### **Visualization Questions (20):**

1. What are the most in-demand job positions across different industries?

Office and Administrative Support Occupations appear to be the most in-demand jobs, with an estimated total employment of over 18,533,450.

1. How does the demand for jobs vary across regions?

I analyzed company salaries across different locations specifically for data science-related jobs and found that salaries can vary significantly based on location. The top three countries offering the highest salaries in this field are Russia, the United States, and New Zealand.

1. What is the distribution of job openings for entry-level vs. experienced professionals?

This largely depends on the type of job the applicant is pursuing. For roles like data scientist, senior-level openings are more prevalent than entry-level positions. However, for roles such as business data analyst, it is generally easier for entry-level applicants to break into the field.

1. What are the most common skills required for tech jobs in the U.S.?

In the U.S. tech job market, some of the top skills to have under your belt include programming (especially with Python, JavaScript, and Java), data science (like machine learning, SQL, and tools like Tableau for data visualization), cloud computing (AWS, Azure, Google Cloud), and cybersecurity (network security, risk assessment, and compliance). Skills in frameworks like React for web development, DevOps tools like Docker and Kubernetes, and familiarity with Git for version control are also highly valued. These skills are at the heart of today’s tech industry, which is all about data-driven decision-making, cloud infrastructure, and cybersecurity resilience.

1. What is the distribution of job postings by company size (e.g., startups, medium-sized companies, large enterprises)?

Statistically, medium-sized companies tend to have more data-related positions. This could be because large enterprises typically already have established data science teams, while smaller companies might lack the financial resources to hire a dedicated team of data professionals.

1. Which industries are hiring the most in the post-COVID job market?

There is a huge boom in technology and IT services post-COVID, mainly because of the prevalence of remote work and digital solutions, with the emergence of zoom and such technologies.

1. How does the demand for jobs requiring remote work vary by region?

A majority of remote work after 2020 seems to concentrate in the United States, with some others concentrated in Great Britain.

1. Which sectors are experiencing a decline in hiring, and what are the possible reasons?

Jobs like Patternmakers (Wood), Timing Device Assemblers and Adjusters, and Dredge Operators are predicted to be among the least in demand, with some roles expected to have only a few hundred openings. Many of these positions are in the service industry and are likely impacted by automation, which is gradually replacing tasks in these fields.

1. How does the availability of internships compare between STEM and non-STEM fields?

STEM fields generally offer more abundant and structured internship opportunities than non-STEM fields, largely due to high demand for technical skills, strong corporate investment in STEM talent pipelines, and federal funding for research-based internships. Non-STEM fields like humanities and social sciences typically have fewer paid internships and rely more on non-traditional formats, such as volunteer-based roles or fellowships, though these fields are increasingly integrating digital skills to appeal to industries seeking multidisciplinary talent.

1. What are the top job roles that offer remote or hybrid work options?

The top job roles offering remote or hybrid work options include Software Developers and Engineers (e.g., full-stack, front-end, and mobile developers), Data Analysts and Data Scientists, Project Managers (especially in IT and digital marketing), Digital Marketers (such as SEO specialists, content strategists, and social media managers), and Customer Support Specialists in tech-based services. Additionally, UX/UI Designers, Writers and Editors (especially in digital media), and roles in Product Management are highly compatible with flexible work arrangements, as these positions often require digital collaboration tools rather than physical presence.

### **Causal Inference Questions (20):**

1. Does job location influence the salary of international students in tech roles?

Yes, job location significantly influences salaries in tech roles, as regions with a high cost of living or strong tech presence—like San Francisco, New York, and Seattle—typically offer higher salaries. For international students, relocating to these areas can lead to better compensation, though it may also mean increased living costs.

1. How does obtaining a master's degree impact the likelihood of landing a higher-paying job?

Obtaining a master’s degree often enhances the chances of securing a higher-paying job, especially in fields like tech, where advanced education is valued for specialized knowledge in areas such as data science, artificial intelligence, and engineering.

1. Does the presence of visa sponsorship increase the number of international student applications to a particular job?

Yes, the presence of visa sponsorship is a critical factor for international students and significantly increases the number of applications, as it provides a pathway for employment in the U.S. without the legal constraints associated with limited work authorization.

1. How does company size affect the probability of a job offer for international students?

Larger companies typically have the resources to support visa sponsorship and offer structured training programs, which increases the likelihood of job offers for international students. In contrast, startups and smaller firms may have limited resources for sponsorship, making job offers from these companies less common.

1. Does work experience in the home country improve the chances of securing a job in the U.S.?

Work experience in the home country can enhance the likelihood of securing a U.S. job, especially if it’s in a relevant field or for a well-known company. Experience demonstrates practical skills and adaptability, which many employers value in addition to academic credentials.

1. Do companies that offer remote work options have a higher chance of hiring international students?

Companies offering remote work options may have a higher chance of hiring international students, as these roles often bypass location restrictions, making it easier to accommodate international candidates who may face visa or relocation constraints.

1. How does the unemployment rate in a city impact the demand for certain job types?

A high unemployment rate in a city can increase competition for jobs and drive demand for essential roles, while a low unemployment rate may lead to shortages in skilled roles, thereby boosting demand and salaries in fields like tech, healthcare, and logistics.

1. Does having proficiency in English lead to higher salaries for international students?

Proficiency in English can lead to higher salaries for international students, as strong communication skills are often essential in client-facing roles, management positions, and collaborative tech teams, making candidates with high English proficiency more competitive.

1. How does the level of job competition influence the starting salaries for entry-level jobs?

High job competition typically drives starting salaries down, as employers can choose from a larger pool of applicants. Conversely, when competition is lower, companies may offer higher starting salaries to attract top talent in specialized or high-demand roles.

1. Does the requirement for advanced technical skills increase the hiring rate for international students?

Yes, positions requiring advanced technical skills, such as software engineering, data science, and cybersecurity, tend to increase the hiring rate for international students, as these skills are highly sought after and may outweigh concerns over visa sponsorship or experience.

### **Prediction Questions (20):**

1. What are the top job sectors that will see the most growth in the next five years?

The top job sectors projected to see the most growth in the next five years include Sales and Related Occupations, Business and Financial Operations, and Healthcare Practitioners and Technical Occupations. These sectors are expected to expand due to increasing demand for skilled professionals in finance and business, the rising need for healthcare services, and continued growth in sales roles driven by evolving consumer markets.

1. How will the average salary for data analysts change over the next two years?

The current average salary for a data analyst is approximately $100K per year, with an overall upward trend.

1. Which industries are likely to increase their hiring of international students post-pandemic?

Post-pandemic industries such as technology, healthcare, finance, and renewable energy are likely to increase hiring of international students. These sectors face talent shortages and benefit from international expertise in areas like data science, engineering, and specialized healthcare roles, making them more open to global talent pools.

1. How will the introduction of new visa regulations affect job openings for international students?

New visa regulations can either expand or restrict job openings for international students. Easing regulations could increase access to more roles, while restrictive policies may limit opportunities, especially in smaller companies without resources for complex visa processes, shifting more job openings toward larger, multinational firms.

1. Can we predict which cities will become job hubs for international students in the future?

Likely future job hubs for international students include Austin, Seattle, and Atlanta, as these cities are growing tech and business centers with expanding opportunities in sectors like technology, healthcare, and logistics. These hubs have favorable business climates, relatively lower living costs than major coastal cities, and rising demand for skilled international talent. In another research that I did, with combined factors like unemployment rate, cost of living, and salary, the best state for jobs is texas.

1. What job roles are likely to offer the highest salaries for international students in the next five years?

In the next five years, high-paying roles for international students are expected to be in software engineering, AI and machine learning engineering, data science, and cybersecurity, as these fields continue to see high demand and require specialized skills that command competitive salaries.

1. How will automation impact job demand in the manufacturing sector?

Automation is expected to reduce demand for routine, manual roles in manufacturing while increasing demand for jobs focused on robotics, maintenance, quality control, and automation engineering. This shift may also lead to reskilling initiatives for workers to operate or maintain advanced manufacturing technology.

1. Can we predict which skills will be most in demand for tech jobs over the next decade?

Over the next decade, in-demand tech skills will likely include machine learning and AI development, cybersecurity, cloud computing, data analytics, blockchain technology, and IoT (Internet of Things). Adaptability to emerging technologies and proficiency in data-driven decision-making are also predicted to remain crucial.

1. What job positions are most likely to be replaced by AI in the near future?

Positions that involve routine, repetitive tasks are most vulnerable to AI replacement, including data entry clerks, basic customer service roles, telemarketing, and some aspects of administrative support. However, roles requiring complex decision-making, creative thinking, and interpersonal skills are less likely to be replaced in the near future.

1. How will the trend toward remote work evolve in the next five years?

Remote work is expected to become even more prevalent as many tasks can now be efficiently completed outside the office. Advancements in communication technology—like high-quality video conferencing, collaborative software, and secure cloud storage—have made it easier for teams to connect and collaborate seamlessly from any location. As companies recognize the benefits of remote work, including reduced overhead costs and access to a broader talent pool, the shift towards flexible work environments is likely to continue growing.