Relationship Between Academic Achievement and Future Career and Living

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Background


CAREER
BRAINSTORMING
IMAGINATION
BUSINESS
TEAMWORK
INNOVATION
STRATEGY
EDUCATION
ASPIRATIONS
INTELLIGENCE
LEADERSHIP
CREATIVITY
WINNING
CONCEPTS
DEVELOPMENT
SUCCESS
CONNECT
FINANCIAL
SKILL
IDEAS
CROWD
STUDYING
GROWTH
RESEARCH
OCCUPATION
HOPE
ACTION
GLOBAL
PRESENTATION
OFFICE
MONEY
THINKING
FORWARD
CONTEMPLATION
ANALYZING
CONSPIRACY
TECHNOLOGY
FUTURISTIC
MARKETING
INVENTION
JOB
DESIGNER
PLANNING
FORECASTING
COMMUNICATIONS
COOPERATION
DESIGN
INCENTIVE
CONCENTRATION
INDIVIDUALITY
SOLUTION
WISDOM
INSPIRATION
CHOOSING
WORKING
LEARNING
PLAN
FINANCE
PROGRESS
MOTIVATION
WEALTH
SALES
COMPUTER
INTERNET

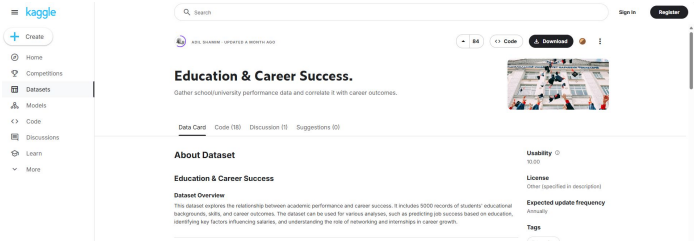

CAREER
EDUCATION
GRADUATE

Research Questions

1. Which educational factors among university ranking, university GPA, and field of study are related to work-life balance?
    - Work-life balance as measure of career satisfaction (intrinsic)
    - Provided in the dataset with scale from (1-10)
2. Is university GPA related to job offers, starting salary, and years to promotion?
    - Can academic performance measure extrinsic success?

Dataset Overview

- 5000 records of students' educational backgrounds, skills, and career outcomes
- Explores the relationship between academic performance and career success
- Student Information / Academic Performance / Skills & Extracurricular Activities / Career Outcomes



Academic Performance	University_Ranking
	University_GPA
	Field_of_Study
Career Outcomes	Job_Offers
	Starting_Salary
	Years_to_Promotion
	Work_Life_Balance

Methods

1. Initial Analysis:
    a. Descriptive Statistics
2. Research methods:
    a. Decision Tree
    b. ANOVA
    c. Regression Analysis

Initial Analysis

1. Descriptive Statistics

- Saved our dataset as `data`
- Variables to use

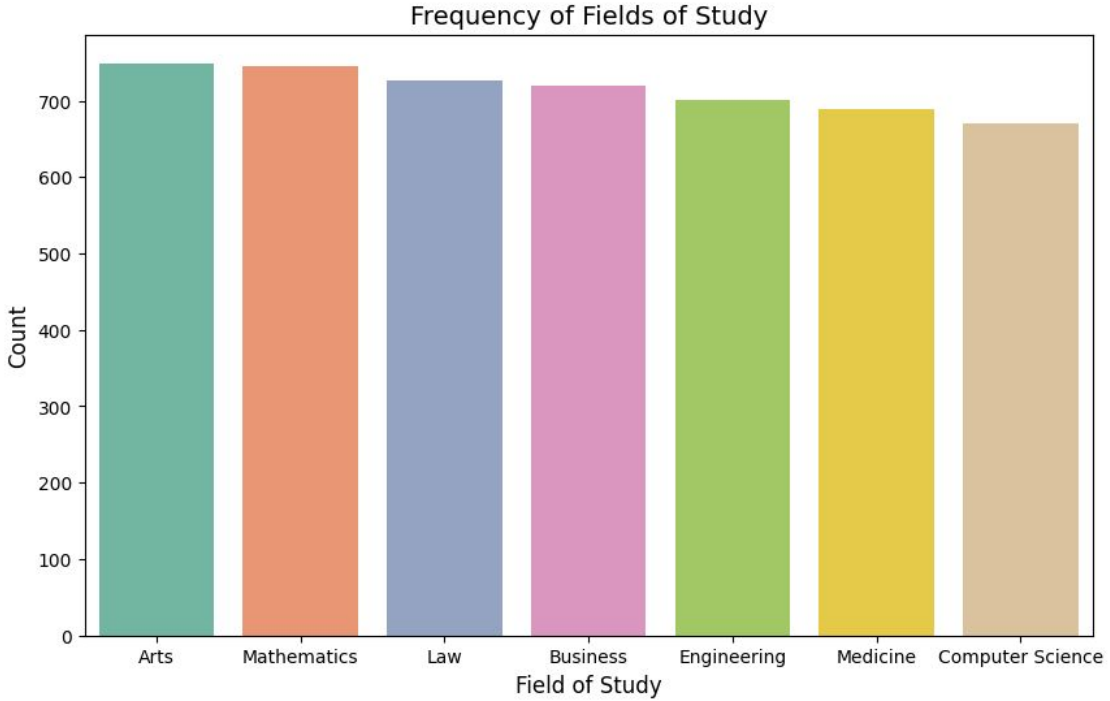
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 5000 entries, 0 to 4999
Data columns (total 20 columns):
 #   Column                  Non-Null Count  Dtype
---  ------                  --------------  -----
 0   Student_ID              5000 non-null   object
 1   Age                     5000 non-null   int64
 2   Gender                  5000 non-null   object
 3   High_School_GPA         5000 non-null   float64
 4   SAT_Score               5000 non-null   int64
 5   University_Ranking      5000 non-null   int64
 6   University_GPA          5000 non-null   float64
 7   Field_of_Study          5000 non-null   object
 8   Internships_Completed   5000 non-null   int64
 9   Projects_Completed      5000 non-null   int64
 10  Certifications          5000 non-null   int64
 11  Soft_Skills_Score       5000 non-null   int64
 12  Networking_Score        5000 non-null   int64
 13  Job_Offers              5000 non-null   int64
 14  Starting_Salary         5000 non-null   float64
 15  Career_Satisfaction     5000 non-null   int64
 16  Years_to_Promotion      5000 non-null   int64
 17  Current_Job_Level       5000 non-null   object
 18  Work_Life_Balance       5000 non-null   int64
 19  Entrepreneurship        5000 non-null   object
dtypes: float64(3), int64(12), object(5)
memory usage: 781.4+ KB
```

Initial Analysis

1. Descriptive Statistics - Field of Study

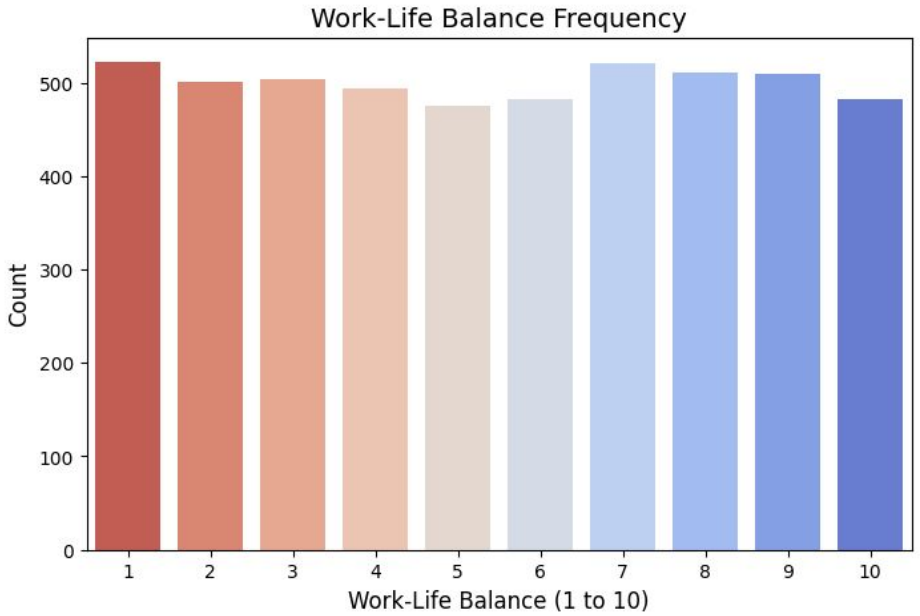
Field_of_Study	count
Arts	749
Mathematics	745
Law	727
Business	719
Engineering	701
Medicine	689
Computer Science	670



Initial Analysis

1. Descriptive Statistics - Work-Life Balance

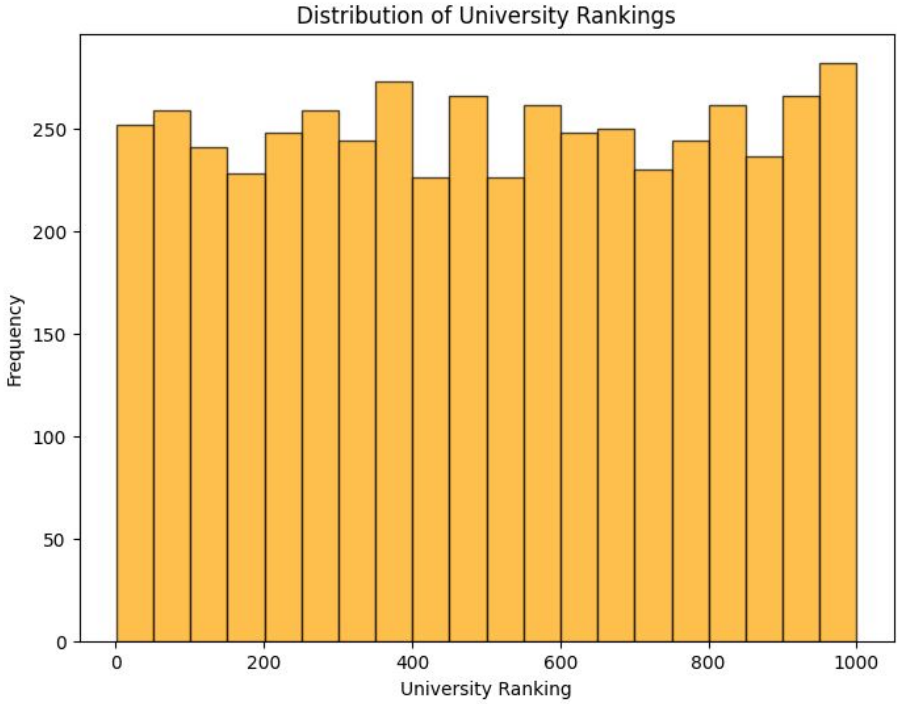
Work_Life_Balance	count
1	522
2	501
3	503
4	494
5	475
6	482
7	521
8	511
9	509
10	482



Initial Analysis

1. Descriptive Statistics - University Ranking

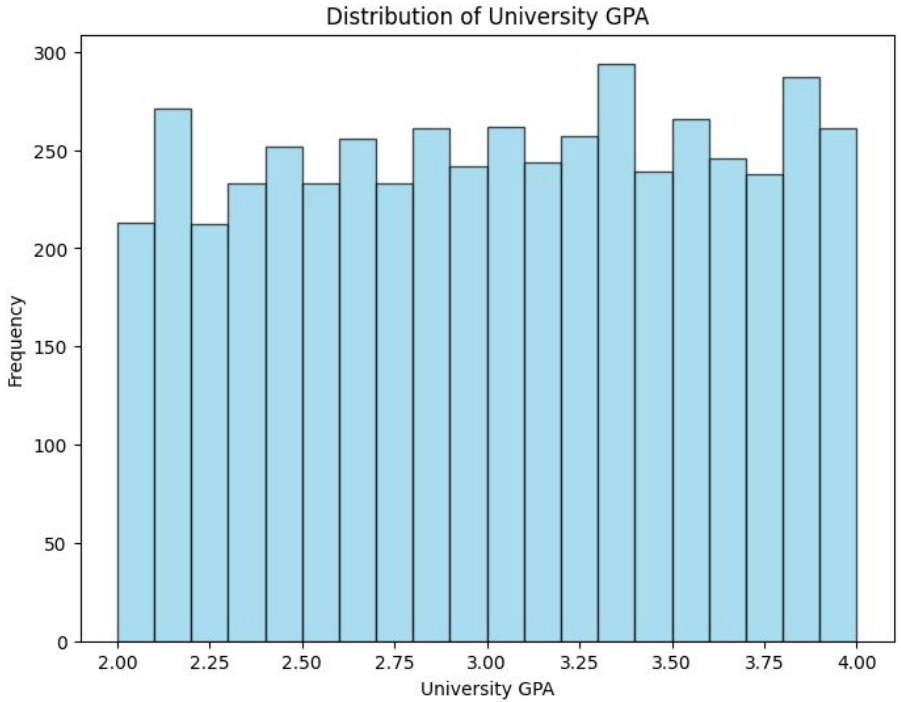
	University_Ranking
count	5000.000000
mean	504.335600
std	291.060011
min	1.000000
25%	256.000000
50%	501.500000
75%	759.000000
max	1000.000000



Initial Analysis

1. Descriptive Statistics - University GPA

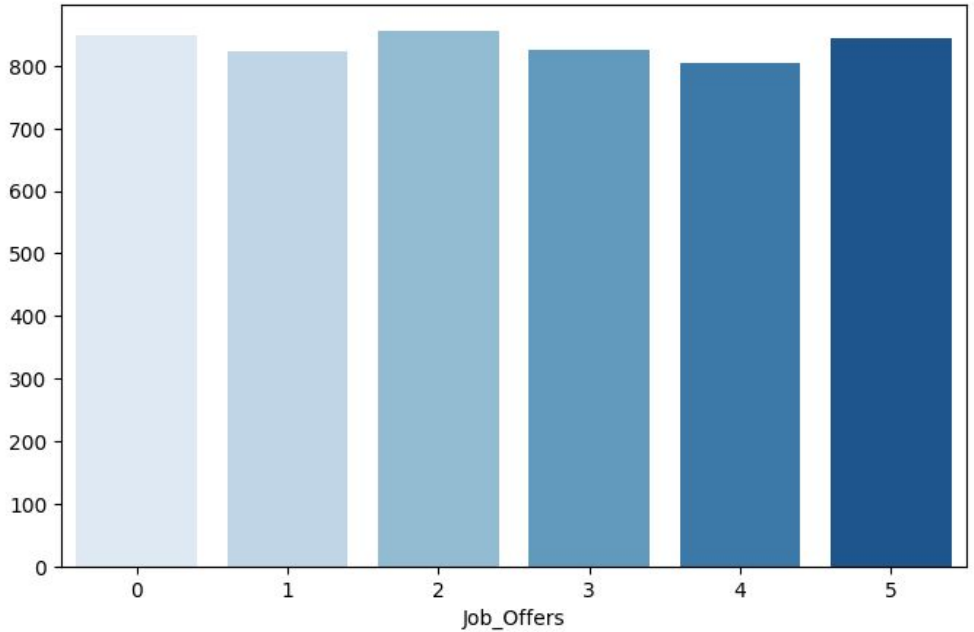
	University_GPA
count	5000.000000
mean	3.020028
std	0.576047
min	2.000000
25%	2.520000
50%	3.030000
75%	3.510000
max	4.000000



Initial Analysis

1. Descriptive Statistics - # of job offers

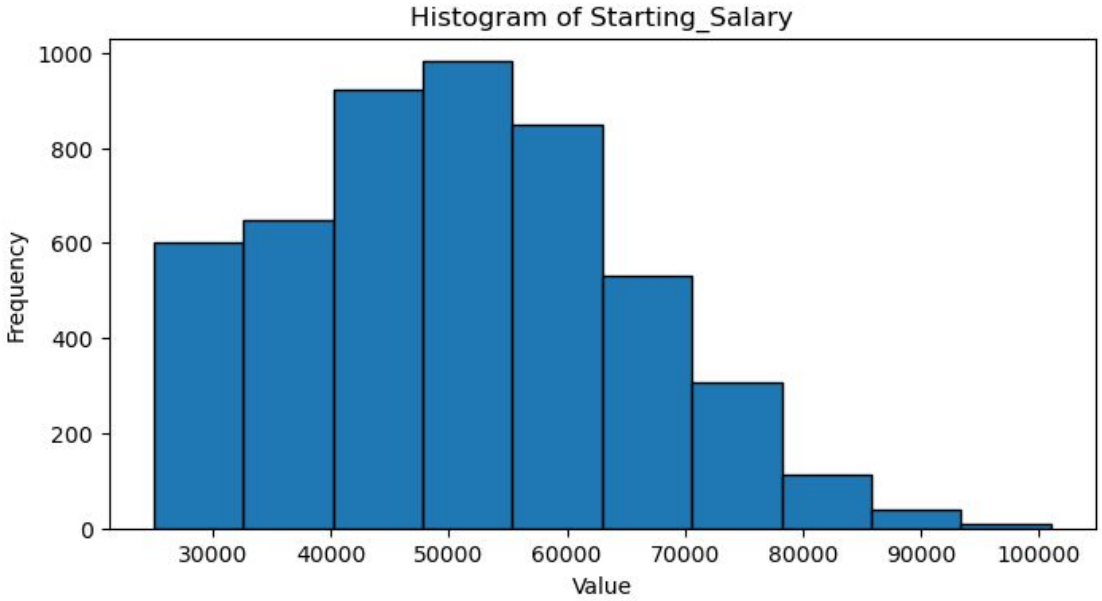
Job_Offers	count
0	848
1	823
2	856
3	826
4	804
5	843



Initial Analysis

1. Descriptive Statistics - Starting salary

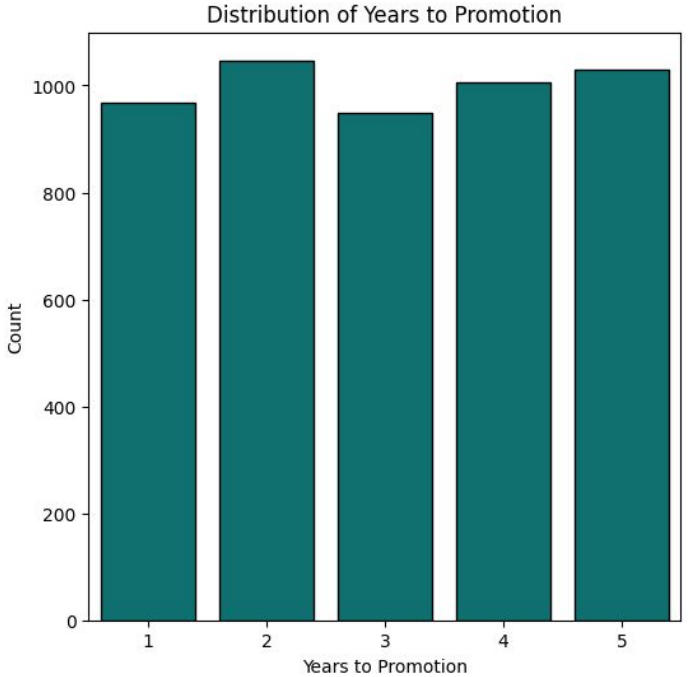
	Starting_Salary
count	5000.000000
mean	50563.540000
std	14494.958207
min	25000.000000
25%	40200.000000
50%	50300.000000
75%	60500.000000
max	101000.000000



Initial Analysis

1. Descriptive Statistics - years to promotion

Years_to_Promotion	count
1	969
2	1047
3	949
4	1006
5	1029

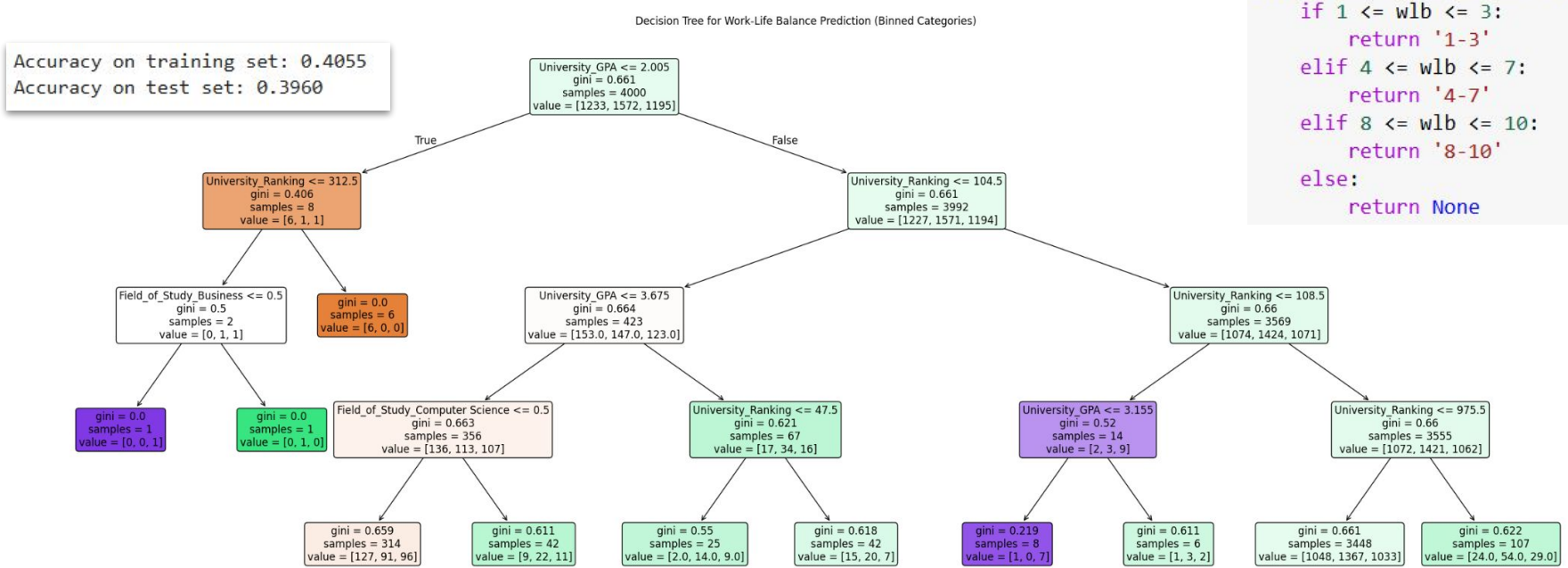


Results

Q1. Which educational factors among university ranking, university GPA, and field of study are related to work-life balance?

```
Accuracy on training set: 0.4055
Accuracy on test set: 0.3960
```

```python
def bin_work_life_balance(wlb):
    if 1 <= wlb <= 3:
        return '1-3'
    elif 4 <= wlb <= 7:
        return '4-7'
    elif 8 <= wlb <= 10:
        return '8-10'
    else:
        return None
```



Q2 Results: University GPA vs #Job Offers

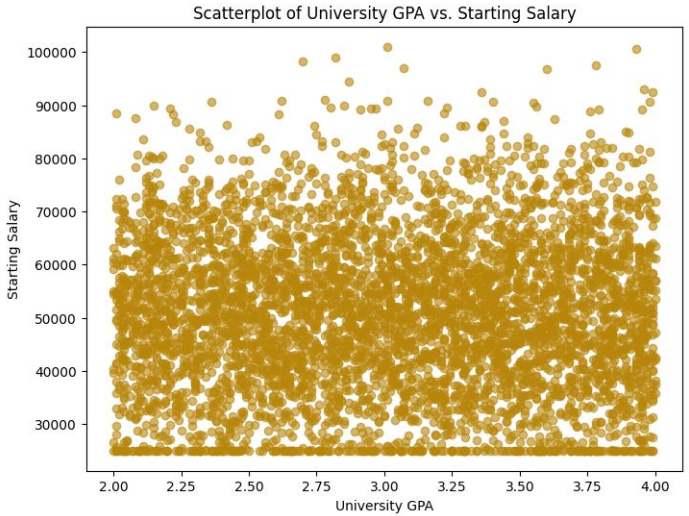
Using One-way ANOVA

```
bins = [0, 2.5, 3.5, 4.0]  # Example GPA bins
labels = ['Low', 'Medium', 'High']  # Labels for each category
```

```
F-statistic: 2.4633
P-value: 0.0853
There is no significant difference in the number of
 job offers across GPA categories.
```

Q2 Results: University GPA vs Starting Salary

Check for correlation using Pearson and Spearman coefficient




```
Pearson Correlation Coefficient: 0.001
P-value: 9.424e-01
```

```
Spearman Correlation: -0.005
P-value: 7.438e-01
```

Q2 Results: University GPA vs Years to promotion

Using One-way ANOVA

```
F-statistic: 1.8180
P-value: 0.1224
There is no significant difference in University GPA
 across different Years to Promotion groups.
```

Conclusion and Future Research

1. Conclusion
   - Academic performance does not show significant relation to future living/ success
2. Future Research
   - Use more variables for more complex analyses
   - Find meaningful variables that is highly correlated each other

Image references

- https://st2.depositphotos.com/1000651/5737/v/600/depositphotos_57374329-stock-illustration-career-word-cloud.jpg
- https://medutur.com/2020/12/21/7-ways-to-build-a-successful-career-for-students/