

AGRICULTURAL JOB MARKET REPORT

February 2024 Report



TABLE OF CONTENTS

Author Information _____	1
Executive Summary _____	2
Job Postings and Openings _____	3
Job Trends _____	4
Salary _____	5
Description Analysis _____	8
Appendix _____	11
References _____	16

Author Information

Joshua Strine, Graduate Research Assistant, Department of Agricultural Economics, Purdue University

Dr. Brady Brewer, Assistant Professor, Department of Agricultural Economics, Purdue University

Dr. Nathan DeLay, Assistant Professor, Department of Agricultural Economics, Purdue University

AGRICULTURE JOB MARKET REPORT

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 February 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 separate job boards. These job boards can be company-specific as well as common job posting sites like LinkedIn and Glassdoor. On Google's job search engine, LinkedIn is the most popular job board for agricultural jobs that are found in the data.

JOB TRENDS

Agricultural Job postings were collected 27 times between February 23, 2022, and February 21, 2024. On average, there are 2750 new job openings every four weeks. There were 3123 new job openings on Google between January 24, 2024, and February 21, 2024. Current job openings and postings have increased for two collections in a row. Over one-third of job openings were in the Midwest.

SALARY

The average agricultural job salary since February 2022 is \$47,897. On February 21, 2024, jobs in economics, lending and finance, and natural resources are among the highest-paying jobs in agriculture. Additionally, jobs in the Midwest had the highest average salary among the geographical regions, but remote jobs had higher average salaries.

DESCRIPTION ANALYSIS

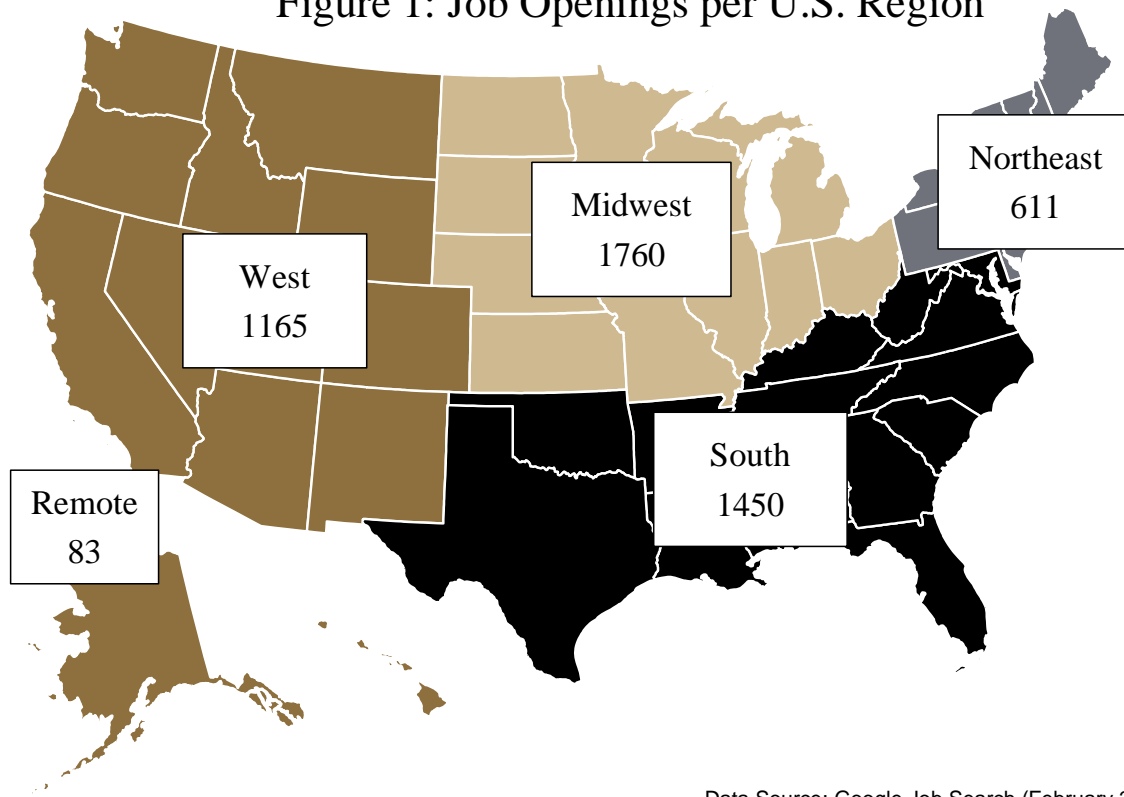
Experience is mentioned in the description of 95% of agricultural jobs, making it the most common requirement on February 21, 2024. The most common types of job openings are lending and finance, natural resources, and engineering.

Job Postings and 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 5390 job postings for 5069 unique jobs on February 21, 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 January 24, 2024, job openings in the Midwest, South, and West were higher. Remote jobs and jobs in the Northeast were lower. 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



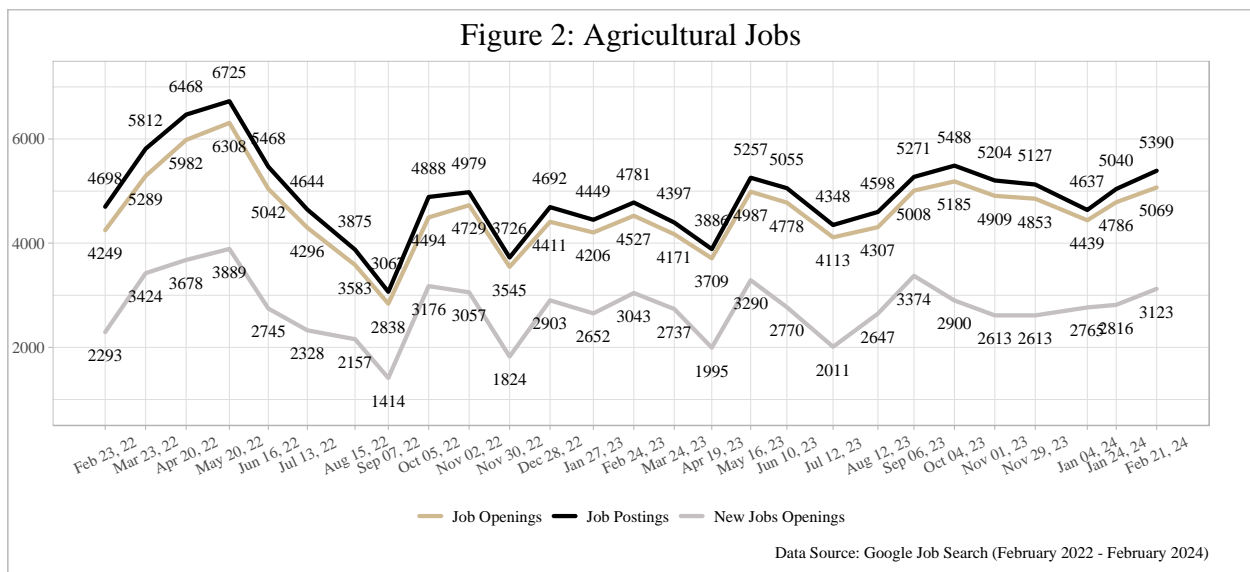
Data Source: Google Job Search (February 2024)

AGRICULTURE JOB MARKET REPORT

Job Trends

Figure 2 represents job posting collected every four weeks from February 23, 2022, to February 21, 2024. On average, there were 2750 new openings present every four weeks. New postings have been above this two-year average for the past three collection periods. There have now been three straight collections with increased numbers of new job openings.

On average, there were 4586 job openings at each collection date. On February 23rd, there were 5069 unique job openings. This is the second straight collection in which job openings have been higher than the previous collection, following a three-collection stint of decreased openings. In general, the variability of job openings has been more stable over the 12 months, with a range of 3709 to 5185 job openings relative to the previous year, with a range of 2838 to 6725. The average number of job postings in each period was 4888. The long-term trend closely followed the number of job openings.

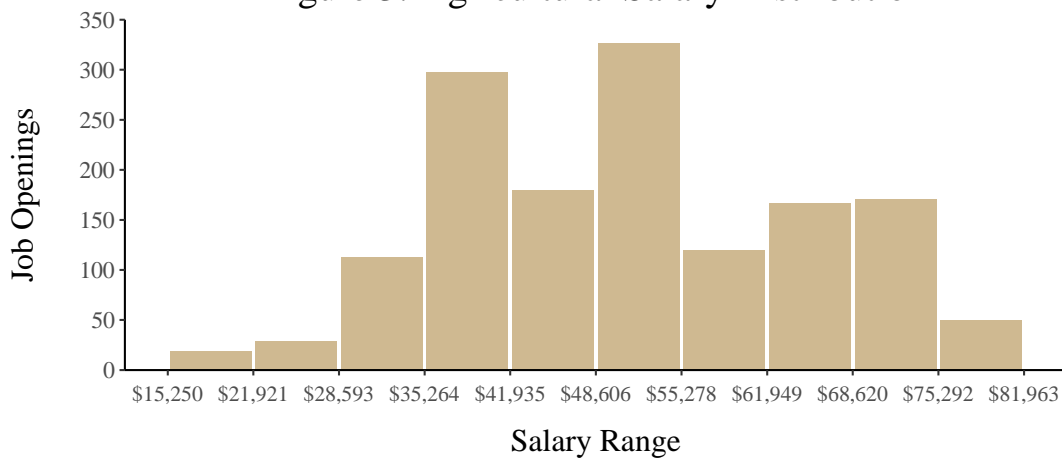


AGRICULTURE JOB MARKET REPORT

Salary

The national median salary computed for the last 24 months was \$44,740/year, and the average salary was \$47,897/year. It is important to note that only 18% of job openings included salary information. Figure 3 illustrates the distribution of salary among agricultural job openings for February of 2024. According to ZipRecruiter, the national average salary for agricultural-related jobs is \$47,486/year. The median weekly wage of all full-time employees was \$1,145 in the 4th quarter of 2023, according to the Bureau of Labor Statistics, which equates to \$59,540 annually.

Figure 3: Agricultural Salary Distribution



Data Source: Google Job Search (February 2024)

SALARY BY SUBSECTOR

The distribution of salaries varies across the different subsectors of agricultural jobs, as shown in Table 1.

Jobs in economics (\$56,576/year), lending and finance (\$56,219/year), and natural resources (\$55,897/year) have the highest average salary. 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 salaries that are excluded as outliers.

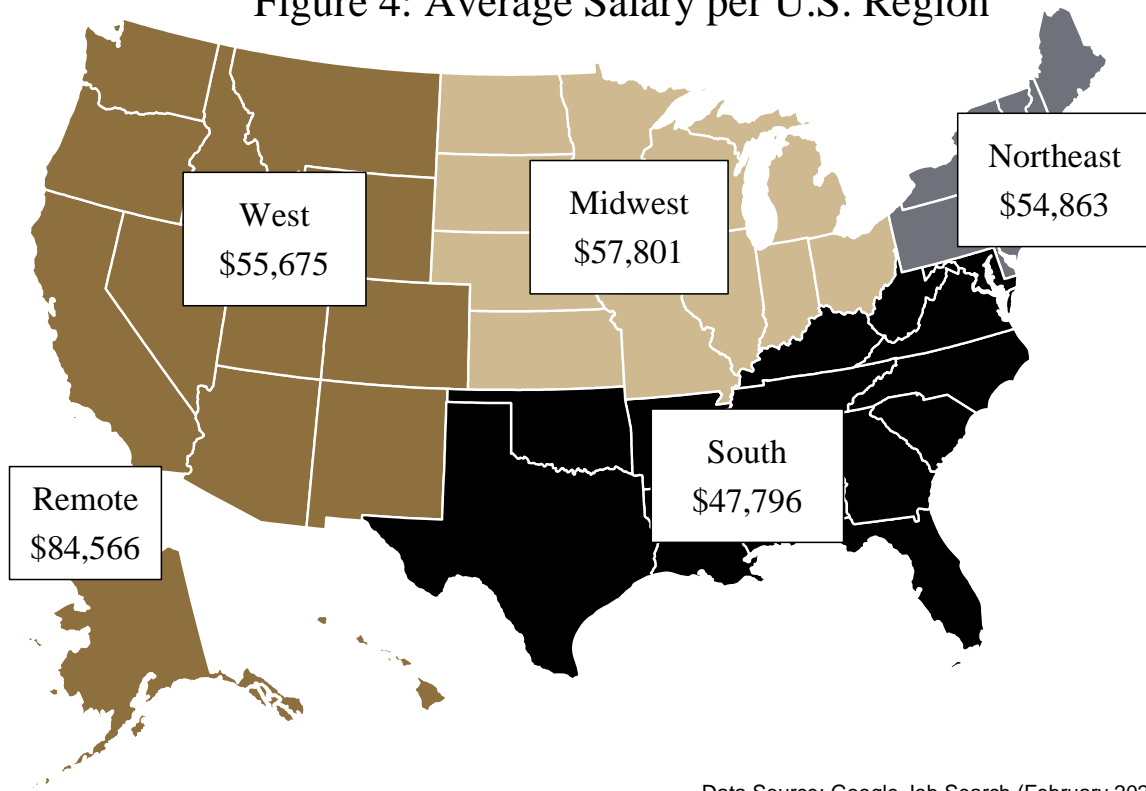
Table 1 Job Salary by Subsector	Average Salary	Median Salary
Academic	\$46,444	\$43,455
Economics	\$56,576	\$55,000
Education	\$52,522	\$51,362
Engineering	\$54,538	\$52,217
Sales	\$55,179	\$51,362
Agronomy	\$55,569	\$50,008
Animal Science	\$53,125	\$50,464
Farming	\$55,026	\$51,362
Food Science	\$48,820	\$47,925
Lending and Finance	\$56,219	\$51,654
Natural Resources	\$55,897	\$53,439
Research	\$55,369	\$51,654
Google Job Search (February 2024)		

AGRICULTURE JOB MARKET REPORT

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 \$84,566/year. The Midwest has the highest average regional salary in job postings at \$57,801/year, followed by the West at \$55,675 /year. The third highest average salary by region is the Northeast at \$54,863/year, followed by the South at \$47,796/year. Relative to the average regional salaries on January 24, 2024, Average salaries in the Midwest, West, Northeast, and for remote jobs were elevated, and average salaries in the South were lower. There was no difference in the ranking of the regional salaries between January 24th and February 21st.

Figure 4: Average Salary per U.S. Region

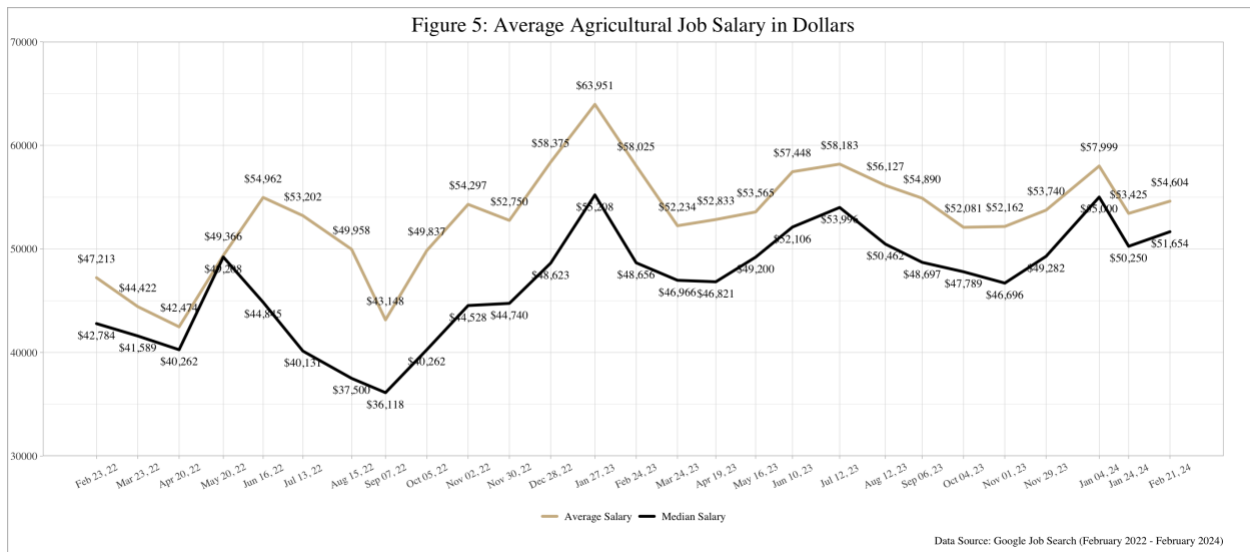


Data Source: Google Job Search (February 2024)

AGRICULTURE JOB MARKET REPORT

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 of agricultural jobs was \$54,604, and the median reported salary was \$51,654. These are both slightly elevated from January 24th but still lower than the first collection of 2024 on January 4th. Over the past two years, the highest average salary occurred on January 27, 2023, and the lowest average salary occurred on February 4, 2022. Relative to this time last year, the average salary is lower, and the median salary is higher.



AGRICULTURE JOB MARKET REPORT

Description Analysis

INDUSTRY SUBCATEGORY

The data can be grouped by mentions 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 of it. 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	2.40%
Ag Education	45.80%
Agronomy	44.60%
Animal Science	24.60%
Economics	35.20%
Engineering	60.10%
Farming	56.50%
Food Science	20.20%
Lending and Finance	80.60%
Natural Resources	70.00%
Research	56.60%
Sales	48.50%
Google Job Search (February 2024)	

REQUIRED SKILLS

Table 3 shows the average percentage of mentions for specific job requirements. Experience is required by 96% 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 span of the data collection, experience has always been the most common requirement.

Table 3 Requirements	Job Openings that Mention
Communication	68.1%
Critical Thinking	19.5%
Data	48.49%
Education	79.34%
Experience	95.58%
Leadership	86.73%
Microsoft	32.83%
Programming	6.98%
Public Speaking	37.25%
Quantitative	47.32%
Remote Work	28.58%
Teamwork	38.82%
Travel	47.15%
Google Job Search (February 2024)	

AGRICULTURE JOB MARKET REPORT

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. It is possible for a job to mention multiple levels of education. Generally, a low share of agricultural jobs indicates a required education. According to Table 4, a bachelor's degree, the most cited degree requirement, is mentioned in 28.75% of agricultural job postings. Desired education has increased over the past two years. Since January 2023, the average percent of jobs desiring each degree level is higher than the average across 2022. The largest differences are in high school degrees (6% higher), bachelor's (10% higher), and master's (7% higher).

Table 4 Desired Education	Job Openings that Mention
High School	25.15%
Associates	4.07%
Bachelors	28.75%
Masters	19.44%
PhD	11.58%
Google Job Search (February 2024)	

JOB BENEFITS

The key terms related to job benefits are in Table 5. These include the broad terms of 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 as

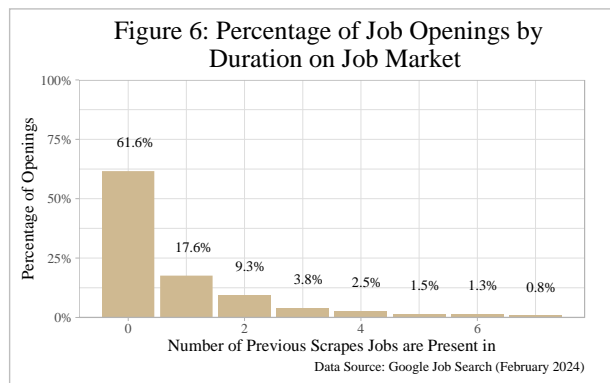
Table 5 Benefits	Job Openings that Mention
401(K)	7.28%
General Benefits	65.95%
Diversity	16.07%
Equal Opportunity	93.42%
Remote	28.58%
Google Job Search (February 2024)	

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 most 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, 93% of jobs included mention of equal opportunity. These levels of mentions have maintained relative stability throughout the duration of data collection.

AGRICULTURE JOB MARKET REPORT

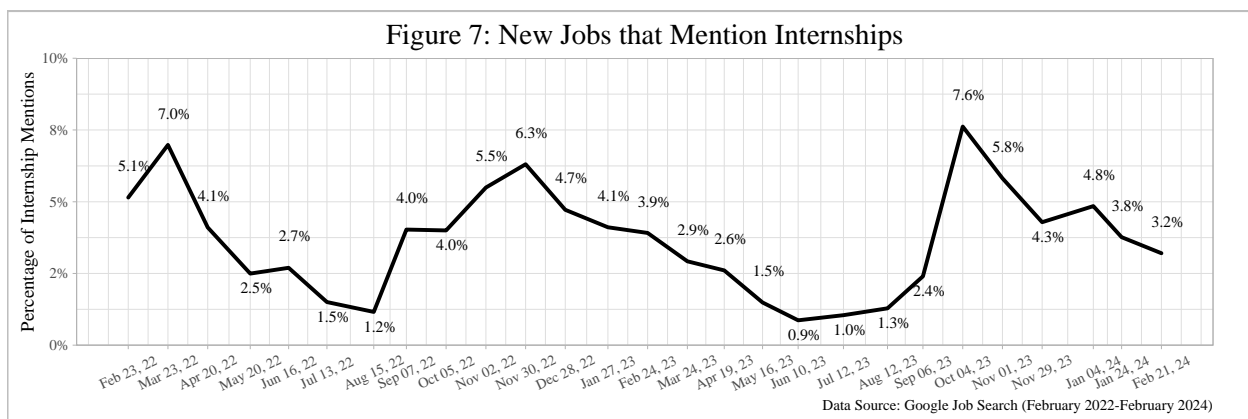
DURATION ON JOB MARKET

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. 61.6% of agricultural jobs were not present in the prior scrape. Only 11.5% of jobs have been present for more than two previous collections. Relative to January 24, 2024, jobs have been on the market relatively shorter.



NEW INTERSHIP OPENINGS

Internships are often filled by current college students who are 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 February 21, 2024, 3.2% of new jobs were internships, as new internships continue to fall from the peak in October 2023.



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

AGRICULTURE JOB MARKET REPORT

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.

AGRICULTURE JOB MARKET REPORT

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”

AGRICULTURE JOB MARKET REPORT

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”

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”

AGRICULTURE JOB MARKET REPORT

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

AGRICULTURE JOB MARKET REPORT

References

“About Indeed.” *Indeed.com*, Mar. 2020, www.indeed.com/about.

“Agricultural Salary.” *ZipRecruiter*, 3 Jan. 2024,
<https://www.ziprecruiter.com/Salaries/Agriculture-Salary#Yearly>.

SerpApi, LLC. “Google Jobs API.” *SerpApi*, 2022, <https://serpapi.com/google-jobs-api>.