
AGRICULTURAL JOB MARKET REPORT

JULY - SEPTEMBER 2024



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Agricultural Economics

Table of Contents

Author Information	1
Executive Summary	2
Job Postings & Openings	3
Job Trends	4
Salary	5
Description Analysis	7
Appendix	11
References	16

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EXECUTIVE SUMMARY

ABOUT THIS REPORT

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 from Google jobs. 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.

Data on the agricultural job market extends from June 2021 to September 2024. The Agricultural Job Market Report provides a measurement of the current state of the job market and discussions on any trends or changes.

JOB TRENDS

Agricultural Job postings were collected 27 times between September 7, 2022, and September 4, 2024. On average, there are 2736 new job openings every four weeks. Over the past three months, the average number of new job postings has increased relative to June 2024. There were 2925 new job openings between August 19, 2024, and September 4, 2024. The number of active job openings was 4910 in September, the most openings since March 20, 2024. There have been two consecutive months in which the current number of agricultural job openings is increasing.

SALARY

The average agricultural job salary since September 2022 is \$50,659. On September 4, 2024, the average salary was \$58,492. September marks the second time in 2024 that the average salary decreased. The sample of agricultural jobs on August 19, 2024, had the highest average salary, \$60,985, since January 2023. Jobs in sales, economics, and engineering were among the highest-paying jobs in agriculture. Additionally, remote jobs had a higher average salary than in-person jobs. Across the United States, jobs in the Northeast had the highest average wage, while jobs in the West had the lowest average salary.

DESCRIPTION ANALYSIS

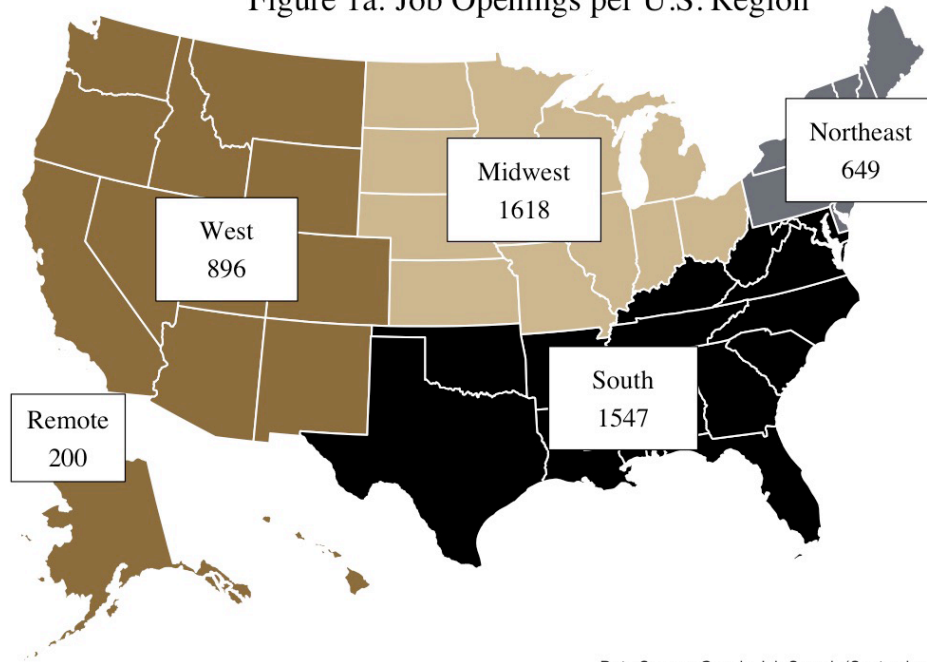
On September 4, 2024, the most common types of jobs were engineering, farming, and lending and finance. The least common type of job was academic positions. Experience was the most cited job requirement in September, followed by leadership and education. Internships made up 2.4% of new jobs in September. This marks the first increase in internships in Fall, which has been a consistent trend in previous years. Contrarily, entry-level jobs have decreased over the past three months following a two-year high in June.

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 1a illustrates the number of job openings for each region of the United States in September 2024. Figures 1b and 1c in the appendix show regional jobs for August and July of 2024, respectively. There were 5112 job postings for 4910 job openings on September 4, 2024. The most job openings were in the Midwest and South, with 1618 and 1547 jobs, respectively. There were 200 remote job openings on September 4th. This is a significant increase over the 65 remote jobs in August and nearly doubled the previous two-year high of 108. Since June 2024, only job openings in the Midwest and remote have increased.

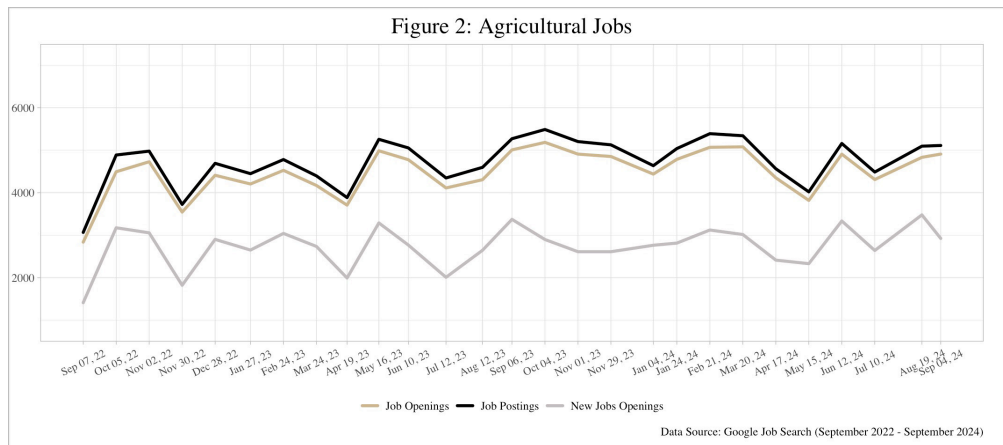
Figure 1a: Job Openings per U.S. Region



Data Source: Google Job Search (September 2024)

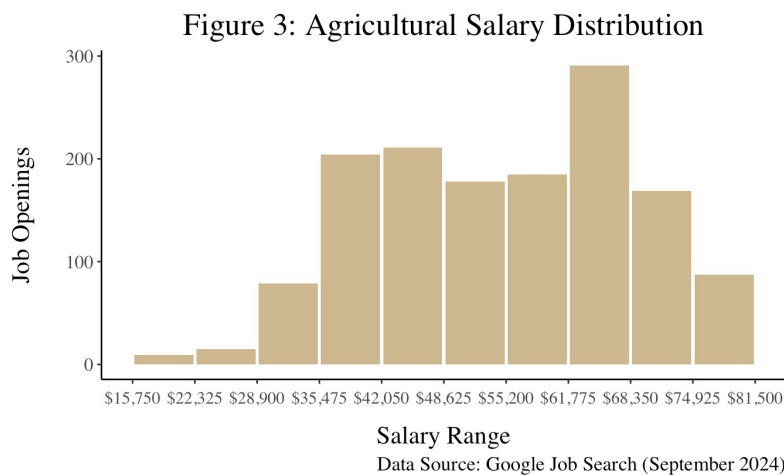
JOB TRENDS

Figure 2 represents job postings collected every four weeks from September 07, 2022, to September 4, 2024. On average, there were 2736 new openings present every four weeks. On September 4, 2024, 2925 new jobs were collected. The average number of agricultural job openings over the past two years is 4492. For the September scrape, there were 4910 total job openings. This marks a two-month period in which job openings have increased and been above the two-year average. This is also the greatest number of job openings present in any one data collection since March.



SALARY

The national median salary computed for the last 24 months was \$49,025/year. The average salary was \$60,659 /year. 21% of job openings included salary information over the past two years. Figure 3 illustrates the salary distribution among agricultural job openings for September 2024. Nearly 300 jobs have posted salaries between \$61,775 and \$68,350. Compared to June of 2024, there is a significant rightward shift in the distribution of salaries. In the most recent scrape, 35% of jobs had posted salaries, down from 39% in August. According to ZipRecruiter, the national average salary for agricultural-related jobs was \$47,486/year on June 11th.



SALARY BY SUBSECTOR

The distribution of salaries varies across the different subsectors of agricultural jobs, as shown in Table 1. Jobs in sales (\$62,158/year), economics (\$60,474/year), and engineering (\$59,518/year) had the highest average salaries. Food Science jobs had the lowest average salary (\$52,941/

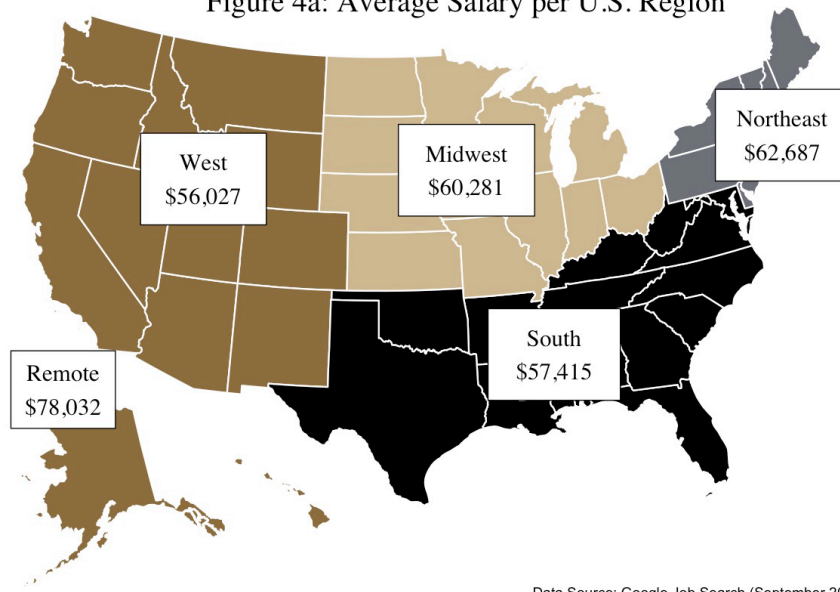
Table 1 Job Salary by Subsector	Average Salary	Median Salary
Academic	\$56,286	\$54,138
Economics	\$60,474	\$61,266
Education	\$58,522	\$59,802
Engineering	\$59,518	\$59,966
Sales	\$62,158	\$60,000
Agronomy	\$56,276	\$49,872
Animal Science	\$57,397	\$55,000
Farming	\$58,272	\$58,246
Food Science	\$52,941	\$49,774
Lending and Finance	\$58,809	\$59,802
Natural Resources	\$58,069	\$59,743
Research	\$58,881	\$59,958
Google Job Search (September 2024)		

year). While it is the lowest-paying subsector on average, the food science salaries in August and September are the highest they have been since April 2023. Additionally, the average salary for sales jobs in August and September is the highest since February 2023. Between August and September 2024, only average salaries for academic positions increased.

SALARY BY REGION

Agricultural job salaries vary by region. Figure 4a illustrates the variation in average salaries across the U.S. for September 2024. Figures 4b and 4c in the appendix show the average regional salaries for August and July, respectively. Fully remote jobs have an average salary of \$78,032/year. The Northeast has the highest average regional salary of job postings at \$62,687/year, followed by the Midwest at \$60,281/year. The South and West had the third and fourth highest average salaries, respectively. In the past two months, the average salary of agricultural jobs in the South has reached highs not seen within the past two years. September 2024 is the first time since November 2023 that the South did not have the lowest average salary.

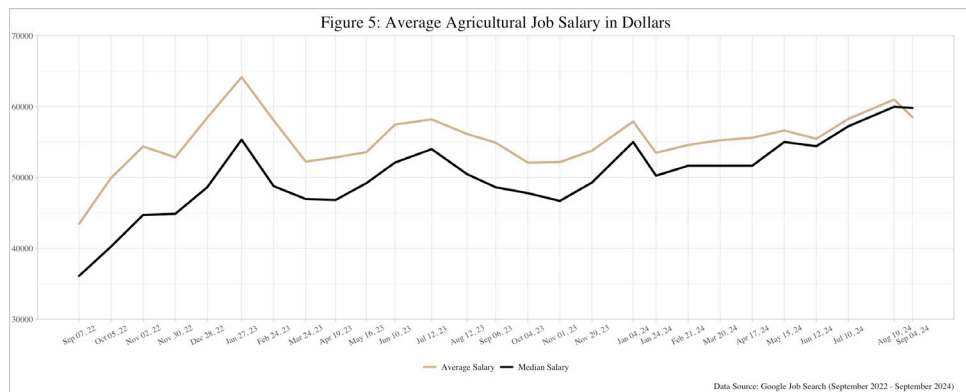
Figure 4a: Average Salary per U.S. Region



Data Source: Google Job Search (September 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 \$58,492, and the median reported salary was \$59,802. This is the first time in the past two years that the median salary has been greater than the average salary. The mean salary decreased from \$60,985 in August, the highest average since January 2023. The median also decreased between August and September, but in both months, it was above \$59,000. In the past two years, the median salary had peaked just above \$55,000.



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

DESCRIPTION ANALYSIS

INDUSTRY SUBCATEGORY

The job openings can be grouped by keywords mentioned within their 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 number of job openings that fall within various subsectors of the agricultural industry. The top three subsectors are engineering, farming, and lending and finance. The number of food science job openings has decreased for three months, reaching the lowest number since September 2022. On the other end, the number of engineering and farming jobs have each exceeded their two-year maximum within the past two months.

Table 2	
Industry Subsector	Job Openings
Academic	231
Ag Education	2889
Agronomy	1451
Animal Science	1319
Economics	1642
Engineering	3579
Farming	3345
Food Science	678
Lending and Finance	2946
Natural Resources	2946
Research	2797
Sales	2328
Total Jobs	4910
Google Job Search (September 2024)	

JOB REQUIREMENTS

Table 3 shows the average percentage of mentions for specific job requirements. Experience is required by 87% of jobs. The next most common requirements are leadership, education, communications, and travel, all mentioned by over half of the jobs. As previously identified, the requirement or opportunity for remote work has been at a two-year high in the past few months. Since June, over 20% of jobs have mentioned remote working opportunities. Another noticeable

Table 3	
Requirements	Percent of Job Openings
Communication	65.64%
Critical Thinking	14.68%
Data	29.82%
Education	68.07%
Experience	86.72%
Leadership	73.48%
Microsoft	35.07%
Programming	6.52%
Public Speaking	28.94%
Quantitative	37.05%
Remote Work	24.66%
Teamwork	43.28%
Travel	59.31%
Google Job Search (September 2024)	

long-term trend is a decrease in the percentage of jobs mentioning teamwork from 54% in January to 43% in September 2024. Even though communications are one of the most cited job requirements, the percentage of jobs mentioning the skill in some manner is trending down and reached a two-year low of 66% of jobs this month. Similarly, public speaking as a requirement has reached a two-year minimum after a consistent decline. Reaching roughly the same peak in June (37%), quantitative and data skills as job requirements have since gone in different directions. Quantitative requirements have stayed near the two-year maximum, while data requirements have decreased back to 30%, where it has been since January 2024.

DESIRED EDUCATION

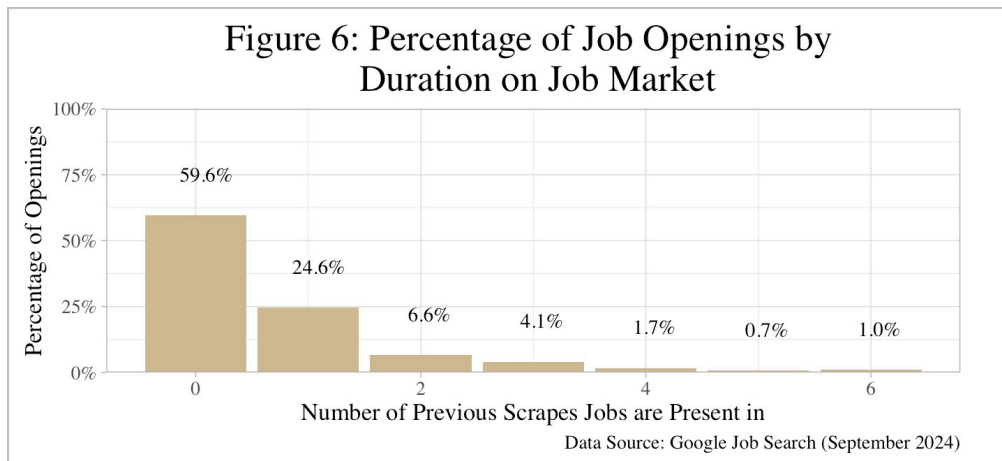
Table 4 reports the percentage of job postings in agriculture that mention each desired level of education by applicants. To be included, the educational term must be explicitly written in a job description. A job can mention multiple levels of education.

Table 4 Desired Education	Percent of Job Openings
High School	23.4%
Associates	2.04%
Bachelors	15.56%
Masters	14.01%
PhD	4.77%
Google Job Search (September 2024)	

According to Table 4, a high school diploma is mentioned in 23.4% of agricultural job postings. At 15.56%, bachelor's degrees were the second most cited education level. With mentions of bachelor's degrees decreasing and master's degrees increasing, the gap between the two education levels, in terms of the percentage of jobs mentioning them, is the lowest in the past two years.

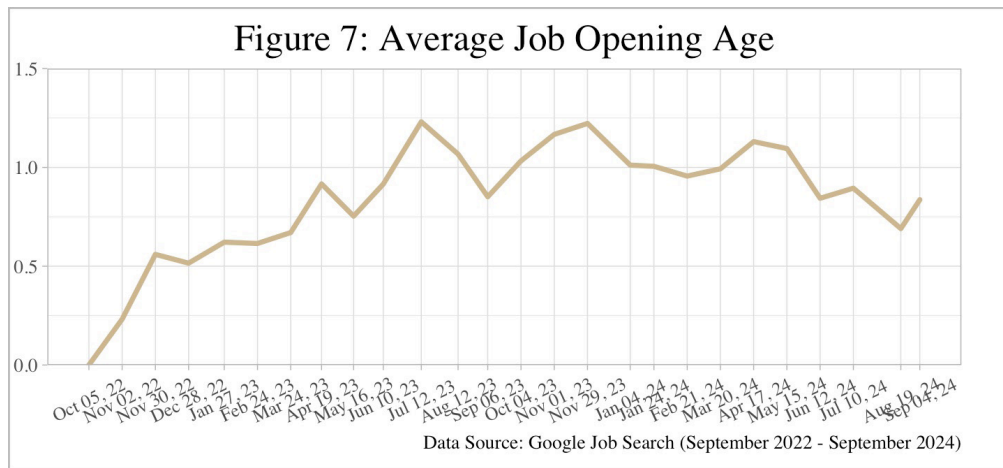
DURATION ON JOB MARKET

The amount of time a job opening is listed can indicate how fast agricultural jobs are filled and how long agricultural employers search for potential candidates. Figure 6 shows the duration current jobs have been on the market. 60% of agricultural jobs were not present in the prior scrape. Only 9% of jobs have been present for more than two previous collections. Relative to June, a smaller percentage



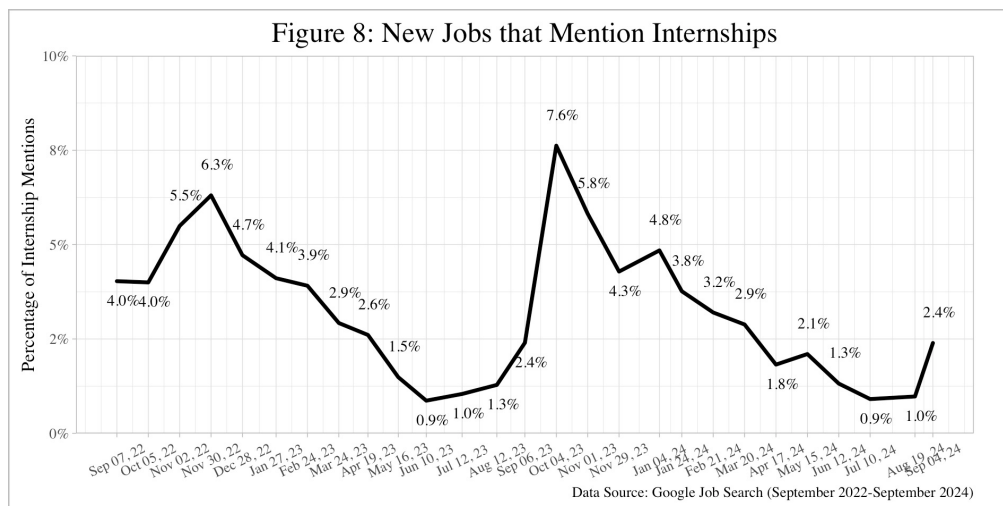
of jobs were new jobs, and a larger percentage of jobs were only present in the most recent scrape. This can, in part, be explained by the narrower gap between the August and September scrapes than previous scrapes, which was caused by data collection issues.

Another way to visualize changing trends in the duration of jobs being posted is by looking at the average age of job postings over time. Figure 7 shows the average age of job postings, in terms of scrapes, over the past two years. An average age of one means the average job has only been observed in one scrape prior to the current collection. Since April, there has been a decreasing trend in the average age of job openings. The uptick in September can again be tied to the shorter gap between the August and September collections. Additionally, the number of job openings increased while new jobs decreased between August and September, leading to an increased average job age.



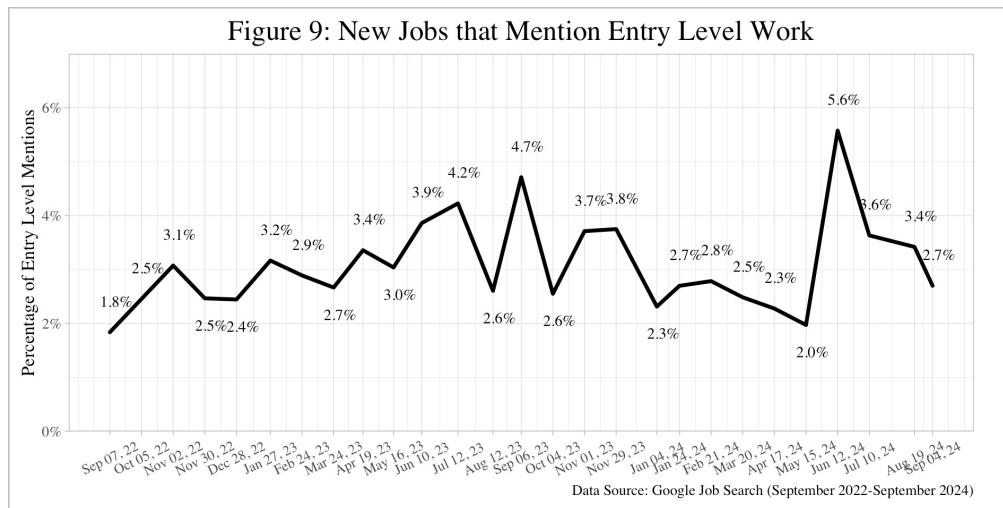
NEW INTERSHIP OPENINGS

Figure 8 shows the percentage of new jobs that are internship positions over the past two years. Each Fall, there is an increase in the number of internship openings. This coincides with a traditional recruitment period on college campuses for students to fill positions. The 2024 cycle starts almost identically to 2023. 2.4% of new jobs are internships in September 2024, which exactly matches the percentage in September 2023.



NEW ENTRY-LEVEL OPENINGS

In June, we observed entry-level positions making up over 5% of new job openings. This was a record high for the entire time that job openings have been collected. The last time entry-level positions made up a similar percentage of new jobs was in November 2021. Immediately following that spike, the percentage dropped back to 2%. While not as severe, a drop-off from June's high is present. In the last three months, entry-level jobs have made up 3.6%, 3.4%, and 2.7% of new jobs. While this is a greater percentage of openings than before June, it is much closer to the long-term trend than the one-month spike. The entire data series for the past two years can be seen in Figure 9.



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 and 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 available to Google's Cloud Talent Solution are curated to best fit the user's search terms. For this study, the search term included: "agriculture." This allows for a broad variety of jobs to be collected within the agricultural job market. Google's job search engine is a conglomerate of multiple online job boards. Many job openings appear on multiple job boards at a given time to get more advertising to potential employees. Data presented in this report could impose bias 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.

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 on 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, subsector information, requirements, and education. The categories

were found using the “bag of words” technique. A list of words was created to represent 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.

Figure 1b: Job Openings per U.S. Region

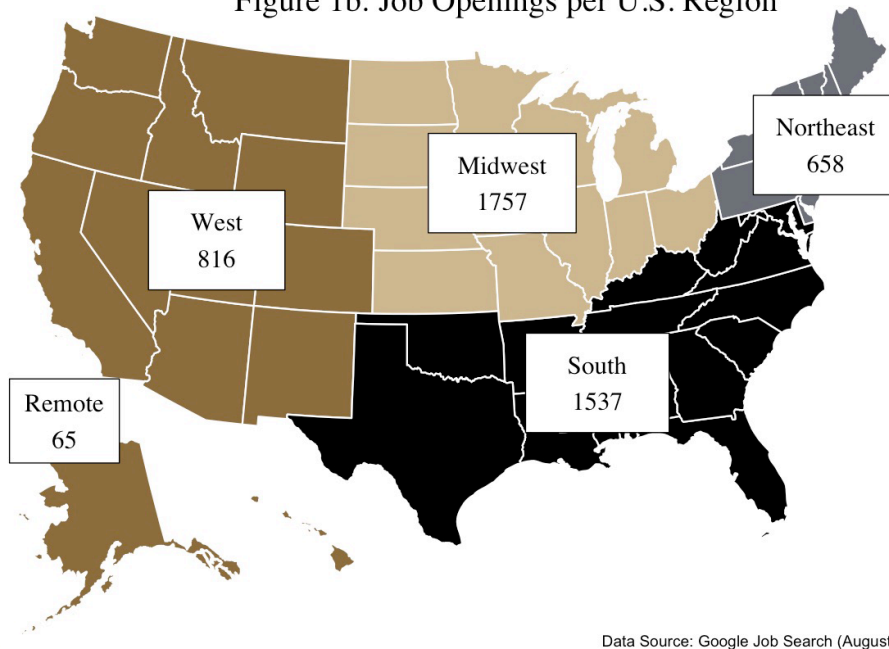


Figure 1c: Job Openings per U.S. Region

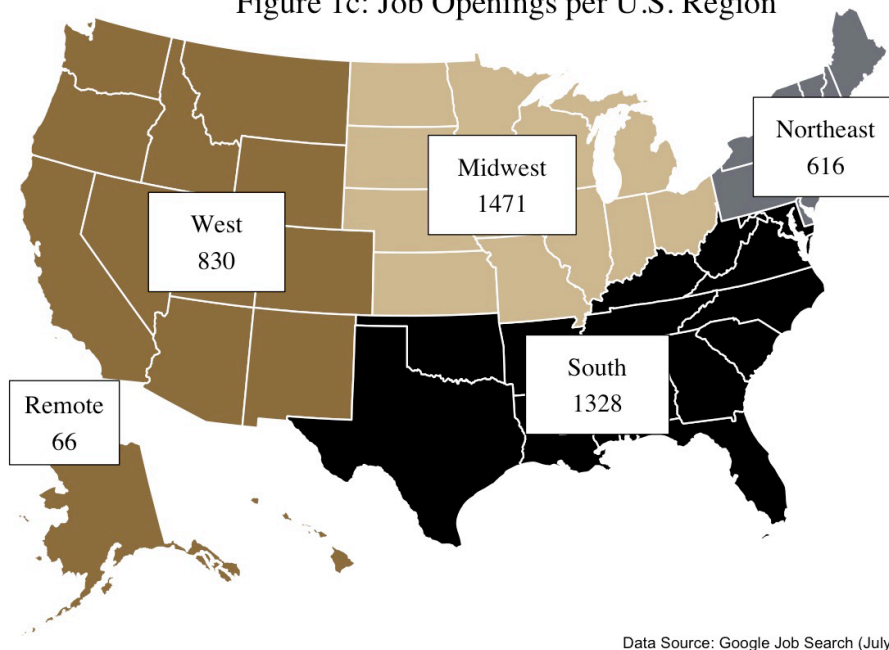


Figure 4b: Average Salary per U.S. Region

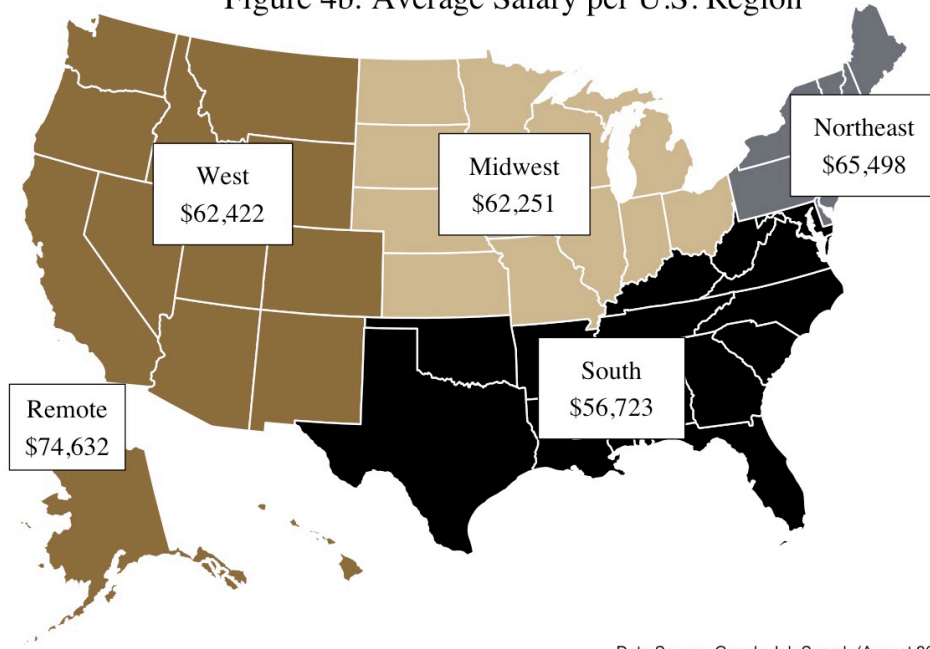
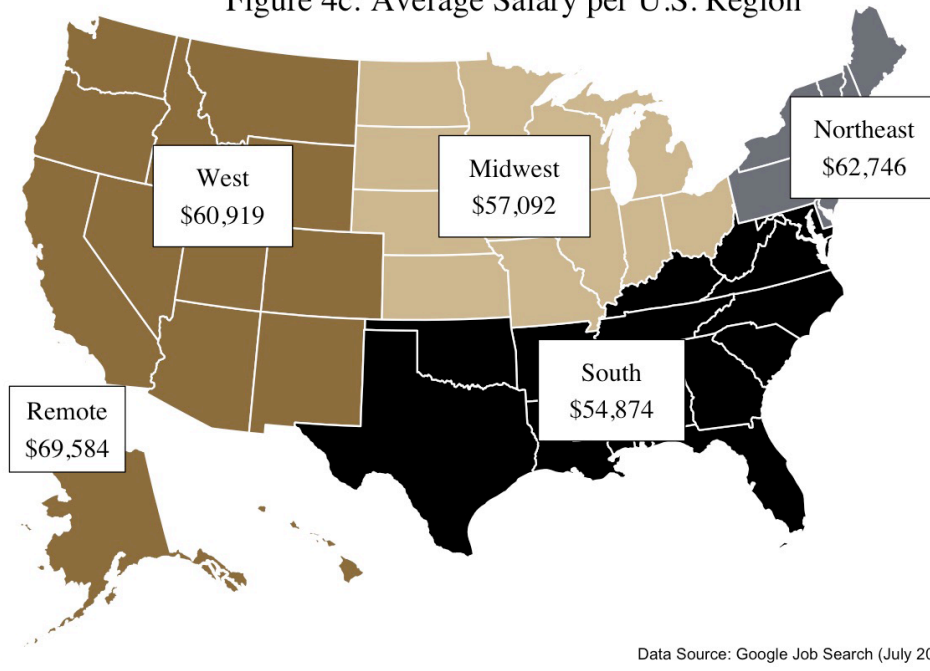


Figure 4c: Average Salary per U.S. Region



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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