

IFT 533 – Data Visualization & Reporting for IT

Project- Phase 2: Decision Making

Group 5

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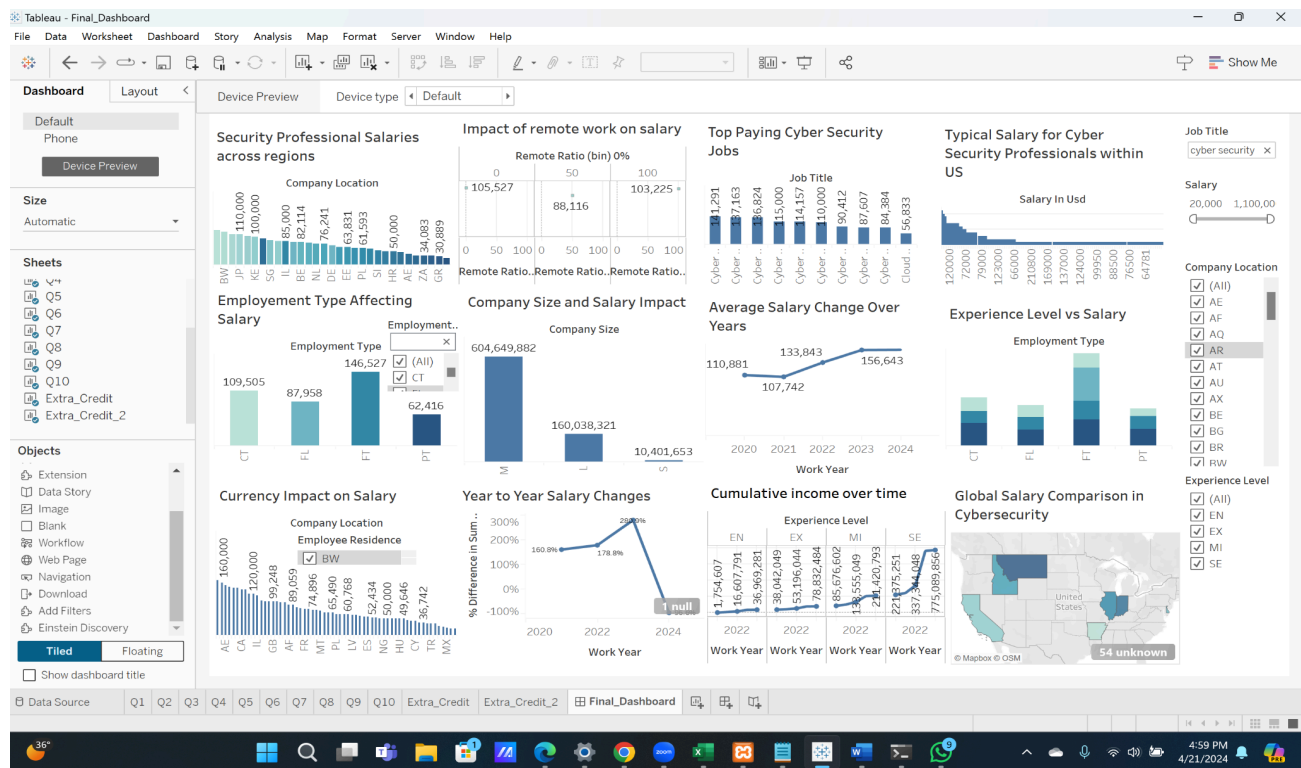
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Section 1

Final Dashboard plot



The dashboard serves as a comprehensive analytical tool for exploring salary patterns in the cybersecurity industry. It integrates various data points to provide multifaceted insights into how factors such as geographic location, company size, employment type, remote work prevalence, and individual experience levels can influence the earnings of cybersecurity professionals.

By combining salary data from different regions and comparing it with factors like the prevalence of remote work, the dashboard offers a detailed view of the economic landscape faced by professionals in the field. It also forecasts future salary trends, highlights the impact of currency fluctuations on compensation, and compares salaries across different company sizes, providing a holistic understanding of the cybersecurity job market.

This tool is likely to be highly valuable for HR professionals and recruiters in the tech industry who are responsible for designing competitive compensation packages. Cybersecurity experts and job seekers can also use the insights to make informed decisions about career moves and salary

negotiations. Additionally, financial analysts, consultants, and academic researchers might find the aggregated data useful for broader analyses of employment trends and labor economics within the tech sector. Overall, the dashboard serves as a strategic resource for anyone involved in the hiring, career development, or economic analysis of the cybersecurity workforce.

Section 2: The Dataset

- For the years 2023, 2022, 2021, and 2020, it includes a wide range of data security officer (InfoSec) roles, such as Protection Engineering professionals, Protection Architectural Designers, Crisis Management Analysts, Regulatory Analysts, Safety Specialists, and more.
- The infosec-jobs.com compensation survey is the source of the dataset, which offers a comprehensive compilation of cyberspace as well as information security (InfoSec) compensation statistics.
- The dataset provides special insights into the salaries associated with different professions, skill levels, and geographical areas, making it an indispensable resource for individuals and firms operating in the cybersecurity industry.
- The dataset comprises several criteria for every entry, including the employee's place of residence, the proportion of remote work, the company's location, its size, the year of employment, the experience level, the type of employment, the job title, the compensation, and the salary in US dollars.

Attributes with their description, data type, domain and attribute type:

1. Work_year :

- Indicates the yearly compensation data that is connected to the dataset.
- It has an integer data type.
- Years can be a domain.
- Nominal attribute type is used.

2. Experience_level:

- The proficiency tier of the worker (EX denoting Expert, SE indicating Senior, etc.).
- The data type for it is string.
- Domain can be a field which embodies the diverse spectrum of expertise among individuals featured in your dataset.
- Attribute type is categorial.

3. Employment_type :

- It denotes the form of application like FT/PT which denotes full time or part time.
- The data type is string.
- It may incorporate the "job_type" characteristic, denoting the individual's professional status in the data compilation, such as Permanent, Contractual.
- Attribute type is categorial.

4. Job_title :

- The designation of the worker.
- The data type is string.
- The domain signifies an assorted array of positions within the realm of data protection and cyber defense.
- Attribute type is nominal.

5. Salary :

- The remuneration for the staff member within the authentic monetary unit.
- The data type is number.
- The realm might encompass the spectrum of potential salary figures.
- Attribute is nominal.

6. Salary_currency :

- The native denomination for the compensation amount.
- The data type is string
- His sphere of influence might encompass the array of potential monetary denominations.
- Attribute type is categorial.

7. Salary_in_usd :

- The wage earned by the staff member, converted into United States Dollars.
- The data type is a number.
- It may encompass the spectrum of potential salary figures in United States dollars (USD).
- Attribute is nominal.

8. Employee_residence :

- The domicile of the staff member.
- The data type is string
- It may consist of an array of potential nation options.
- Attribute is nominal.

9. Remote_ratio :

- The proportion of hours the worker spends working from a distance.
- The data type is a number.
- The "remote_ratio" attribute holds numeric values denoting the proportion of remote tasks performed by a worker, with its range confined between 0 and 100.
- Attribute is ratio.

10. Company_location :

- The geographical whereabouts of the organization.

- The data type is string.
- The data category is represented by a string.
- Attribute is nominal.

11. Company_size :

- The magnitude of the enterprise (S denoting Small, M indicating Medium, L representing Large, and so forth).
- The data type is string.
- It could encompass a range of potential company size classifications, such as Small (S), Medium (M), and Large (L), as examples.
- Attribute type is categorical.

Section 3: Dashboard Users

1. Managers and corporate leaders

By using the dashboard, they may learn more about pay patterns in the many areas where their organization conducts business. They can strategically plan their business development by determining whether places have significantly higher or lower income norms. For instance, if they see that salaries in a certain area are noticeably higher, they can think about growing their business there to draw in top personnel or changing how much money they set aside to be competitive in that market.

2. Statistical analysts

Using the dashboard, this group may keep a close eye on changes in compensation over time. They can find trends, such pay rises or falls within particular job roles, by examining the historical data. They may use this information to more precisely anticipate pay costs and make sure that the company's remuneration is in line with overall market trends, which is very helpful for future budget planning.

3. Employment Seekers

Those who are looking for work may use the dashboard to learn about typical pay in their desired location for particular positions. With this knowledge, job searchers can negotiate with prospective employers with greater assurance, knowing exactly what a reasonable and competitive wage range is for the role and area they want.

4. Hiring Managers

They may create typical compensation expectation ranges for different job types using the dashboard. Recruiters may use the data to provide candidates accurate compensation projections that are in line with market averages while speaking with job seekers. By providing pay packages

that are competitive within the industry, this strategy helps to recruit and retain top staff and encourages openness in wage conversations.

Section 4 : Questions

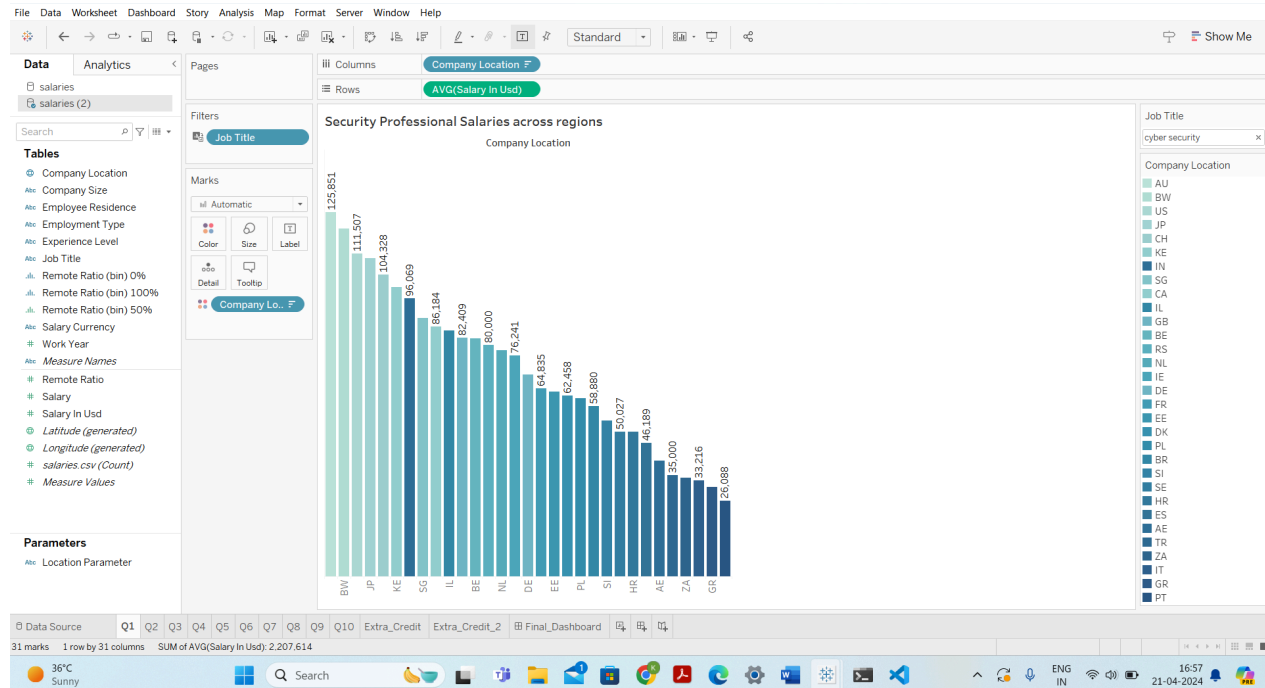
1. How do security professionals' salaries vary across different regions of the country?
2. What impact does remote work have on salary levels?
3. How does salary vary according to different levels of professional experience?
4. Currency Impact on Salary: How do salaries compare when adjusted for currency across different regions?
5. How do cybersecurity salaries vary globally?
6. Company Size and Salary Impact
7. What are the top paying cybersecurity jobs?
8. How has the average salary changed over the years?
9. How does employment type affect salary?
10. What is the typical salary range for cybersecurity professionals in the United States?

Extra Credit:

Year-to-Year Salary Changes

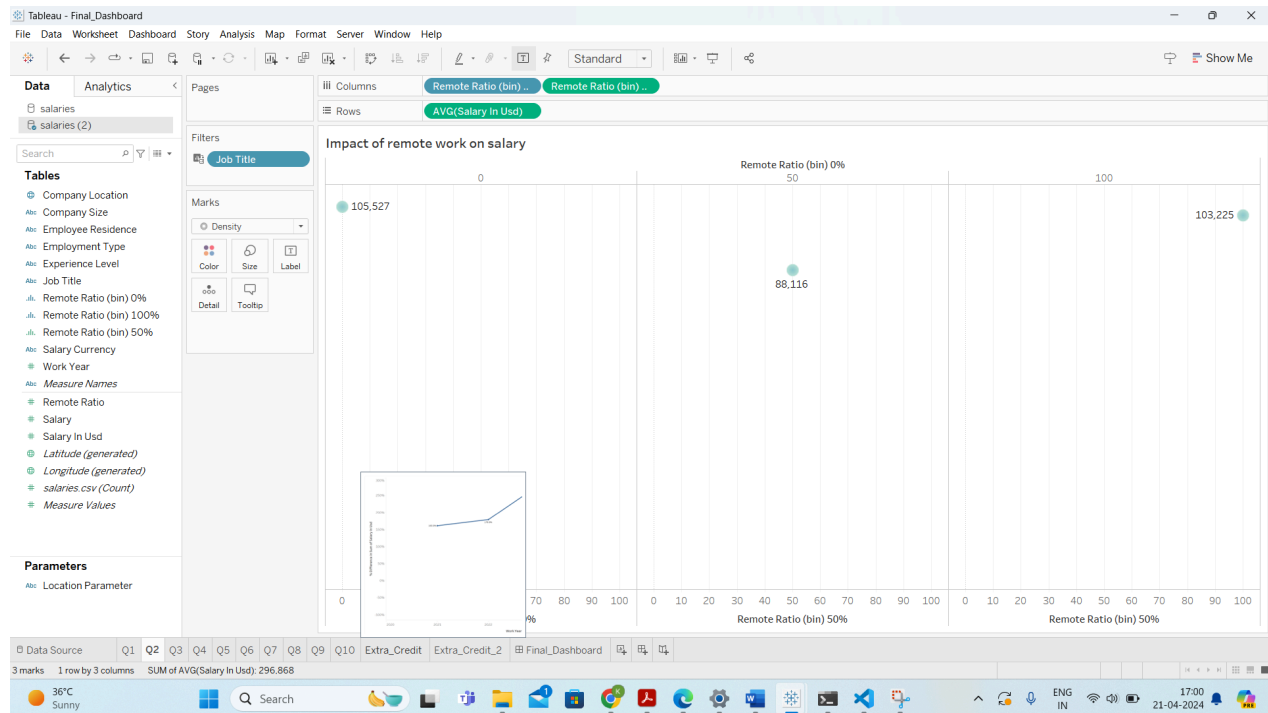
Section 5: Plots

1: How do security professionals' salaries vary across different regions of the country?



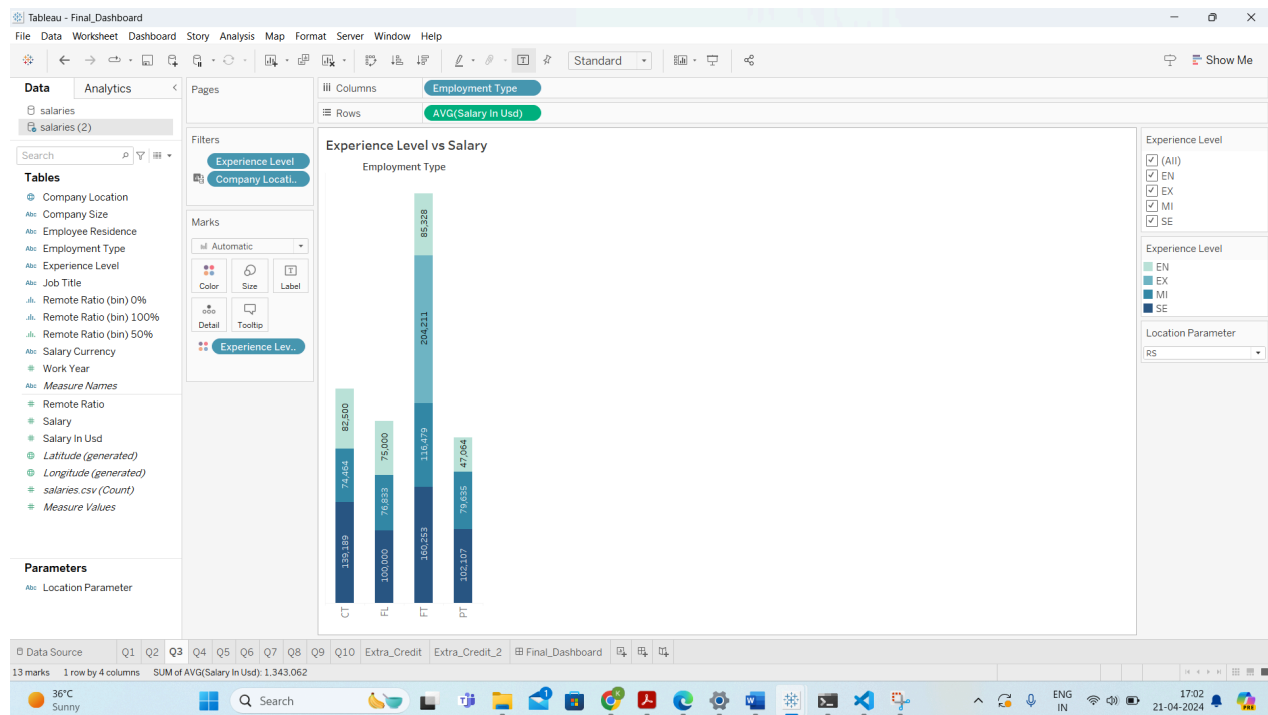
The picture supplied is a bar chart with the headline "Security Professional Salaries across regions." It shows the average pay for cybersecurity experts across several nations or areas. The company location is on the X axis The average wage for security professionals in each region is displayed on the y-axis. The data being presented is specifically for experts in the cybersecurity industry because a filter for "Job Title" has been applied and set to "cyber security" in the upper right corner. The tallest bars show the highest average wages, while the shorter bars show lower average salaries. The bars are color-coded and sorted in descending order. With the help of this visual aid, one can easily compare the typical wages of cybersecurity specialists in various regions, demonstrating the notable regional variations in remuneration. For those who are thinking about a career in cybersecurity or who want to know more about the global need for these positions, the graphic offers useful information.

2: What impact does remote work have on salary levels?



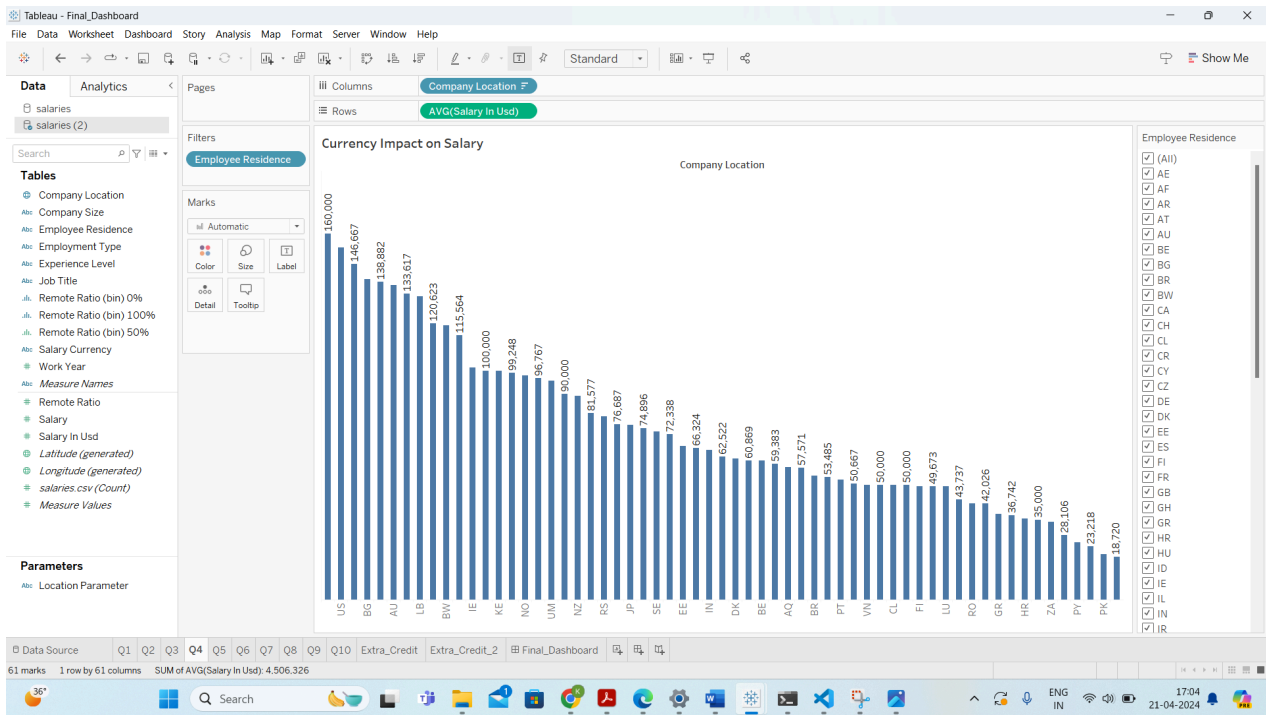
The graphic shows a bar chart that shows the average yearly salary of cybersecurity specialists in different parts of the world. Users can refine data by experience level, employment type, company size, and job title using filters. This analytical tool helps with strategic decision-making by providing stakeholders with information on pay patterns in the security sector.

3: How does salary vary according to different levels of professional experience?



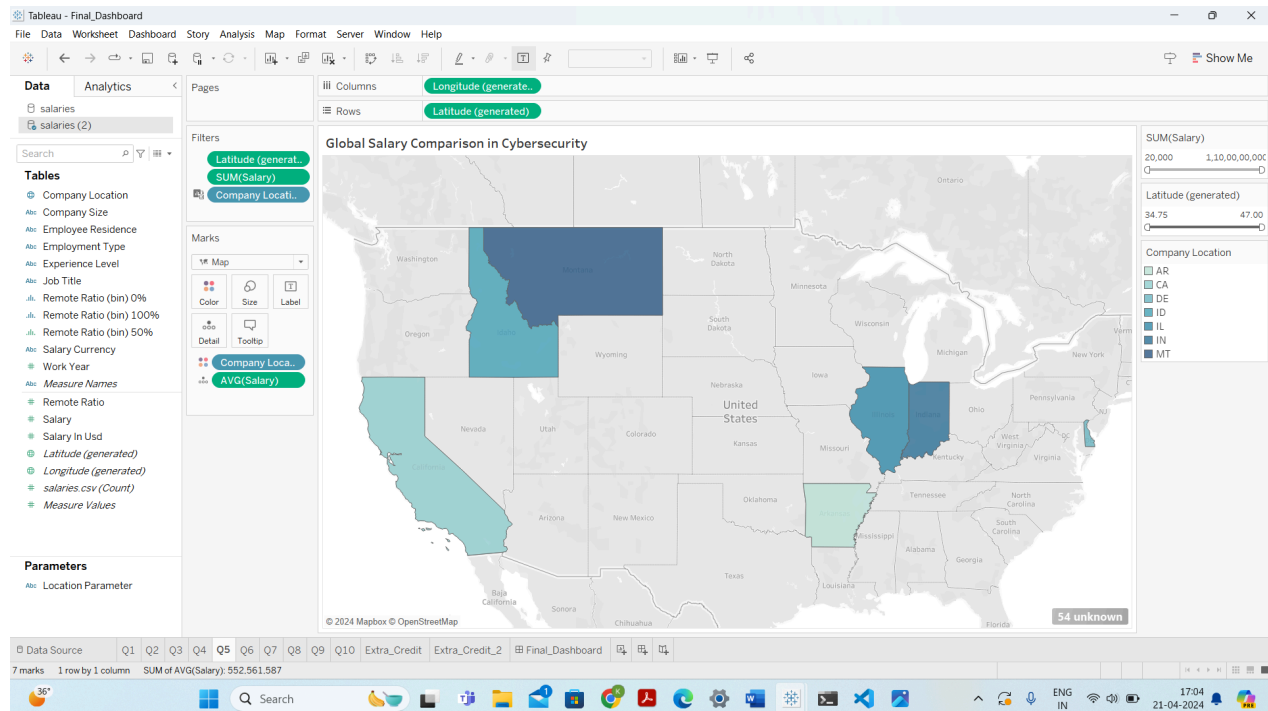
The illustration shows a dashboard or analytics report with a chart showing the relationship between employee experience levels and pay. It displays the four experience levels (Entry, Mid, Senior, and Expert) and the corresponding compensation ranges for each level. The data also provides characteristics and filters related to remote work possibilities, employment type, and currency for wage comparison. This graphic provides insightful information about the pay scale and wage trends according to different employee experience levels.

4: Currency Impact on Salary: How do salaries compare when adjusted for currency across different regions?



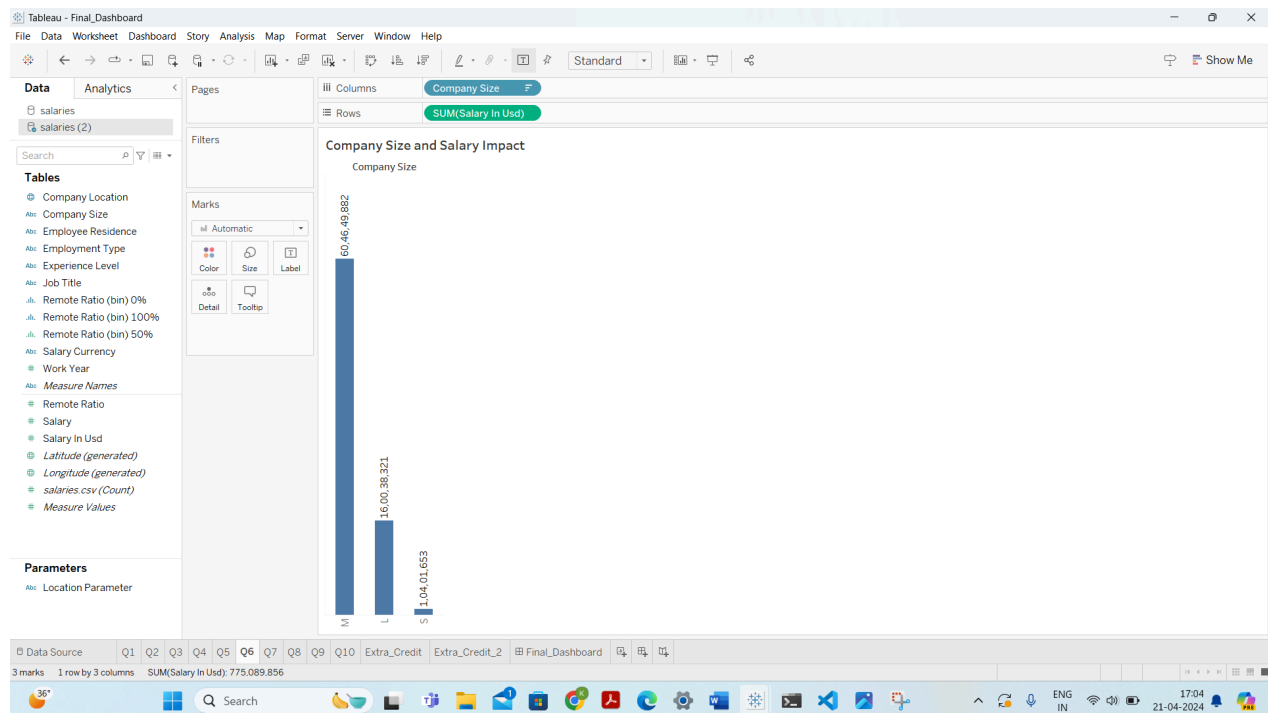
The picture shows a dashboard or data visualization showing wage information and how currency impacts it. A bar chart showing the "Currency Impact on Salary" across several corporate locations serves as the main focal point of the presentation. The y-axis shows the locations, while the x-axis shows the wage impact. The focus is on the data display since the data is visually appealing and well-organized, with no names or faces that can be recognized.

5: How do cybersecurity salaries vary globally?



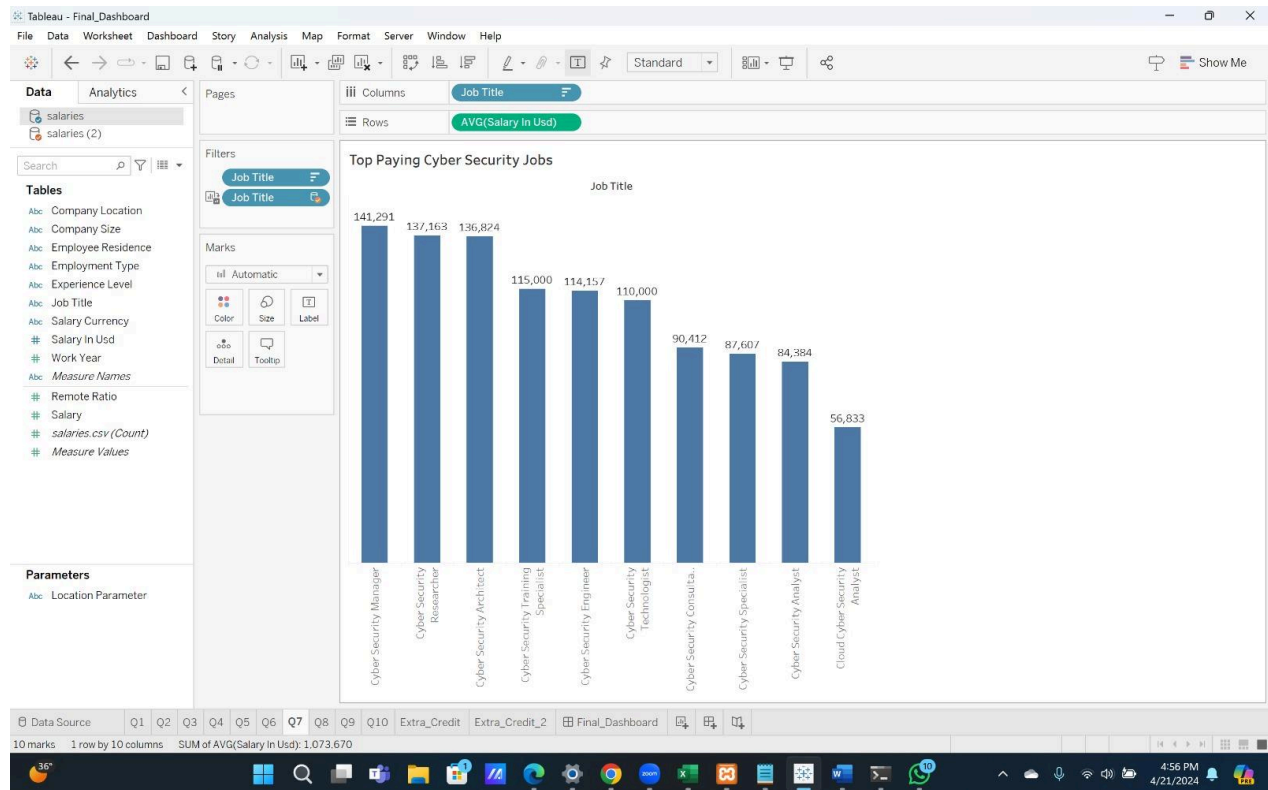
The picture, named "Global Salary Comparison in Cybersecurity," is a choropleth map that shows the average salary for cybersecurity professionals in several U.S. states. With deeper hues denoting greater incomes and lighter tones denoting lower earnings, the states are tinted in accordance with their respective average salary levels. Quick regional pay comparisons in the cybersecurity industry are made possible by this map, which is helpful for people, companies, and governments. The collection contains records with undefined or unrecognized state locations, as indicated by the notation "54 unknown".

6: Company Size and Salary Impact



The Tableau bar chart named "Company Size and Salary Impact" looks into the relationship between cybersecurity specialists' total compensation and firm size. Plotted against total USD compensation, it shows three bars, each of which represents a possible small, medium, or big firm size. Paying the highest cumulative salary, medium-sized businesses stand out, indicating that they either hire more cybersecurity experts or give greater compensation. Job seekers may use this graphic to estimate their earning potential, while employers can use it to plan pay budgets based on the cybersecurity industry's influence on size.

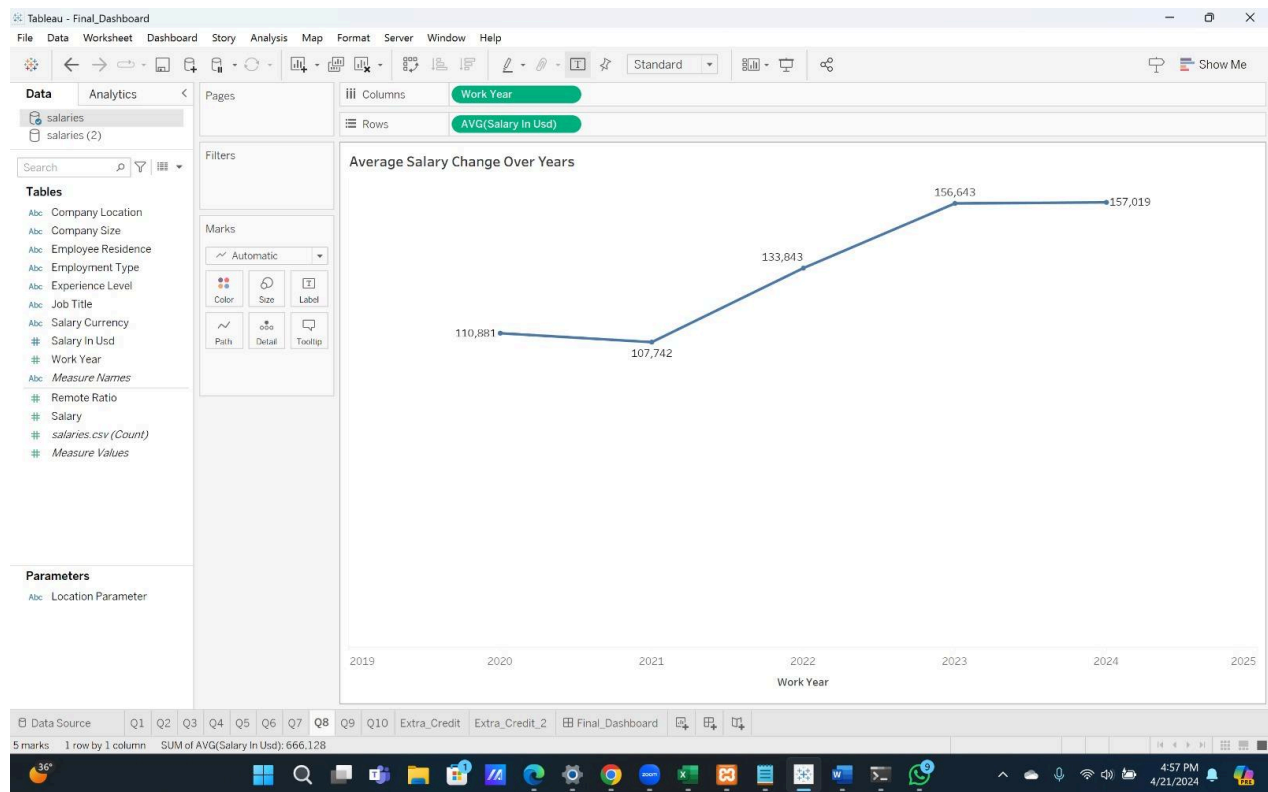
7: What are the top paying cybersecurity jobs?



The aforementioned question is addressed by rating the job titles on the horizontal x-axis and charting the average income in US dollars on the vertical y-axis. Every bar signifies a distinct job title, and the length of the bar indicates the typical wage—the greater the salary, the longer the bar. The highest-paying position is on the left side of the descending sequence of jobs.

Based on the facts at hand, we can determine from the graphic which cybersecurity positions are the highest paid. Labeled at the top of the bar is the job on the far left that has the highest average wage; other jobs are labeled in descending order of average salary. Viewers may easily and quickly determine which cybersecurity positions pay the highest average salary thanks to this graphic depiction.

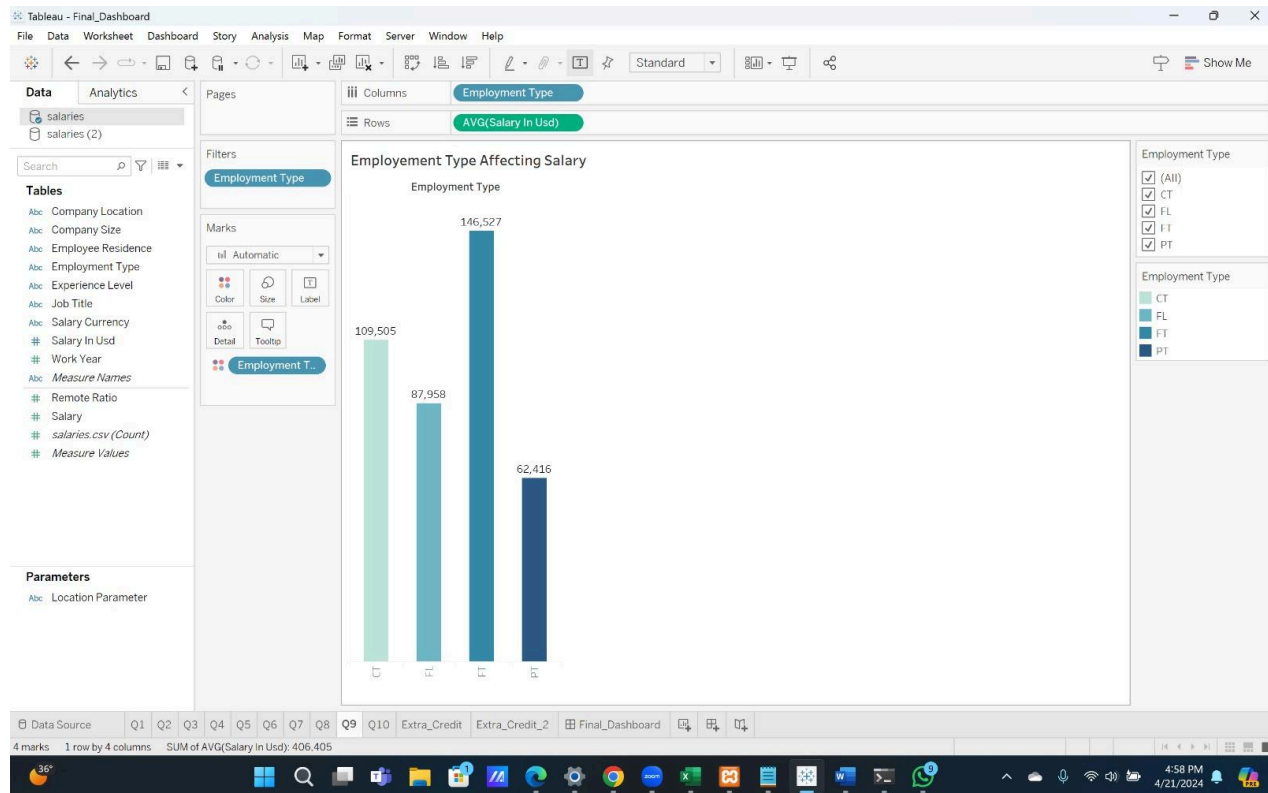
8: How has the average salary changed over the years?



In order to answer the question at hand, the graph plots the work year on the x-axis and the average income in US dollars on the y-axis. The average income for each year is represented by a point on the line graph, and the trend over time is depicted by the line joining these points. The graph's upward slope from 2019 to 2024 suggests that the average cybersecurity pay has been rising annually.

Employers and individuals in the business may both use this visualization to monitor changes in the compensation environment and swiftly assess how the average income in the cybersecurity area has increased during the period shown. It's also useful for analyzing the labor market and predicting changes in the IT sector's economy.

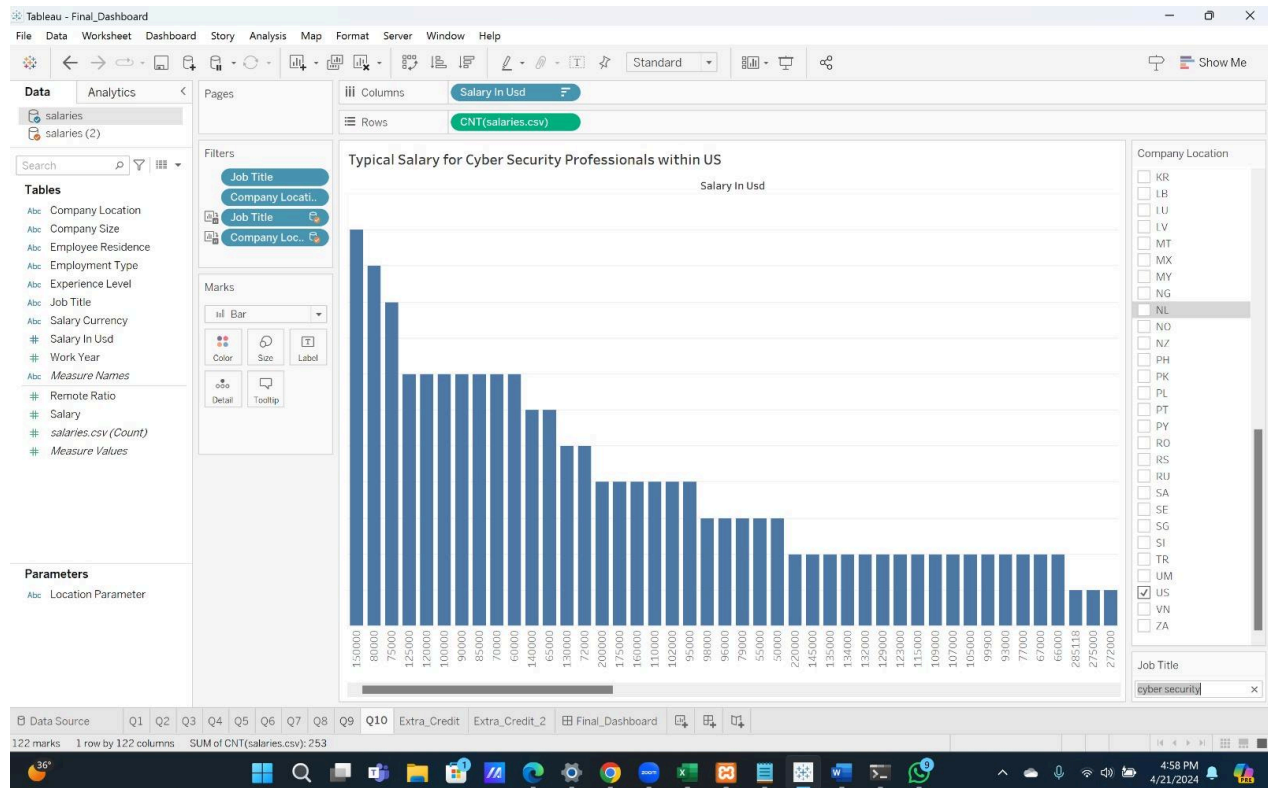
9: How does employment type affect salary?



The bar graph, which contrasts average pay for several job categories including contract (CT), freelance (FL), full-time (FT), and part-time (PT), provides an answer to this topic. The height of the bar corresponds to the average pay for each work category, and each bar represents a distinct employment type.

In conclusion, the graphic effectively conveys the variations in the mean incomes among the various job categories. It's helpful for people deciding what kind of job to apply for as well as for businesses organizing their hiring procedures. Additionally, it offers information on the possible financial consequences connected to every kind of work in the cybersecurity sector.

10: What is the typical salary range for cybersecurity professionals within the United States?

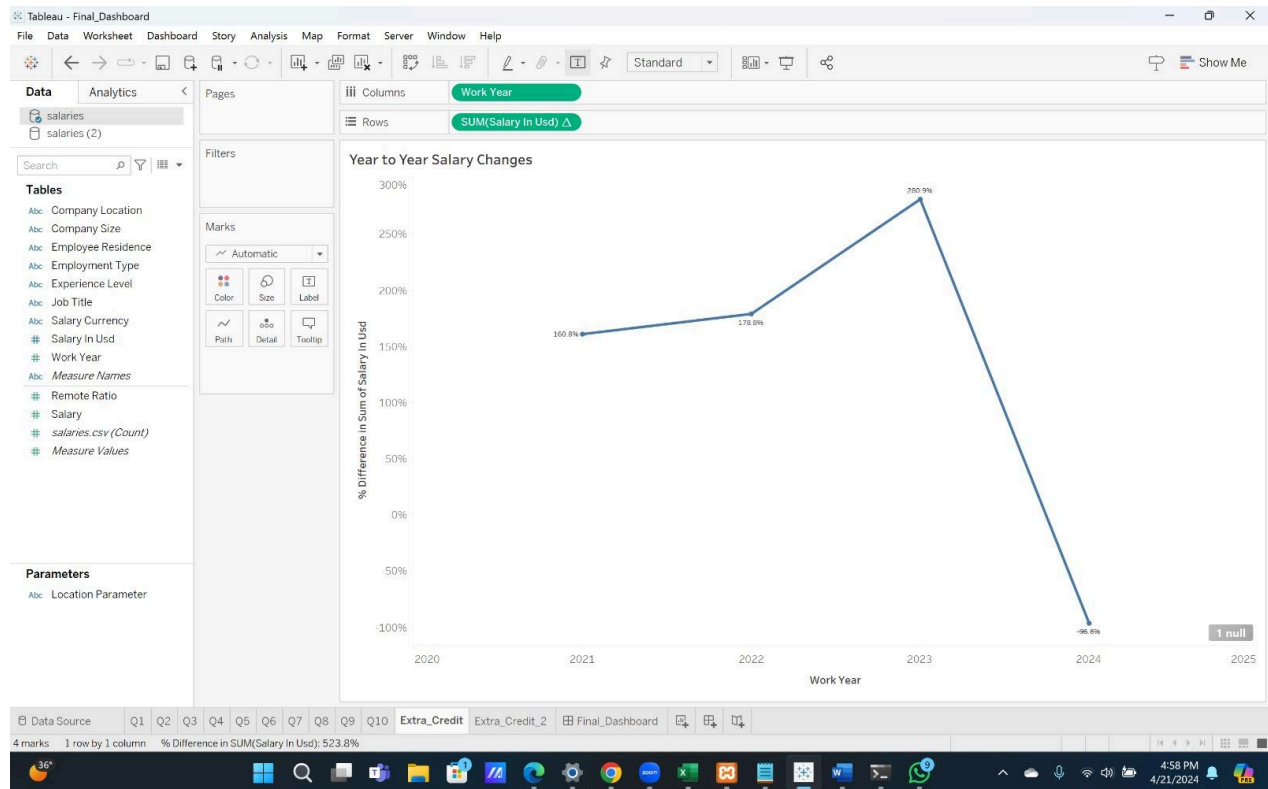


The salary distribution of cybersecurity specialists is shown in the chart to answer this issue. Different income ranges in US dollars are shown by the x-axis, while the number of people or occupations that fall within those wage ranges seems to be represented by the unlabeled y-axis. The height of each bar represents the number of wages falling into each respective bracket.

With the aid of this graphic, users may rapidly understand the typical compensation ranges for cybersecurity specialists in the US. This information is helpful for job market analysis in the cybersecurity industry as well as for people negotiating prices or firms setting salary standards. Based on the available data, the figure illustrates the core concentration and breadth of incomes, offering some indication of what a "typical" pay may include.

11: Extra credit

Year-to-Year Salary Changes using table calculations.

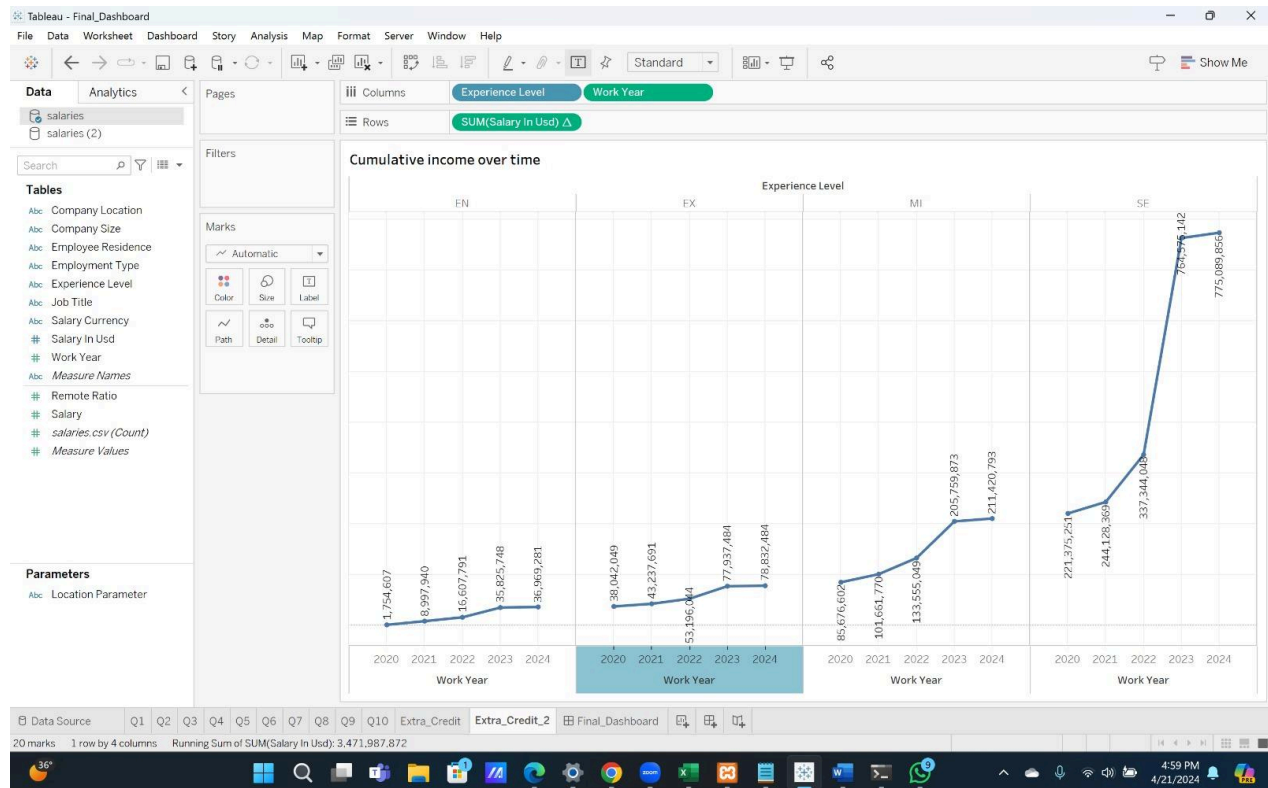


The percentage change in salary from one year to the next is calculated using table calculations. The work year is shown on the x-axis of the chart, and the percentage change in the total salary over the prior year is shown on the y-axis. The percentage change in the average pay from the prior year to the stated year is shown by each point on the line graph. The graph illustrates the increase or decrease in the total sum of wages within the dataset from year to year.

The average wage shows a high percentage gain from 2020 to 2021, continuous growth into 2022, and then a major decline from 2023 to 2024, as shown by the line chart. The "null" label at the end of the line may indicate a calculation mistake or a lack of data for the following year. The ability to comprehend and predict changes in compensation within the cybersecurity area is made possible by this graphic, which is useful for identifying patterns in wage changes over time for stakeholders including HR professionals, recruiters, and workers.

12: Extra credit

Running Salary Totals Sorted by Experience Level or Job Title.



Plotting the cumulative income statistics for entry-level, mid-level, senior, and perhaps executive experience levels (EN, MI, SE, and EX) across a range of work years provides an answer to this issue. The experience levels are represented by each line on the graphic, while the y-axis displays the cumulative sum of salary earned up to 2024.

The lines show how an individual's experience level might affect the rate at which their overall earnings build. As an illustration of how incomes might rise as one gains experience and, presumably, job titles, the figure displays that those at the senior level (SE) had a substantially greater growth in cumulative income. Based on experience level, this image helps users comprehend the possible long-term income trajectory in the cybersecurity industry. Employers may use this information to design pay plans for long-term employee retention, and professionals can use it to assist establish expectations for income growth in their career planning.

Section 6: Interactivity

- **Experience Level Filter**

Objective: Enable users to sort data by professional experience level (e.g., Entry, Mid, Senior).

Related Visualizations: Salary Comparison by Experience Level, Top-Paying Cybersecurity Roles.

Available Options: Derived from the experience_level attribute. Choices typically include Junior (EN), Mid (MI), Senior (SE), and possibly Director (DI) levels.

- **Remote Work Ratio Filter**

Objective: Allow users to filter data based on the percentage of remote work, distinguishing between fully remote, hybrid, or onsite roles.

Related Visualizations: Impact of Remote Work on Salary.

Available Options: Typically 0, 50, 100, indicating 0% (no remote work), 50% (hybrid), and 100% (fully remote).

- **Country/Region Selector**

Objective: Enable users to choose specific countries or regions to view salary data relevant to those locations.

Related Visualizations: Global Salary Comparison in Cybersecurity.

Available Options: Derived from employee_residence or company_location attributes. This control should present a list of countries or regions available in the dataset.

- **Company Size Selector**

Objective: Allow users to filter visualizations by the company's size (Small, Medium, Large).

Related Visualizations: Company Size and Salary Impact, Distribution of Cybersecurity Roles by Company Size.

Available Options: Derived from the company_size attribute, typically including Small (S), Medium (M), and Large (L).

- **Employment Type Selector**

Objective: Enable filtering of data based on employment type (Full-time, Part-time, Contract, etc.).

Related Visualizations: Employment Type and Salary.

Available Options: Derived from the employment_type attribute. Options usually include Full-time (FT), Part-time (PT), and Contract (CT).

- **Job Title Selector**

Objective: Allow users to choose specific job titles to filter the data for roles they are interested in.

Related Visualizations: Top-Paying Cybersecurity Roles.

Available Options: Derived from the job_title attribute, shows options related to cybersecurity roles.

Dashboard Link

https://public.tableau.com/app/profile/sriranjini.ramesh.vasista/viz/Group_5_17137472009180/Final_Dashboard

References

- <https://infosec-jobs.com/salaries/>
- <https://www.kaggle.com/datasets/infosecjobs/global-salaries-in-cybersecurity-infosec>
- <https://app.mural.co/t/dvprojectteam51142/m/dvprojectteam51142/1712263047903/6f396730f43e599cacdea7fb27a3cc4beec382c3?sender=uf292b82c19243b56c2085634>

Dashboard link:

- https://public.tableau.com/app/profile/sriranjini.ramesh.vasista/viz/Group_5_17137472009180/Final_Dashboard