PREDICTING CAREER SUCCESS FROM FIRST-SEMESTER PERFORMANCE

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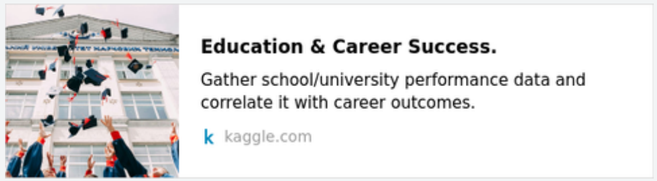
INTRODUCTION

Dataset Description:
I selected a dataset titled “Education and Career Success”, which contains anonymized data on individuals’ educational background, career choices, and perceived success in their professional lives.

LINK DATA SET



Three Data Questions I Hope to Answer
1. What factors influence starting salary the most?
Goal: Identify which variables have the strongest impact on a student’s starting salary.
2. Which fields of study lead to the highest salaries or job opportunities?
Goal: Help students choose fields with better career outcomes.
3. Do soft skills and networking affect career satisfaction or promotion speed?
Goal: Evaluate the importance of non-academic factors in early career success.

SUMMARY REPORT

Question 1. What factors influence starting salary the most?

Chosen visualizations:

- Scatter plot (GPA vs Starting Salary)
- Bar chart (Internships vs Starting Salary)

Why these charts were chosen?

These plots clearly show whether academic performance (GPA) and practical experience (internships) are predictors of salary. They allow both individual-level patterns (scatter plot) and aggregate trends (bar chart) to emerge.

Question 2. Which fields lead to better careers?

Chosen visualizations:

- Bar chart (Field vs Avg Salary)
- Bar chart (Field vs Avg Job Offers)
- Heatmap (Field vs Avg Satisfaction)

Why these charts were chosen:

Combining bar charts and a heatmap enables a multi-dimensional assessment of career quality across fields (income, opportunity, and fulfillment). Each plot offers a distinct but complementary view of “better careers.”

Question 3. Do soft skills and networking affect career outcomes?

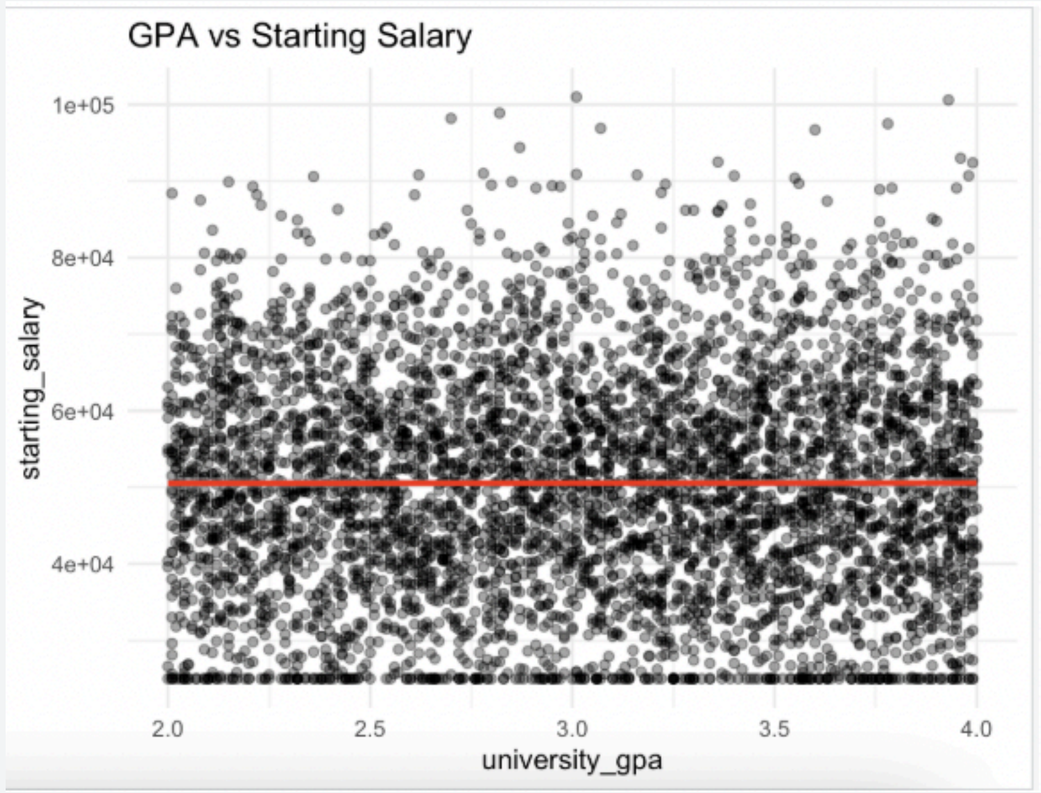
Chosen visualizations:

- Scatter plot (Soft Skills vs Career Satisfaction)
- Boxplot (Networking Score vs Years to Promotion)

Why these charts were chosen:

Scatter plots are well-suited for continuous variable relationships, while boxplots are ideal for showing variability across categorical groups. Together, they help determine if non-academic factors meaningfully influence satisfaction and advancement.

Q1. WHAT FACTORS INFLUENCE STARTING SALARY THE MOST?



Scatter plot (GPA vs Starting Salary):
Used to assess the linear relationship between university GPA and starting salary. The trend line helps visualize whether higher GPA leads to higher pay.

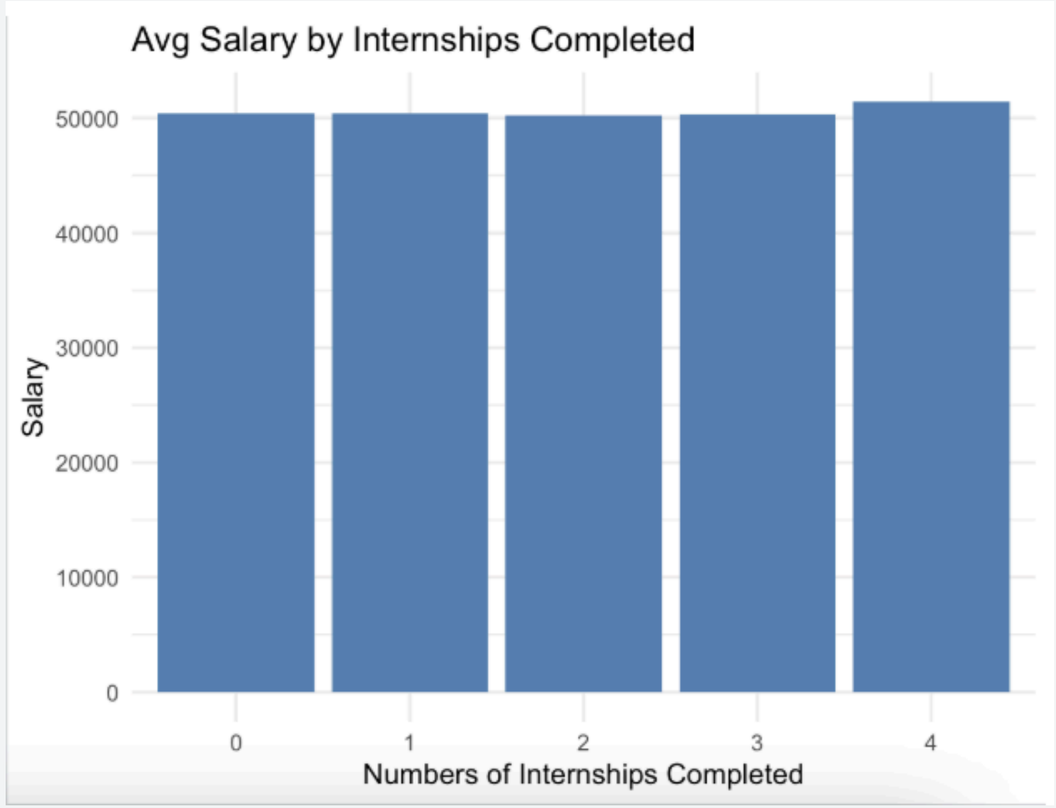
What I see:

- The red trend line is nearly flat.
- Data points are highly dispersed vertically for each GPA value.

Interpretation:

- There is no strong linear relationship between university GPA and starting salary.
- Students with lower or higher GPAs appear to have similar salary distributions..

Q1. WHAT FACTORS INFLUENCE STARTING SALARY THE MOST?



Bar chart (Internships vs Starting Salary):
Used to compare the average starting salary across different levels of internship experience. Bar charts are ideal for group comparisons involving discrete categories.

What I see:

- Salaries are relatively flat across internship counts (0 to 4).
- Slight increase at 4 internships, but not substantial.

Interpretation:

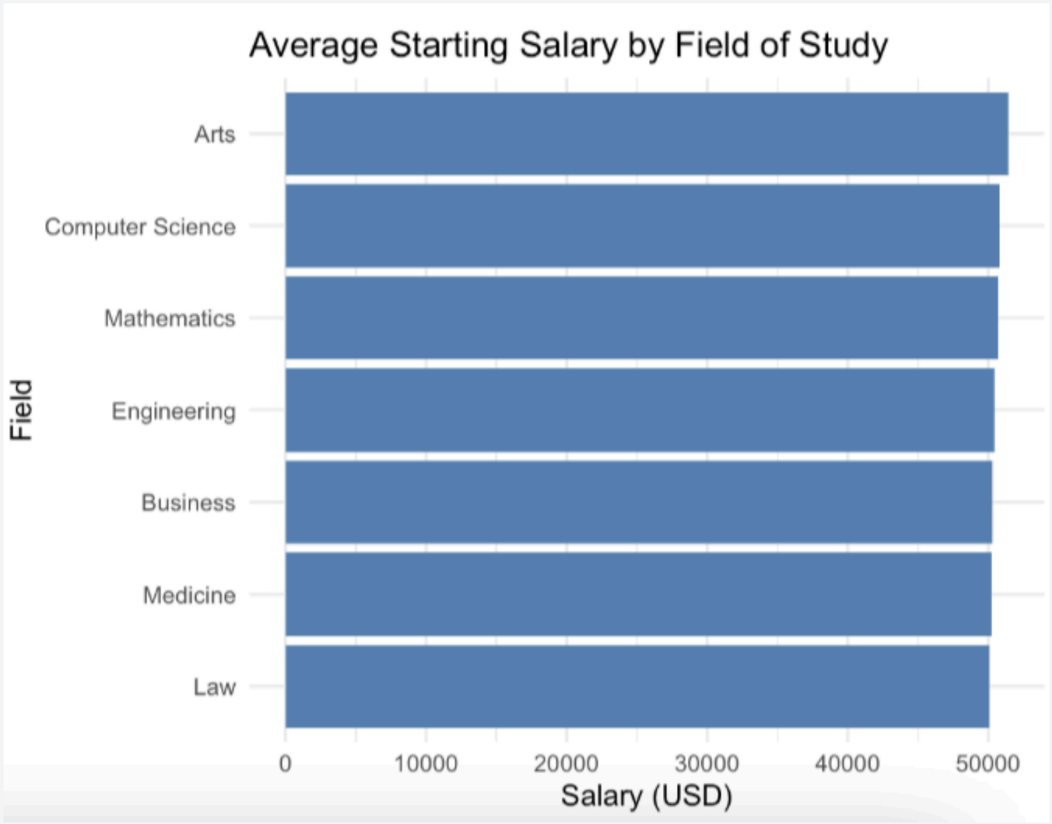
- Internships might not significantly boost salary in this dataset.
- However, internships could affect job offers or promotion speed more than salary — worth exploring in future analysis.

CONCLUSION FOR QUESTION 1

01 Although the number of internships affects starting salary more than GPA, neither factor alone strongly predicts starting salary.

02 This suggests that employers may weigh other factors such as networking, certifications, soft skills, or field of study more heavily.

Q2. WHICH FIELDS LEAD TO BETTER CAREERS?



Bar chart (Field vs Avg Salary):
To compare monetary outcomes across majors.

What I see:

- The average starting salaries for most fields fall within a narrow range (~$50,200–$51,400).
- Arts, Computer Science, and Mathematics lead slightly in salary.
- Law and Medicine are on the lower end of the salary scale.

Interpretation:

- Salary differences between fields are minimal, suggesting field of study may not drastically affect pay at entry level.
- Arts surprisingly shows the highest average salary, which may be due to outliers or specific roles in the synthetic data.
- Other variables like location, job type, or skillset may be stronger salary drivers than field alone.

Q2. WHICH FIELDS LEAD TO BETTER CAREERS?

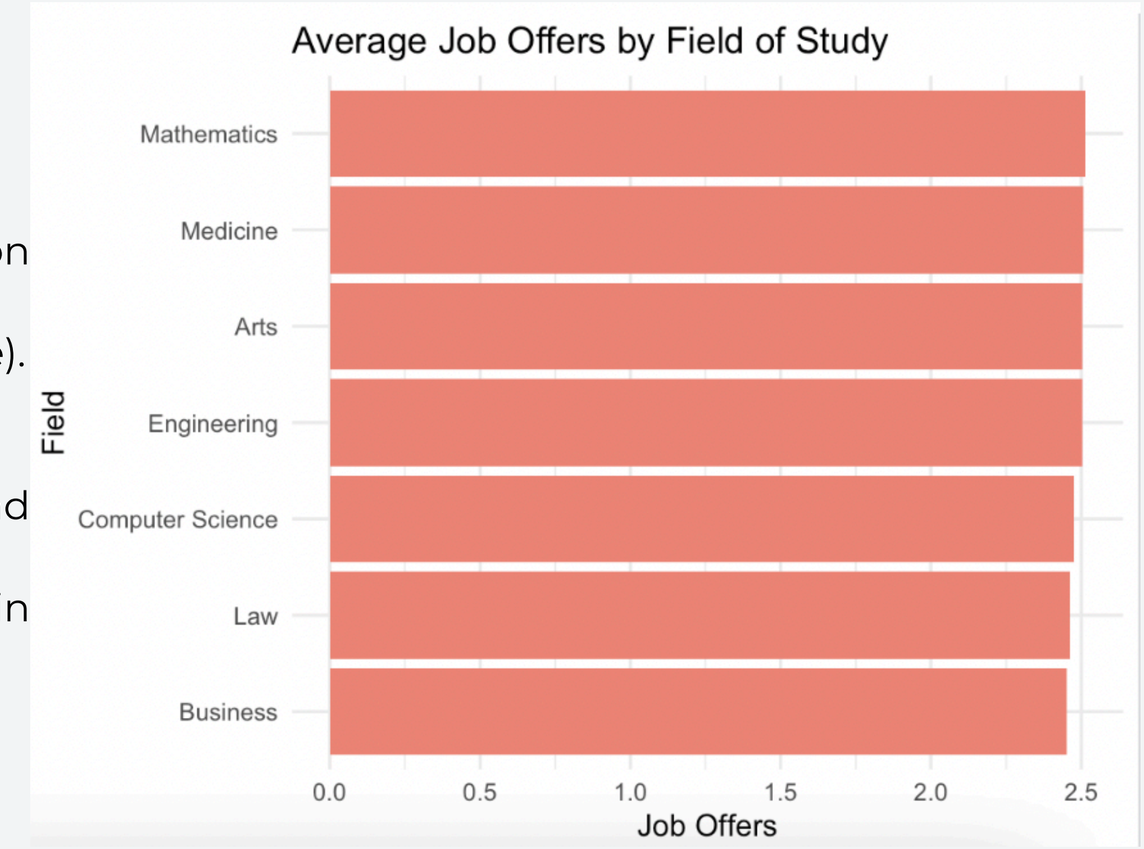
Bar chart (Field vs Avg Job Offers):
To evaluate career opportunity levels by major.

What I see:

- Mathematics, Medicine, and Arts receive the most job offers on average (~2.3 offers).
- Business and Law receive fewer offers (just above 2.0 on average).

Interpretation:

- Some technical or healthcare-related fields (like Math and Medicine) offer stronger employability right after graduation.
- The number of job offers may reflect demand in certain industries more than salary potential.
- Business may be more competitive, despite its popularity.



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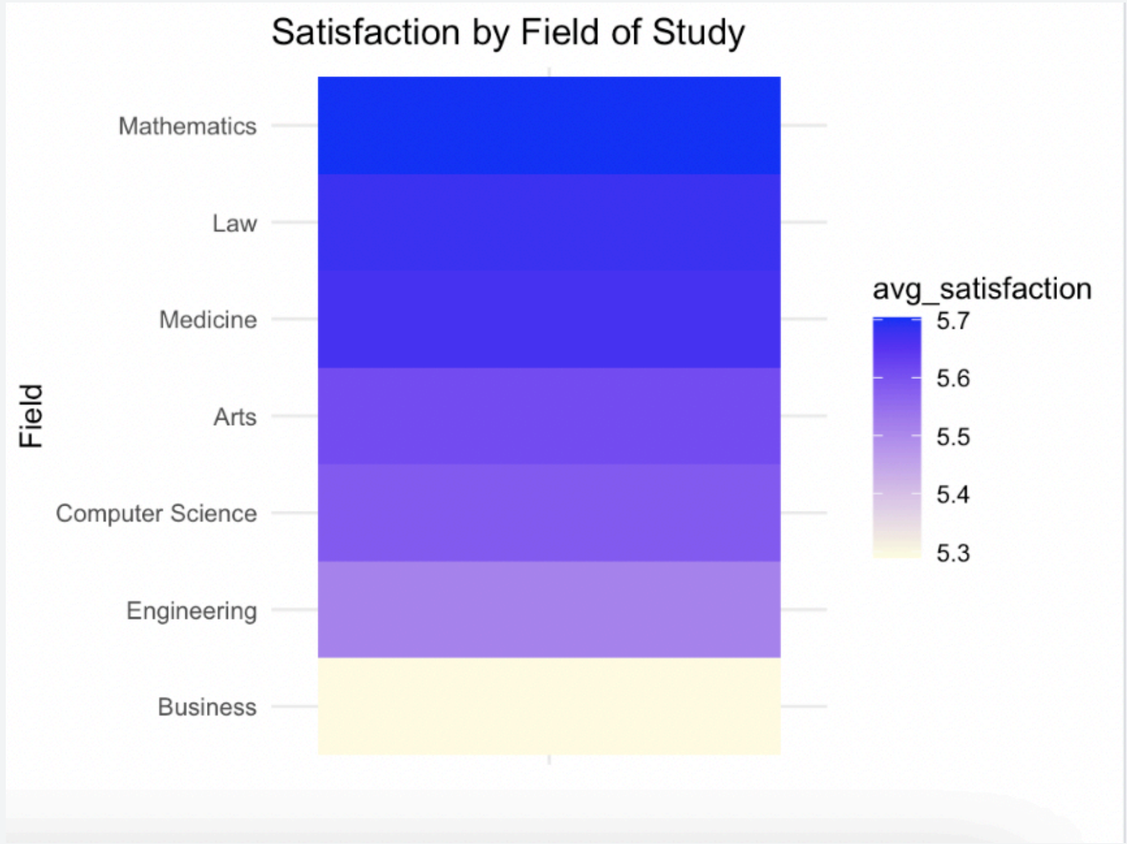


Heatmap (Field vs Avg Satisfaction):
To show relative satisfaction levels visually and clearly, with color intensity indicating how positive each field is rated.

What I see:

- Mathematics, Law, and Medicine show the highest satisfaction scores (above 5.65).
- Business and Engineering show the lowest (around 5.3–5.5).
- Arts and Computer Science fall in the mid-range.

Interpretation:

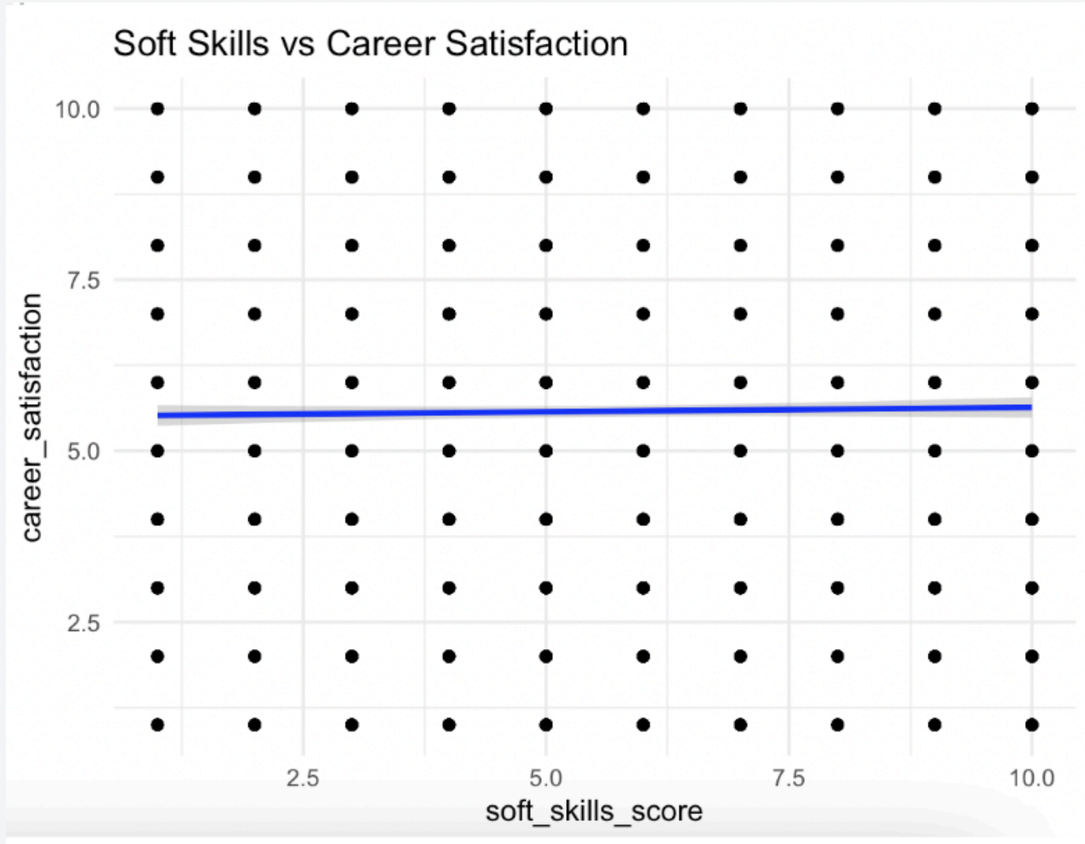
- Satisfaction may correlate more with personal fulfillment or job fit rather than pay.
- Mathematics stands out for scoring highly across salary, job offers, and satisfaction—suggesting strong overall outcomes.
- Business again ranks lowest, consistent with previous charts.

CONCLUSION FOR QUESTION 2

- Mathematics consistently performs best across all three metrics, making it the most well-rounded field in terms of early career outcomes.
- Medicine also shows strong performance in job offers and satisfaction, though its average salary is slightly lower.
- Arts unexpectedly offers one of the highest starting salaries and moderate satisfaction, despite receiving fewer job offers.
- Business consistently ranks lowest in salary, job offers, and satisfaction, suggesting more challenging early career prospects in this field.

*These findings suggest that technical and analytical fields like **Mathematics and Medicine** may offer the most promising starts to a career, while popular fields like Business may not guarantee stronger outcomes without other supporting factors (e.g., networking, experience, or graduate education).*

Q3. DO SOFT SKILLS AND NETWORKING AFFECT CAREER OUTCOMES?



Scatter plot (Soft Skills vs Career Satisfaction):
Used to examine the correlation between interpersonal ability and satisfaction using a linear regression line.

What I see:

- The data points are evenly scattered across the entire range of soft skills scores.
- The blue trend line is nearly horizontal, showing no upward or downward trend.

Interpretation:

- There is no strong linear relationship between soft skills and career satisfaction in this dataset.
- Students with both low and high soft skills report similar satisfaction levels.
- This suggests soft skills alone may not significantly influence early career satisfaction, or that their impact is mediated by other factors (e.g., job type, role fit, work culture).

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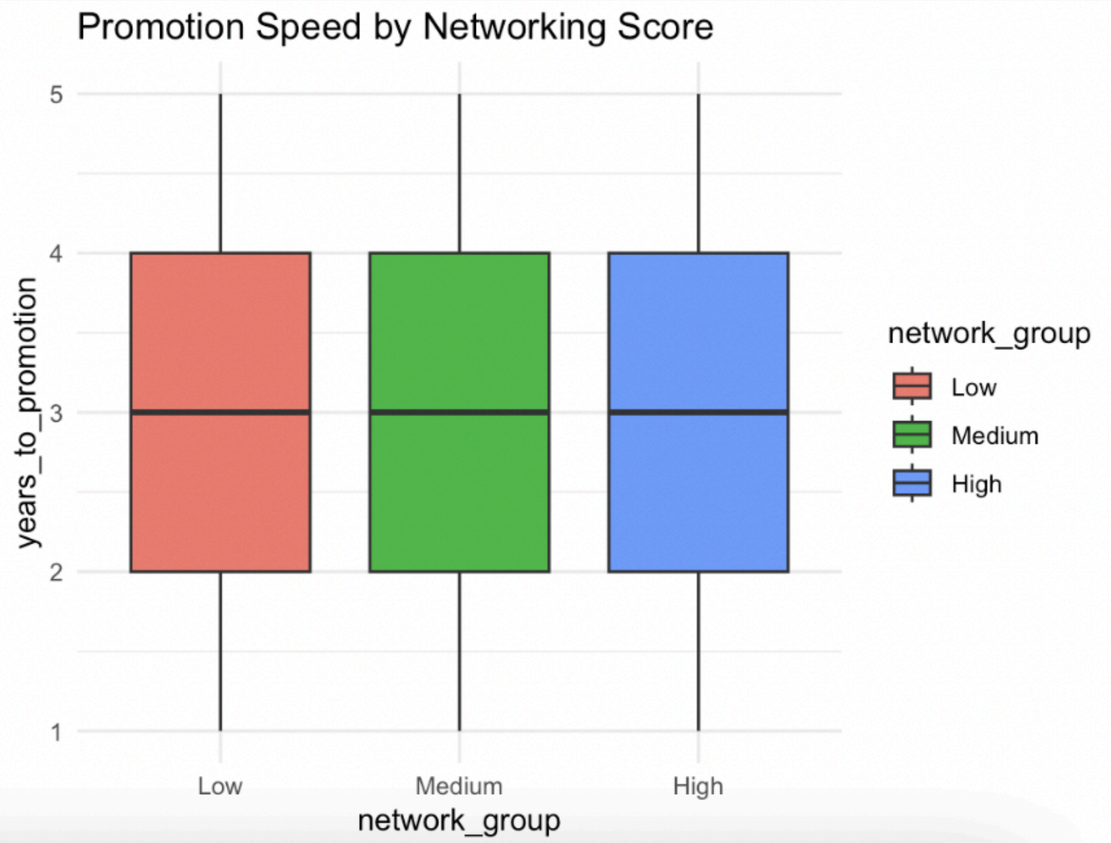


Boxplot (Networking Score vs Years to Promotion):
Used to compare promotion timelines across levels of networking ability, showing distribution and median time to promotion.

What I see:

- The median years to promotion (≈ 3 years) are identical across all three networking groups (Low, Medium, High).
- The interquartile ranges are also very similar.

Interpretation:

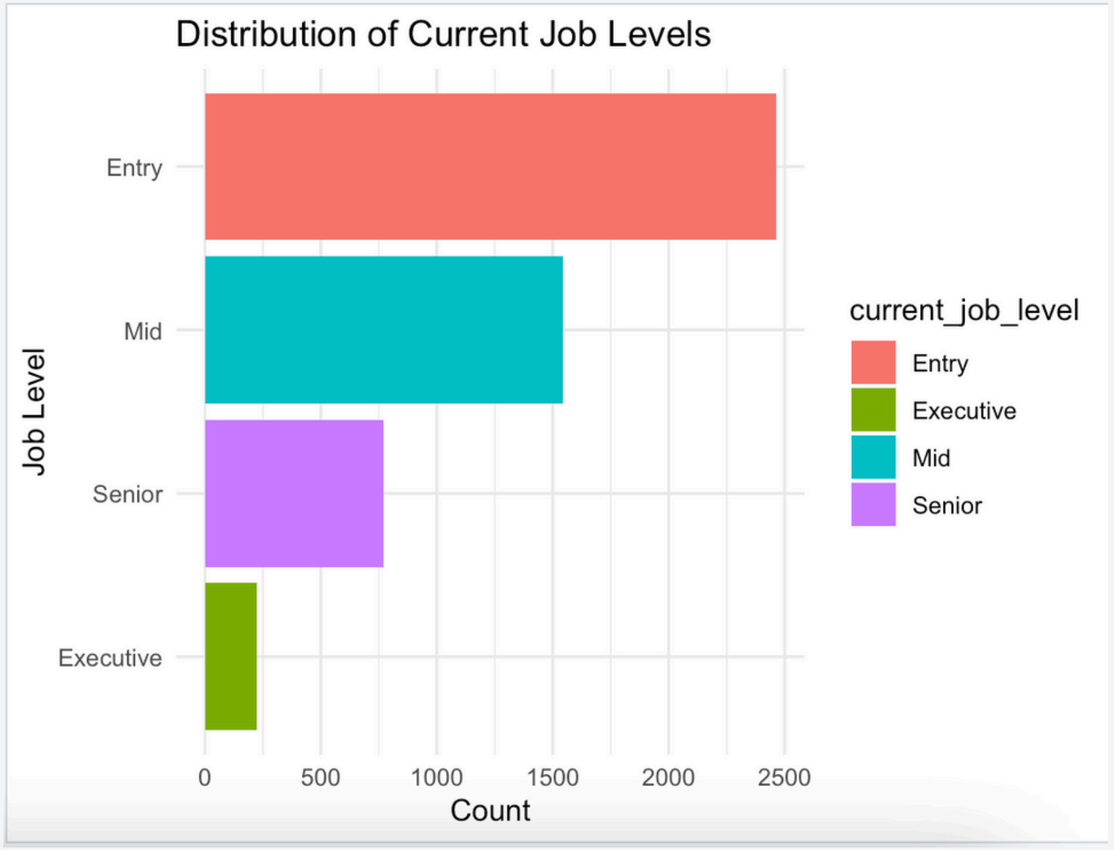
- Networking score does not appear to have a meaningful effect on how quickly someone receives their first promotion.
- Promotion timing is likely influenced by organizational structure, performance, or industry norms more than networking ability.

CONCLUSION FOR QUESTION 3

- There is little evidence that soft skills or networking scores have a strong impact on early career outcomes in this dataset.
- Soft skills show **no clear correlation** with career satisfaction. Students with both low and high soft skill ratings report similar satisfaction levels.
- Networking scores **do not affect** the time to first promotion. Median promotion speed remains constant regardless of whether students are in the low, medium, or high networking group.

These findings suggest that while soft skills and networking are commonly viewed as valuable professional assets, their measurable influence on satisfaction and promotion may not manifest strongly in the early stages of a career—or may require more context-specific factors to show clear effects.

EXPANDING PART



Bar Chart: Distribution of Current Job Levels

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- The interquartile ranges are also very similar.

Interpretation:

- Networking score does not appear to have a meaningful effect on how quickly someone receives their first promotion.
- Promotion timing is likely influenced by organizational structure, performance, or industry norms more than networking ability.

WHAT I LEARNED FROM THE DATA

- Academic metrics, such as GPA and the number of internships completed, appear to have a limited influence on starting salary. While students with more internships tend to earn slightly more, the overall variation is minimal. This suggests that employers may place greater emphasis on other attributes when determining compensation.
- Field of study has a more substantial impact on early career outcomes. For example, students in Mathematics and Medicine reported the highest levels of job offers and satisfaction. Interestingly, Arts majors had the highest average starting salaries. In contrast, Business students consistently ranked lowest across salary, job offers, and satisfaction.
- Although soft skills and networking are often emphasized as critical for long-term career growth, this dataset shows no strong evidence of their effect on either career satisfaction or promotion speed in the short term. Their value may emerge over time or within specific roles not fully captured by this dataset.
- The distribution of current job levels indicates that most individuals in the dataset are at the entry-level, with a gradual decline toward mid, senior, and executive levels. This suggests the data primarily represents early career professionals, making it more useful for analyzing first-job outcomes than long-term career trajectories.

FOLLOW-UP QUESTIONS TO EXPLORE

1. Does university ranking influence long-term job levels (e.g., becoming senior or executive)?
2. Do students who started businesses (entrepreneurship = Yes) report higher work-life balance or satisfaction?
3. Are there interaction effects between field of study and soft skills/networking that affect salary or promotions?
4. How does gender influence salary and job offers across different fields?
5. Does having multiple certifications improve job outcomes more than internships?

REFERENCES

Shamim, A. (2022). Education and career success [Data set]. Kaggle. https://www.kaggle.com/datasets/adilshamim8/education-and-career-success/data

THANK YOU!