Unlocking Opportunities: A Data-Driven Exploration of UNLV Students' Financial Landscape

A survey and analysis conducted on students' Financial Struggles and scholarship communication mediums used at UNLV.

According to a report published by ThinkImpact, an online source for education statistics, 51% of students drop out because they cannot afford to continue college (Craft, 2021). The report also signifies that 55% of students struggle to financially support their education (Craft, 2021). There is no doubt that college is expensive.

For those reasons, my group members wanted to explore how the high costs of college are affecting UNLV students for a class project. The following data I am about to show was used for a business proposal for my undergraduate class "BUS 321 - Business Communication." Data collected from over 240 students was used to persuade the Executive Director of Financial Aid and Scholarships at the University of Nevada, Las Vegas (UNLV) to develop an app for students to easily access scholarship opportunities. This article will focus mainly on the survey and data I analyzed for the proposal using Excel and the R Programming Language. Both platforms were used to create various figures and Excel was used to clean the dataset.

Here is a link to access the data for yourself:
https://github.com/Robles752/Scholarship-App-Survey-Data

Before we start, Here are some related statistics about UNLV

- UNLV has been recognized as the most diverse campus in the nation with over 63% of students identifying as being an ethnic minority.
- The average undergraduate cost for tuition is $26,415 for in-state and $42,506 for out-of-state students.
- The Institute for College Access and Success (ICAS) has reported that the average student debt from graduates was over $19,000 for the class of 2019 (Thymianos et al., 2021).

UNLV Scholarship App Interest Survey

UNLV Scholarship App Survey

Dear UNLV Students,

This brief survey is part of our "Organizational Change" class project. This survey is open to current UNLV students as well as former students, including those who have taken breaks, dropped out, or graduated. Your experiences are valuable, and we appreciate your participation.

To conduct the survey, my group decided to use Google Forms so all students could easily access and share it with friends. The survey was distributed amongst all our classes via Canvas's learning management systems inbox feature. 12 questions were asked consisting of mainly checkbox, yes/no, and Likert Scale questions. Some questions were optional out of respect for privacy. A list of all the questions are provided below:

- Major
- Minor (If Applicable)
- School Year
- Are you a first-generation student?
- Are you an international student?
- Which of the following best describes your ethnicity? (Select all that apply)
- During your time at UNLV, have you ever dropped out or taken a break from college due to financial issues?
- Have you had to take out a loan to pay for college?
- Please indicate the extent to which you agree with the following statement: "During my time at college, I have faced difficulties in finding employment to support my college expenses because of class commitments and/or the lack of jobs that offer work visas for immigrants."
- To what extent do you feel informed about scholarship opportunities available on campus?
- How satisfied are you with the current methods UNLV uses (Emails, websites, other channels) to communicate information about scholarship opportunities?
- In your opinion, would an app for UNLV and non-campus related scholarships be easier and more convenient to find scholarship opportunities?

Let's first take a look at some figures used to represent the responses related to student demographics.

Figure 1: Frequency of Responses by Major and College/School

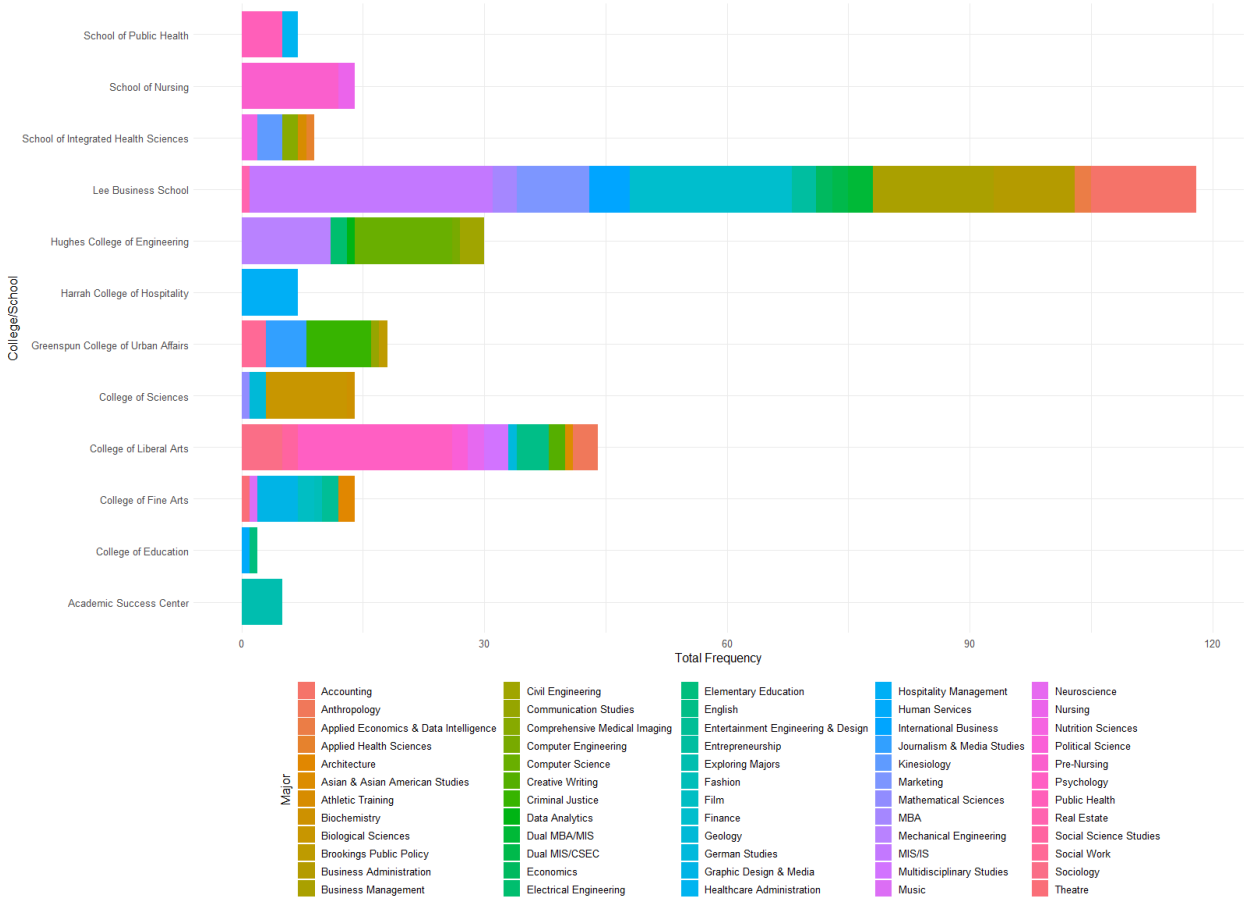


Figure 1 is a stacked bar chart that represents all survey respondents by the school their major and minor are a part of. Out of all responses, we have gathered data from 60 majors and minors from 12 out of the 16 schools at UNLV. Each color within each bar represents a major within the school it's a part of. Although it is difficult to distinguish between each major, the purpose of the graph was to show that our data is diverse and filled with many majors to represent a reflective sample size.

The largest number of responses by the school was the Lee Business School (42% of all responses), likely because the majority of people to whom we sent this survey were in classes related to business. This is followed by 15% of responses being from the College of Liberal Arts and 11% from the College of Engineering. Additionally, of all 245 students, only 11% of students had a minor, and 3% were double majoring. It

Unsurprisingly, the most popular major was MIS/IS because I, being an IS major, sent the survey out to people enrolled in MIS/IS courses and modules. I also had to combine IS and MIS, despite one being an undergraduate degree, and the other being a Graduate degree because

some of my responses made it unclear on the exact major they had. This further contributed to why IS/MIS was on top. Below is a list of the 10 most frequent majors within my dataset rounded to the nearest whole percentage:

1. MIS/IS (Lee Business School) - 16%
2. Finance (Lee Business School) - 11%
3. Psychology (College of Liberal Arts) - 10%
4. Business Management (Lee Business School) - 8%
5. Accounting (Lee Business School) - 7%
6. Computer Science (Hughes College of Engineering) - 7%
7. Mechanical Engineering (Hughes College of Engineering) - 7%
8. Pre-Nursing (School of Nursing) - 7%
9. Biological Sciences (College of Sciences) - 5%
10. Business Administration (Lee Business School) - 5%

Again these statistics fall in line with Figure 1 With the Lee Business School being the most frequently counted college.

The Process of Creating Figure 1

To create this chart, I placed the raw data in a new sheet in Excel. From there I had to combine columns listing responses for each major and minor into a single column and separate responses that listed double majors in new cells. Then I converted the column into a table so that I could organize the list of majors in alphabetical order. This allowed me to see if there were any spelling errors or problems that needed to be fixed.

One problem was that some responses listed an abbreviation of their major with others listing the full name. For example, someone would write "Graphic Design", the abbreviation, and another person would write "Graphic Design and Media", the full name. I gave responses like this with the same name to avoid redundancy and make each major's frequency accurate for the graph.

	A	B	C
1	Major	College	Frequency
2	Accounting	Lee Business School	13
3	Anthropology	College of Liberal Arts	3
4	Applied Economics & Data Intelligence	Lee Business School	2
5	Applied Health Sciences	School of Integrated Health Sciences	1
6	Architecture	College of Fine Arts	2
7	Asian & Asian American Studies	College of Liberal Arts	1
8	Athletic Training	School of Integrated Health Sciences	1
9	Biochemistry	College of Sciences	1
10	Biological Sciences	College of Sciences	10
11	Brookings Public Policy	Greenspun College of Urban Affairs	1
12	Business Administration	Lee Business School	10
13	Business Management	Lee Business School	15
14	Civil Engineering	Hughes College of Engineering	3
15	Communication Studies	Greenspun College of Urban Affairs	1
16	Comprehensive Medical Imaging	School of Integrated Health Sciences	2
17	Computer Engineering	Hughes College of Engineering	1
18	Computer Science	Hughes College of Engineering	12
19	Creative Writing	College of Liberal Arts	2
20	Criminal Justice	Greenspun College of Urban Affairs	8
21	Data Analytics	Hughes College of Engineering	1
22	Dual MBA/MIS	Lee Business School	3

I re-alphabetized the table and made a new and separate table that has a column that shows only each major once (no repeats), the college/school of each major, and the total frequency. The CountIf Function was used to refer to the first table and count the number of times a certain major appears. This formula was copied for each major and re-alphabetized, making it ready to be used in coding a stacked bar chart in R!

```r
# Install packages
install.packages("data.table")
install.packages("ggplot2")

# Load libraries
library(data.table)
library(ggplot2)

# Reads CSV file and sets it to the data variable
MajorFrequency <- fread("Major-Data.csv")

# Creates a 2D Stacked bar chart for frequency of majors by college/school
ggplot(MajorFrequency, aes(x = College, y = Frequency, fill = `Major`)) +
  geom_bar(stat = "identity") +

# Flips the X and Y axes to make the stacked bar chart horizontal
  coord_flip() +

  labs(x = "College/School",  y = "Total Frequency",  fill = "Major") +

  # Adds legend title
  guides(fill = guide_legend(title = "Major")) +

  # Theme settings to make the stacked bar chart visually organized
  theme_minimal() +

  theme(
    legend.position = "bottom",

    # Adjusts font size for axes labels, axes titles, and legend title
    plot.title = element_text(hjust = 0.5),
    axis.title = element_text(size = 12),
    legend.text = element_text(size = 10),
    legend.title = element_text(size = 12, angle = 90, vjust = 2, hjust = 0.5),
    axis.text.x = element_text(size = 10),
    axis.text.y = element_text(size = 10)
  )
```

In R, the libraries "data.table" was used to read the table I exported as a CSV file, and "ggplot2" to visualize the data. For example, I used the "geombar()"function to create the stacked bar chart initializing the x-axis with the frequency column, the y-axis with the college column, and the legend to fill the proportion of majors within the y-axis with different colors. Theme settings were used to improve readability such as the "coord_flip()" to make a horizontal stacked bar chart. Since I had a lot of legend keys, I had to adjust the size and position of aspects of the graph so that it is readable. At last, a colorful stacked bar chart was made! The code and excel file used to make Figure 2 are on my GitHub page titled “UNLV-College-Stacked-Bar-Chart.R” and “Major-Data.CSV”.

Let's take a look at more demographic data collected from the survey.

Figure 2: Frequency of Responses by Major and College/School

Population (Fall 2023)

Ethnicity	Count	%
African American/Black	2,751	**9%**
Asian/Pacific Islander	4854	**16%**
Hispanic/Latinx	10,221	**34%**
Native American/Alaska Native	92	**0%**
Middle Eastern/North African	N/A	N/A
White/Caucasian	7,864	**26%**
Unknown Race/Ethnicity	375	**1%**
Biracial/Multiracial	4,047	**14%**
Prefer Not to Say	N/A	N/A
Total		**30204**

Sample (Fall 2023)

Ethnicity	Count	%
African American/Black	29	**12%**
Asian/Pacific Islander	66	**27%**
Hispanic/Latinx	84	**35%**
Native American/Alaska Native	1	**0%**
Middle Eastern/North African	2	**1%**
White/Caucasian	21	**9%**
Other	1	**0%**
Biracial/Multiracial	32	**13%**
Prefer Not to Say	9	**4%**
Total		**245**

Figure 2 looks at demographic information related to ethnicity. The table on the left represents population data on UNLV's website for the Fall 2023 semester consisting of approximately 30,000 students. The table on the right is our sample from 245 students of the fall 2023 semester.

Please note that some modifications were made in categorizing ethnicities so there can be an accurate comparison of both datasets. For more information, visit: https://www.unlv.edu/about/facts-stats to view the population data. Each table contains the total frequency and percentage of each ethnicity. Below are the similarities and differences:

Similarities

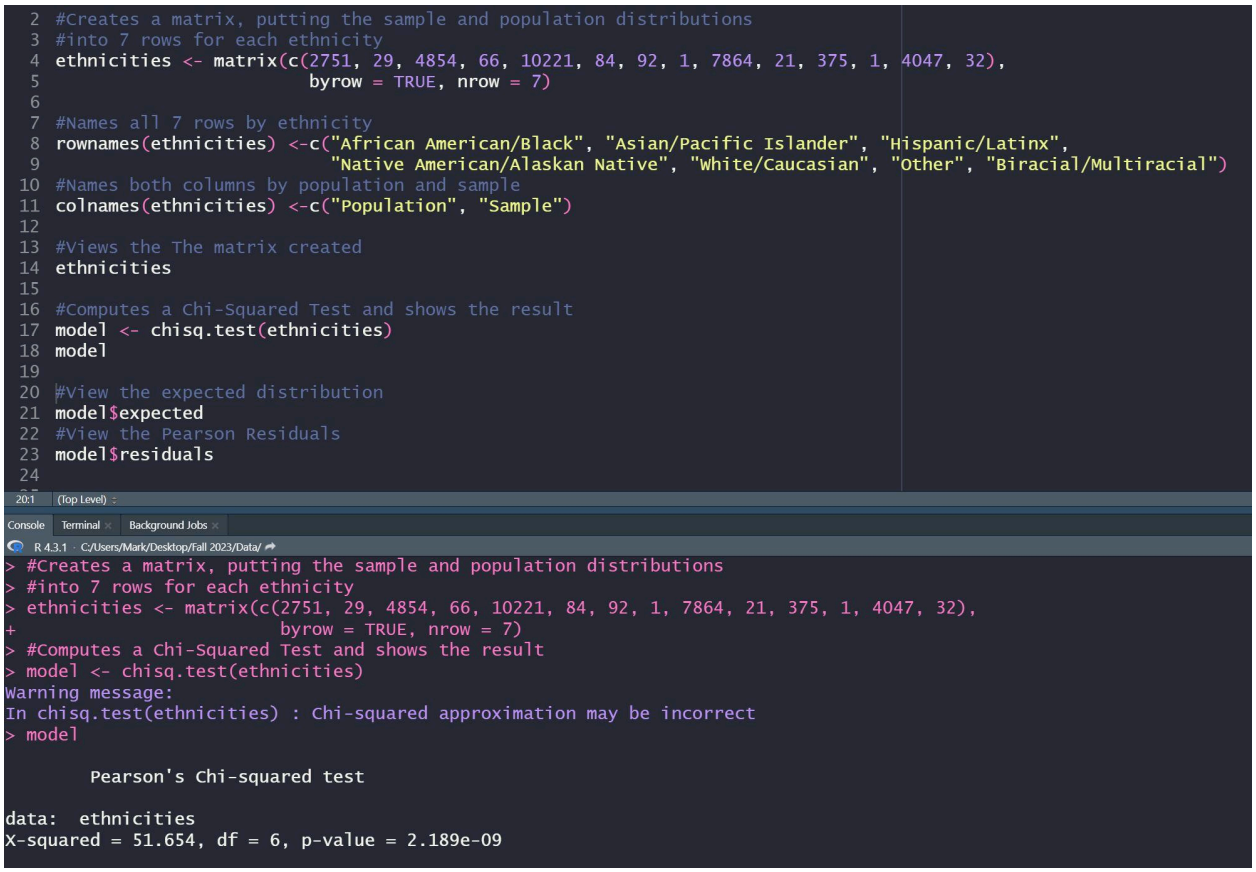
- The proportion of students that are African American/Black for the population and sample are similar (9% vs 12%)
- The percentage of students that identify as Hispanic/Latinx is also close (34% vs 35%)
- Both datasets have a lack of students who identify as being Native American/Alaskan Native. Because the percentages are rounded to the nearest whole number, they are depicted as being around 0%.

- The Biracial/Multiracial category percentages are almost identical percentage-wise in both tables (14% vs 13%)

Differences

- Our sample contained more students who identify as Asian/Pacific Islander than the population (16% vs 27%)
- The population data has way more students who are White/Caucasian than our sample (26% vs 9%)
- The population data did not contain the Middle Eastern/North African or prefer not to say Category which could make comparing both tables less precise

Seeing that our table consisted of predominantly students who identified as a minority, it can be argued that our sample is reflective of UNLV since the institution has been recognized as a diverse campus. We also see similarities in comparing it to the population. However, there is some significance as listed in the differences section and these differences could have offset the ethnicity categories in our similarities section. For these reasons, I conducted an independent chi-squared test in R. With this statistical analysis I can be able to identify whether or not my sample demographic data is similar or varies significantly from the population.



```
#Creates a matrix, putting the sample and population distributions
#into 7 rows for each ethnicity
ethnicities <- matrix(c(2751, 29, 4854, 66, 10221, 84, 92, 1, 7864, 21, 375, 1, 4047, 32),
                      byrow = TRUE, nrow = 7)

#Names all 7 rows by ethnicity
rownames(ethnicities) <-c("African American/Black", "Asian/Pacific Islander", "Hispanic/Latinx",
                          "Native American/Alaskan Native", "White/Caucasian", "Other", "Biracial/Multiracial")
#Names both columns by population and sample
colnames(ethnicities) <-c("Population", "Sample")

#Views the The matrix created
ethnicities

#Computes a Chi-Squared Test and shows the result
model <- chisq.test(ethnicities)
model

#View the expected distribution
model$expected
#View the Pearson Residuals
model$residuals

20:1  (Top Level) :

Console  Terminal  Background Jobs
R 4.3.1 · C:/Users/Mark/Desktop/Fall 2023/Data/
> #Creates a matrix, putting the sample and population distributions
> #into 7 rows for each ethnicity
> ethnicities <- matrix(c(2751, 29, 4854, 66, 10221, 84, 92, 1, 7864, 21, 375, 1, 4047, 32),
+                       byrow = TRUE, nrow = 7)
> #Computes a Chi-Squared Test and shows the result
> model <- chisq.test(ethnicities)
Warning message:
In chisq.test(ethnicities) : Chi-squared approximation may be incorrect
> model

        Pearson's Chi-squared test

data:  ethnicities
X-squared = 51.654, df = 6, p-value = 2.189e-09
```

in the code above, I first created a matrix of 2 columns and 7 rows to create the contingency table needed for the chi-squared test. I also named the rows and columns for readability and conciseness in lines 8-11. From there I set my null and alternative hypotheses:

- Null Hypothesis (H_0): The distribution of ethnicities in the sample is independent of, or does not significantly differ from, the distribution of ethnicities in the population.

- Alternative Hypothesis (H_1): The distribution of ethnicities in the sample is dependent on, or significantly differs from, the distribution of ethnicities in the population.

Next, I used the chisq.test() function to compute an independent chi-squared test. If our result is higher than the chosen significance level of 0.05, we fail to reject the null hypothesis. Otherwise, if it is lower than 0.05 we reject it in favor of the alternative hypothesis. Our p-value is 2.189e-0.9. This represents that our p-value is very close to zero and that the sample's expected and observed distributions show a statistically significant difference. Since the p-value is far below the significance level, we can strongly reject the null hypothesis. Our sample significantly differs from the population ethnicity distributions.

I also wanted to check if my result would be the same if I calculated it by hand. In Excel, I created a contingency table of my observed results to help calculate X-squared. I adopted the same degrees of freedom and significance level to find a critical value of 12.59. if X-squared is higher than the critical value, we reject the null hypothesis. If X-squared is lower, we fail to reject the null hypothesis Then I created another contingency table to calculate what the expected results should have been if there was a strong correlation. I matched the expected results I calculated by hand with the expected results in the R code in line 21 having both identical numbers.

I did the same for the values of Pearson's Residual test, obtaining the same values when I executed line 23 of the R code using the formula (Observed - Expected) / Sqrt(Expected). Unfortunately, this would not allow me to calculate X-squared. I needed to use a different residual formula to calculate it. I adopted the Chi-Square Statistic Residual formula X-sqaured= Σ(Observed - Expected)^2 / Expected and summed up all the values to get 51.654. This number far exceeds the critical value of 12.59, meaning that the observed results vary significantly from what the expected results should be. In conclusion, the statistical analysis represents that our sample of students is not representative of the population data, leading us to reject the null hypothesis.

One problem to mention is that the Chi-squared test does not compute well with values of less than 5. Since I had 2 small values, this could have affected the results. I decided to compute the test again by removing the columns associated with these numbers and got a p-value = 3.723e-10. This still falls way below the chosen significance level, meaning that it still falls in line with the previous result. Moreover, since the original calculation already shows high significance between the population and samples, it likely means that the original chi-squared test was

sufficient enough to represent the results. If you would like to view this specific R-code and Excel file yourself, please visit my GitHub page. The R File is Called “Chi-Squared-Test.R”

Figure 3: Proportion of Responses by School Year

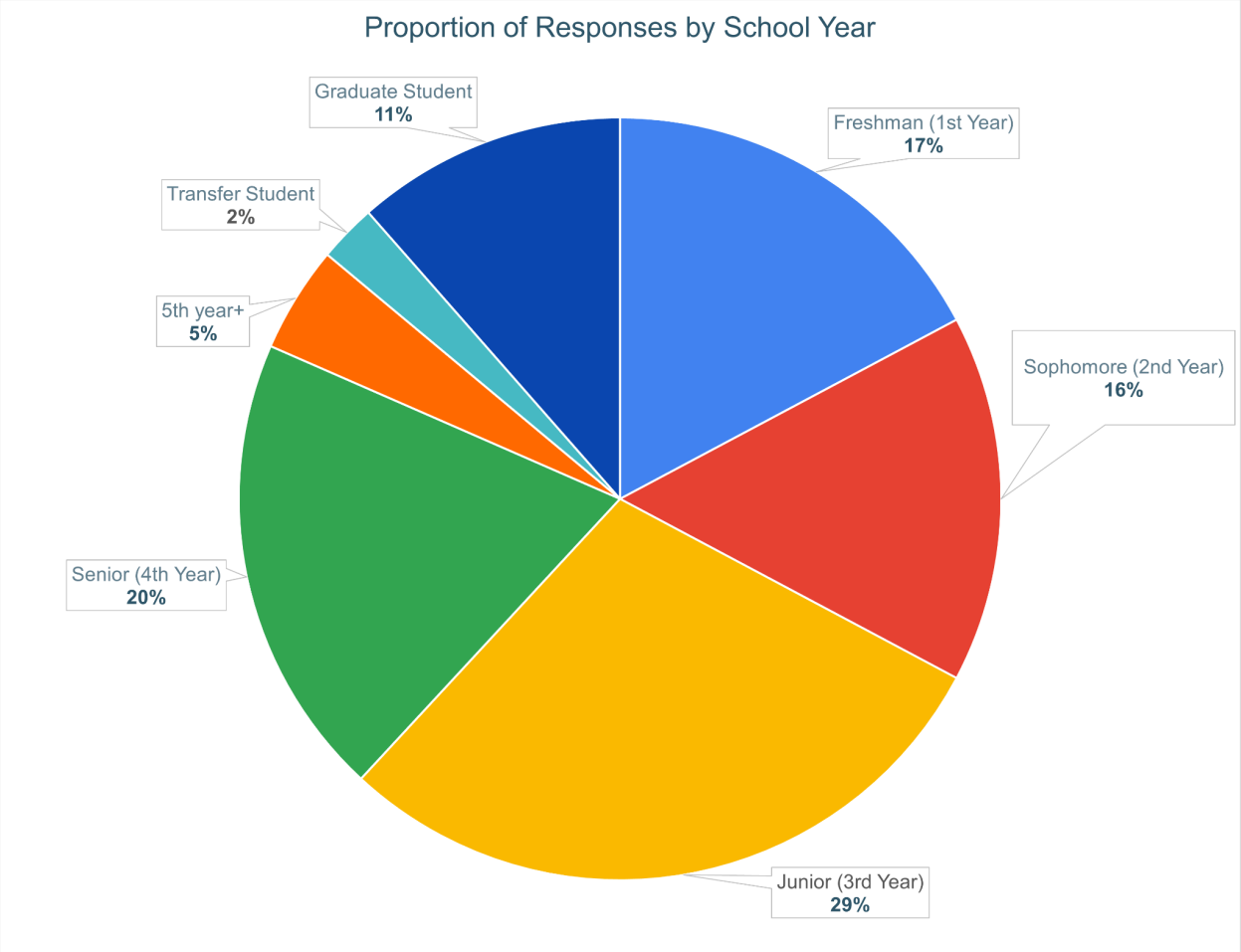


Figure 3 is the final figure related to the respondent's demographic information showing off the proportion of students by school year. Each pie shares a good proportion of freshmen to seniors and even graduate students. I felt that including their opinions was important for the scholarship app proposal because their classes are far more expensive than undergraduate classes with higher rates of interest on loans. The majority of responses were from Juniors followed by seniors likely because I was enrolled in upper-division courses. However, this appeared to not affect the amount of responses I got from other school years.

Unfortunately, I can not compare this to any UNLV data that I could find online. However, if we look back on the population data I used to create Figure 2, we can see that the ratio of graduates to undergraduates is approximately 17%. The sample shows that 11% of students are

graduates. Although a 6% difference does not sound too far off, it is significant enough to show that the sample may be unrepresentative of the population. This does not mean the data still is not irrelevant because again, there is a good proportion of students from all school years. Overall, because figures 1-3 indicate diversity in our demographics, the data can be effectively used to see the financial impacts on students and their opinions on a scholarship app.

The Process of Creating Figures 3-6

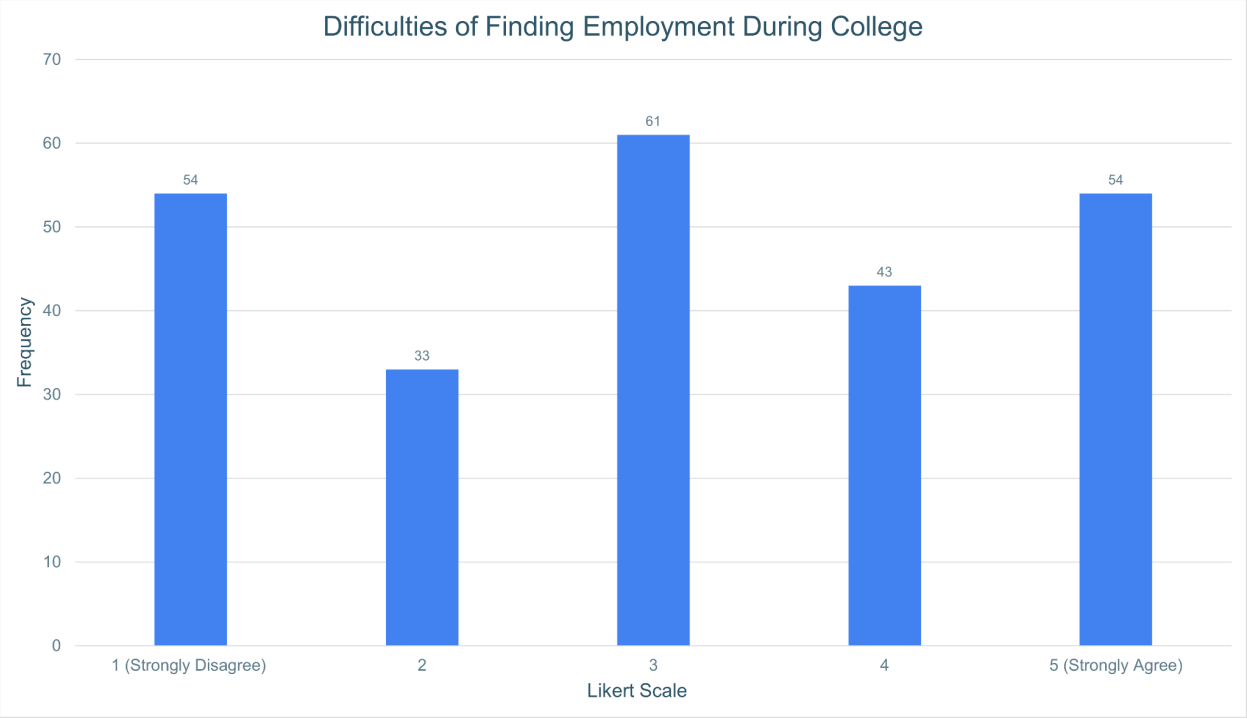
From here on out, the creation of Figure 3-6 will follow relatively the same process.

1. I grabbed the data related to the question asked in my raw sheet (for this figure grabbed data on the school year)
2. Put them in separate sheets
3. Converted the data to a table to be organized (In alphabetical order or smallest to largest number)
4. Used the COUNTIF function to count the number of times a certain number or phrase appeared for all possible answers someone can list (this is to create a table for the total frequencies of each response)
5. Create a pie chart or bar chart using the table I made in Step 4.

I could have used the graphs automatically created in Google Forms for figures 3-8. However, I wanted to see if the data I cleaned to make Figures 1 and 2, matched the graphs made in Google Forms. This helped me ensure that I did not make any errors in all the graphs I created. Plus, I wanted the Excel file to be the definitive way to see all of the data and graphs for this article. The Excel file contains the raw and cleaned data, a table of contents section, and a brief explanation of each sheet.

Let's move on to the results I got from the financial questions asked! Figures 4-6 are based on the Likert scale questions asked in the survey:

Figure 4: Difficulties of Finding Employment During College



Figures 4-6 are based on the Likert scale questions asked in the survey:

Figure 4: Difficulties of Finding Employment During College

The question presented is "Please indicate the extent to which you agree with the following statement: "During my time at college, I have faced difficulties in finding employment to support my college expenses because of class commitments and/or the lack of jobs that offer work visas for immigrants". Here is the proportion of responses ranging from 1 (very Unsatisfied) to 2 (very satisfied):

- 22% of students strongly disagreed with the statement
- 13% of students disagreed with the statement

- 25% of students were neutral
- 18% of students agreed with the statement
- 22% of students strongly agreed with the statement

Based on the responses, it appears that we have a wide range of students who felt differently about the statement indicating that there were no biases when framing the question. 40% of students overall agreed with the statement but 35% disagreed as well. Given that there is a significant percentage of agreement, it shows that there are a lot of students who would benefit from learning about scholarship opportunities. It also indicates that students may not feel that informed about scholarships going on on campus and from other institutions. We explored this next, in Figure 5.

Figure 5: Students' Knowledge of Scholarships on Campus

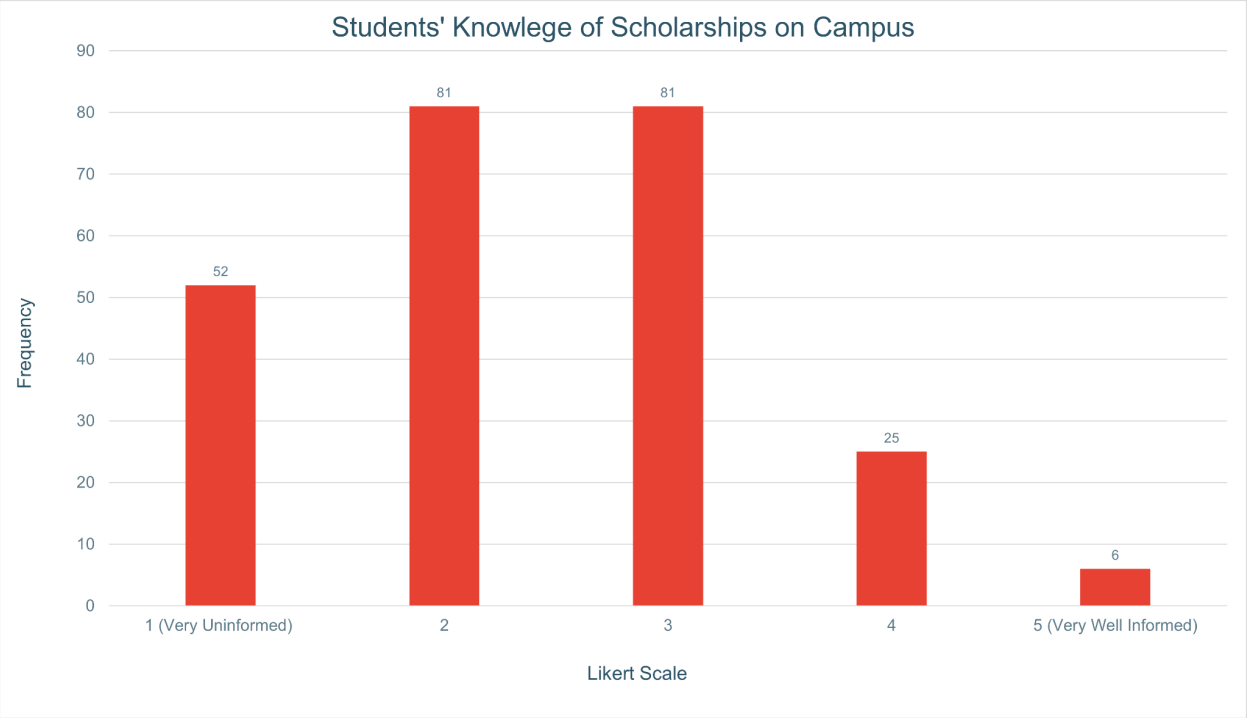


Figure 5 presents the question "To what extent do you feel informed about scholarship opportunities available on campus?". A score of 1 represents that a student feels very uninformed while a score of 5 represents that a student feels very well-informed:

- 21% of students felt very uninformed
- 33% of students felt uninformed
- 33% of students felt neutral

- 10% of students felt well informed
- 2% of students felt very well-informed

We can see that the responses lean towards more students feeling uninformed about scholarship opportunities at UNLV. From a Likert score of 5 to 1, we see a gradual increase in percentage. This is problematic because UNLV offers a wide variety of scholarships based on your major's department, GPA, and more. The Lee Business School alone awards $800,000 in scholarships to business majors. Moreover, 32% of individuals feel neutral meaning that there is a meaningful opportunity to improve the forms of communication for scholarships.

This Figure would be a very convincing graph to show to the director of Financial Aid. It shows that Current forms of scholarship mediums are not the best that they could be or that a new entire system should be implemented. As a UNLV student, the main way I hear about scholarships is through emails, my class modules on Canvas, and UNLV's websites. I personally think that these are not the best ways to get access to scholarships. The problem is that the scholarships sent may be ones that you are unqualified for and that it does not give you a one-stop shop to view all available scholarships at UNLV and beyond.

Do students feel satisfied with how they are receiving scholarships? Figure 6 provides more details on the matter.

Figure 6: Satisfaction Level with Current Forms of Scholarship Communication

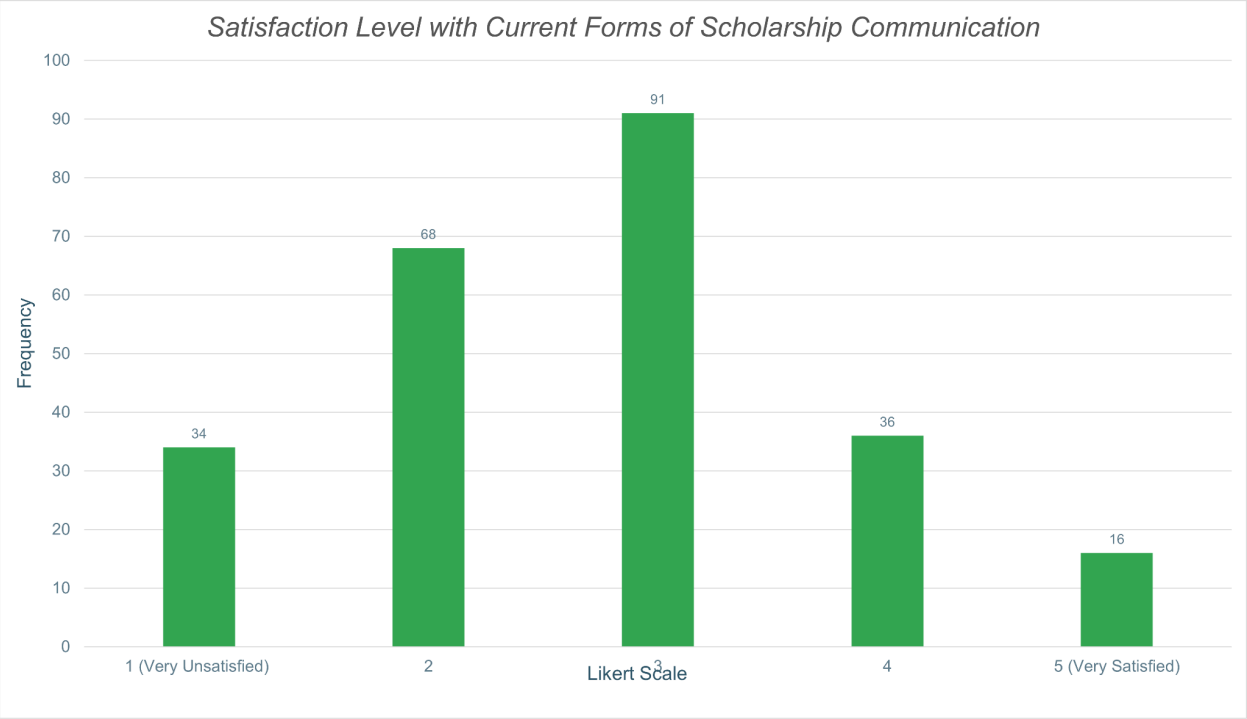


Figure 6 is based on the question that asks students how satisfied they feel with the current forms of communication at UNLV to distribute information on scholarships. Some current mediums that UNLV uses include E-mails, Websites, and announcements in Canvas through classes or enrolled student help programs. A score of 1 signifies that a student feels very unsatisfied and a score of 5 signifies that a student feels very satisfied. Below are the findings:

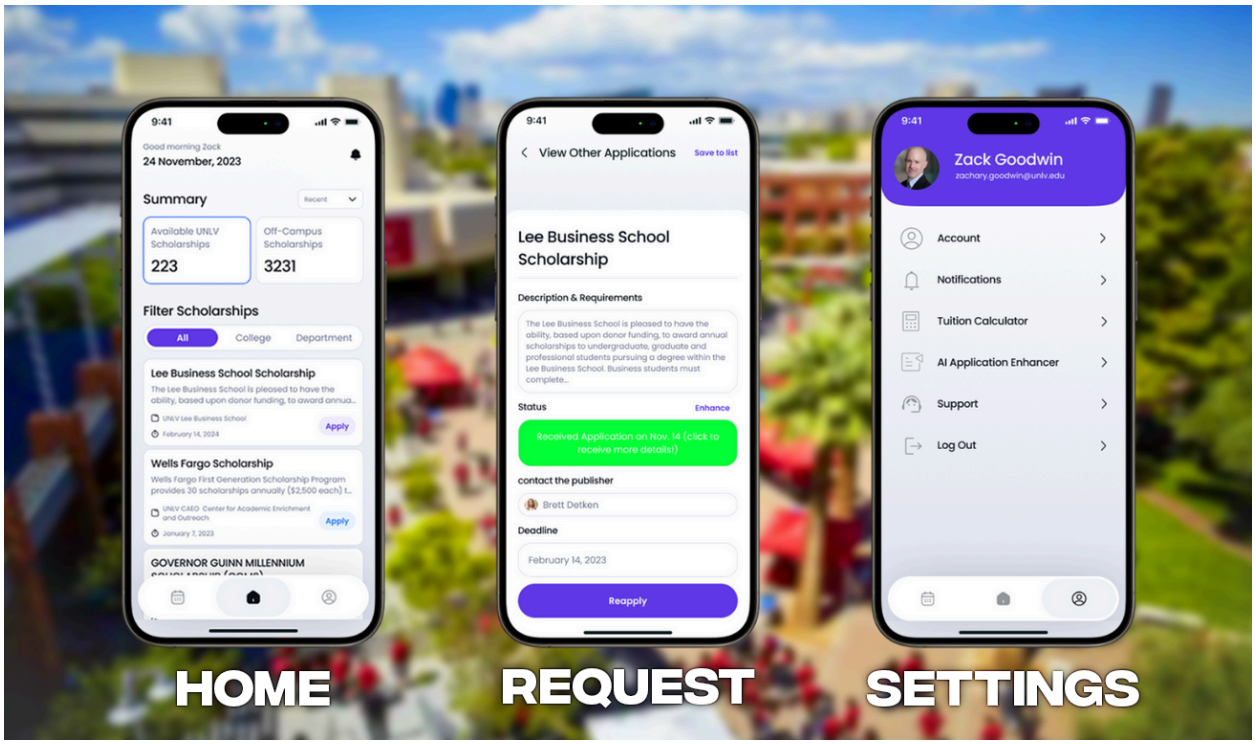
- 14% of students felt very unsatisfied
- 28% of students felt unsatisfied
- 37% of students felt neutral
- 15% of students felt satisfied
- 7% of students felt very satisfied

Once more, we see somewhat of a linear increase in responses as we go from students feeling satisfied to unsatisfied. 42% of students felt unsatisfied overall, 22% felt satisfied, and 37% felt neutral. Figure 6 shows that there certainly is a problem or room for improvement at the very least and that a scholarship App is worth exploring. Because enough students in our sample find difficulty in financing their education, are less knowledgeable on scholarship opportunities, and dislike how UNLV is distributing information on scholarships, making a scholarship app, or finding some way to improve things would be a vital objective that UNLV should strive to achieve.

Other Findings

- When asked about whether an app for UNLV and non-campus related scholarships would be convenient to find scholarships, 97% of students said yes
- approximately 72% of students in the sample are first-generation students
- 6% of students are international students
- 18% of students had to drop out of college or take a break due to financial issues
- 35% of students had to take out a loan to pay for college.

Figure 7: Prototype of Scholarship App



This is unrelated to the data analysis but I wanted to share what a scholarship app for UNLV could look like. The figure you see above was created from a template using Figma and edited in Photoshop. The Figma template made it easy to create the app design which can be accessed and accredited here: https://www.figma.com/community/file/128695844577370373

In Photoshop, I placed the menu designs on an iPhone screen to make the app look realistic for the business proposal, used a background of UNLV's campus while improving the color balance of the photo, and added text at the bottom to explain the purpose of each menu. The Scholarships listed are real scholarships that students can get at UNLV and I even incorporated the director of Financial Aid as a profile for the app for added detail. Attached below are the main 3 features of the application:

1. A home menu where you can locate all of the available scholarships you are qualified for at UNLV and outside scholarships too.

    - You can filter information by the requirements needed to be eligible, the department/college that offers it, the date, what type of scholarship (Essay, video, STEM, etc.), and more.

2. A request menu to see the status of your applied scholarships and the ability to contact the donor for more information.
    - If you are granted a scholarship, the request menu will give you further information on when you will receive the tuition.

3. A settings menu to update your account information.
    - There will be a feature that allows you to calculate the cost of your tuition for each semester, the tuition you have earned, and how much money is still needed to pay for classes.
    - I added an AI application Enhancer since UNLV has an AI chatbot named Scarlet and an AI version of the president where the students ask questions. UNLV can easily incorporate AI somehow to improve students' essays, responses to application questions, and suggestions for improving their academic profile.

Limitations

When analyzing data, especially on an important topic that revolves around students' financial struggles, it is important to discuss the limitations of my data and results to provide an objective overview and prevent any biases from forming. I discussed some of these drawbacks earlier but would like to go in-depth here. First, the data is heavily skewed towards students at the Lee Business School containing 42% of all responses. The overabundance of Lee Business School Majors such as IS/MIS is apparent, and the distribution of the survey to mostly Lee Business School classes contributed to it. There is also a lack of representation from other schools such as the College of Education and School of Public Health.

Second, from conducting an independent chi-squared test, it is revealed there is a highly significant difference between the sample and population ethnicities. Our data is likely not representative of UNLV's population.

Third, there is not enough representation of international students, and even though there are some graduate students who were surveyed, there is enough of a difference between UNLV's Fall Population and my sample (a 6% difference) to show yet again, that the data is not similar to UNLV's population. Furthermore, approximately 78% of students said they did not have to take a break or drop out of college due to financial issues. For the Business Proposal, this statistic would not be persuasive in showing that students may be struggling to pay for college or that a scholarship is necessary.

Fourth, the data does not account for and distinguish between students who have scholarships and those who don't. Furthermore, I could have specified what type of scholarships the students

had (e.g. FAFSA, Millenium Scholarship, etc). This could have been an important statistic to uncover by seeing how many students have scholarships and could reveal trends in scholarship accessibility and distribution. It could be likely that students who already have tuition paid for will be less likely to be informed about scholarships since they do not need college funding. It would have also been compelling to see if both types of students shared the same opinions on the Likert-scaled questions asked.

Conclusion & What I Learned

In this project, I navigated every step of the data analytics process from asking financial and scholarship questions to UNLV students, to processing the data from dirty to clean by organizing and standardizing entries into distinct categories (e.g. giving majors the same name and classifying them by their respected school), and by visualizing the data with various figures to interpret results. What I found is that a lot of students seem to feel uninformed and/or unsatisfied with how scholarship information is being distributed. Although my data appears to be significantly unrepresentative of the UNLV population, the fact that I still have a wide variety of responses from students of different majors, school years, & and ethnicities makes me believe that my data has some meaning in learning about the financial landscape of UNLV. A scholarship App or some dynamic change can offer UNLV a gateway to fixing these issues.

Something interesting to note is that no university in the nation has its very own scholarship app. If UNLV can be the first institution to do such a thing, it would have a competitive advantage, help its diverse population containing lots of first-generation students as depicted in this article with paying for tuition, and bring in even more students from all walks of life to better their lives in receiving higher education. It may be difficult to implement, and scholarship apps already developed such as Scholly may make this unnecessary, but having some way to see scholarships on campus in a personalized way would make things much more convenient and effective. Perhaps, universities can work with existing scholarship apps or companies to integrate their existing scholarship databases along with campus resources to have the best of both worlds.

While conducting my Data Analysis, I had to apply critical thinking in how I cleaned and represented my data to avoid unfair/biased conclusions. I also had to discover how I would go about problems. For example, what do I do if a major in my data is a part of multiple schools? Do I count it for both schools or will doing that skew the graph in a certain direction? For someone who identified as biracial/multiracial, do I put their selected ethnicities into each category, or do I count that response only once by putting it in an entirely separate category? What Statistical Analysis is best to conduct to compare my population and sample? If I go with a chi-squared test, how will I account for values that make the final calculation less reliable? Is it okay to combine students who feel unsatisfied and very unsatisfied into one percentage? These things made me want to be precise and double-check everything I have done to be sure that my calculations and presentation of my findings are objective.

By doing this analysis, I got to apply what I learned in my Information Systems classes such as Excel functions, using ggplot2 in R, and calculating statistics in the real world in a fun yet

impactful way. It really shows me how there are stories behind every figure, cell, and column and that it is my responsibility as a data analyst to tell that story truthfully in the best way I can. I cannot thank everyone enough for taking part in this survey, and I highly appreciate my group and my professors who gave me the opportunity and skills to conduct this analysis.

If you would like to view the data for yourself, I have attached the Excel files and R Codes for everything I discussed below.

References

Access all figures, Excel. And R files:

https://github.com/Robles752/Scholarship-App-Survey-Data

Access Figma Template: https://www.figma.com/community/file/128695844577370373

Colleges and schools. (2018, February 16). University of Nevada, Las Vegas.

https://www.unlv.edu/academics/colleges-schools

Craft, S. (2021, October 4). *College dropout Rates [2023] - US statistics and data*.

ThinkImpact.com. https://www.thinkimpact.com/college-dropout-rates/

Degrees Directory - All degrees. (2023, January 27). University of Nevada, Las Vegas.

https://www.unlv.edu/academics/degrees

Facts and stats. (2024, February 1). University of Nevada, Las Vegas.

https://www.unlv.edu/about/facts-stats

Thymianos, K., Vakil, E., Cheche, O. K., Saladino, C., Brown, W. E. (2021). Student Debt in the Mountain West, Class of 2019. Higher Education Fact Sheet No. 14 1-3.