Admissions Case Study

**Admissions Case Study Introduction**

{Video}

**Quiz: Admissions 1-4**

Males:

Major A: 450/900 = 50%

Major B: 10/100 = 10%

Females:

Major A: 80/100 = 80%

Major B: 180/900 = 20%

Is there a gender bias? Yes

Who is being favored? Male or Female

Aggregation:

Males Acceptance Rate: 460/100 = 46%

Females Acceptance Rate: 260/1000 = 26%

Who is being favored? Male or Female

ANSWER: Males

**Dangers Of Statistics**

Simpson’s Paradox:

How we choose and communicate data can lead to different results and statistics. It can be incorrect or misleading.

**Case Study in Python**

Use the Jupyter notebook to analyze admission\_data.csv to find the following values and for the quizzes below. Indexing, query, and groupby may come in handy!

1. Proportion and admission rate for each gender
2. Proportion and admission rate for physics majors of each gender
3. Proportion and admission rate for chemistry majors of each gender
4. Admission rate for each major

**QUESTION 1 OF 10**

Match the correct values

**FEATURE- VALUE**

Proportion of students that are female : 0.514

Proportion of students that are male: 0.486

Admission rate for females: 0.287938

Admission rate for males: 0.485597

**QUESTION 2 OF 10**

By only looking at gender and admission rates, who appears to be favored in the admissions process?

Males

**QUESTION 3 OF 10**

Match the correct values

**FEATURE : VALUE**

Proportion of females with physics majors : 0.121

Proportion of males with physics majors : 0.926

Admission rate for female physics majors : 0.742

Admission rate for male physics majors : 0.516

**QUESTION 4 OF 10**

Of the students applying as physics majors, who appears to be favored in the admissions process?

Females

Correct! More females were admitted as physics majors at a rate of 74.2%, while men were admitted at a rate of 51.6%

**QUESTION 5 OF 10**

Who tends to have more physics majors than chemistry majors?

Males

Correct! 92.6% of males have physics majors!

**QUESTION 6 OF 10**

Match the correct values: .879, .111, .226, .074

**FEATURE – VALUE**

Proportion of females with chemistry majors- .879

Proportion of males with chemistry majors- .074

Admission rate for female chemistry majors- .226

Admission rate for male chemistry majors- .111

**QUESTION 7 OF 10**

Of the students applying as chemistry majors, who appears to be favored in the admissions process?

Females

Correct! More females were admitted as chemistry majors at a rate of 22.6%, while men were admitted at a rate of 11.1%

**QUESTION 8 OF 10**

Who tends to have more chemistry majors than physics majors?

Females

Correct! 87.9% of females have chemistry majors!

**CONTINUE**

**QUESTION 9 OF 10**

Which major has a lower admission rate?

Chemistry

Correct! Chemistry has an admission rate of 21.7%, while physics has a rate of 54.3%!

**Reflect**

Take a moment to organize and explain what just happened.

Depending on the values we are comparing against, specifically, the cohort we take to compute statistics , our results can change. So, we need to be careful about what we are evaluating and the measure against which those numbers are being calculated.

**Reflect**

Take a moment to organize and explain what just happened.

**Your reflection**

Depending on the values we are comparing against, specifically, the cohort we take to compute statistics , our results can change. So, we need to be careful about what we are evaluating and the measure against which those numbers are being calculated.

**Things to think about**

Can you think of other situations where Simpson's Paradox could occur?

ANSWER:

Answers of surveys and polls could be manipulated. Statistics for persuasion or selling could be tweaked to suit motive.

**Conclusion**

**Simpson's Paradox**

In this example lesson, you learned about **Simpson's Paradox**, and you had the opportunity to apply it to a small example with Sebastian, as well as work through similar example in Python.

In the lessons ahead, you will be learning a lot by following along with Sebastian, but it is really important to put these ideas to practice using data and computing, because that is how you will apply these skills in a day to day environment as a Data Analyst or Data Scientist.

It is so easy to get caught up in looking at full aggregates of your data. Hopefully, the examples here serve as a reminder to look at your data multiple ways.

**Upcoming Lessons**

In the upcoming lessons, you will learn the fundamentals of probability by working through some examples. After finishing the lessons on probability with Sebastian, you will put what you learned to practice using Python!