "geologist", "biologist", or "biological"
Research	"research", "laboratory", "scientist", "chemist", or "lab"
Sales	"ag sales", "agricultural sales", "sell", "customer", "account", "commission", "sale", "seller", "buyer", or "buying"

Desired Education	Word List
High School	"high school"
Associates	"associate's", "associate degree", "associates's degree"
Bachelors	"bachelors", "bachelor's degree", "bachelor degree"
Masters	"masters", "master's degree", "master degree", "grad school", "gradschool", "graduate degree", "advanced degree"
PhD	"phd", "p.h.d", "ph.d", "doctorate", "doctoral degree"

Requirements	Word List
Communication	"communication", "communicate", "talk", "call", "email", "explain", "present", "speak"
Critical Thinking	"critical thinking", "problem solving", "analysis", "deliberate", "brainstorm", "reasoning"
Data	"data", "data analysis", "big data", "data analyst", "data wrangling", "data collection"
Education	"degree", "degrees", "college", "graduate", "undergrad", "doctorate", "phd", "bachelor", "bachelors", "education", "gpa"
Experience	"work experience", "experience", "training", "prior job", "familiarity", "practice", "knowledge", "background", "exposure to", "understanding of"
Leadership	"leadership", "lead", "leading", "leader", "manager", "management", "mentor", "supervision", "supervisor", "supervise"
Microsoft	"excel", "spreadsheet", "microsoft", "word", "powerpoint", "outlook"
Public Speaking	"public speaking", "speaking", "speech", "speeches", "speak", "present", "presentation"
Programming	"coding", "code", "python", "r ", "sql", "java", "c", "computing", "algorithm"
Quantitative	"quantitative", "analysis", "analyze", "analyst", "insight", "predict", "prediction", "predictive", "math", "mathematics", "statistics", "statistical", "optimization", "optimize", "regression"
Remote Work	"remote", "remote working", "home office", "work from home", "work at home"
Teamwork	"collaboration", "team", "teams", "teamwork"
Travel	"travel", "drive", "driving", "fly", "flying"

Benefits	Word List
General Benefits	"medical", "dental", "vision", "ad&d", "ad and d", "accidental death and dismemberment", "std", "short term disability", "short-term disability", "ltd", "long term disability", "long-term disability", "vacation", "holiday", "disability", "health insurance", "health savings account", "life insurance", "paid time off", "pto", "referral program", "retirement planning", "retirement"
Diversity	"diverse", "diversity"
Equal Opportunity	"equal opportunity", "without regard", "religion", "sex", "color", "age", "race"
Tuition Reimbursement	"tuition"
401(K)	"401k","401 k","401(k)"

States in Each Region from Figure 1 and 4	
Midwest	IN, IL, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD
Northeast	CT, ME, MA, NH, RI, VT, NJ, NY, PA
South	DE, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, AR, LA, OK, TX, DC
West	AZ, CO, ID, NM, MT, UT, NV, WY, AK, CA, HI, OR, WA

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