

Spring 2020

Preparing for the Future: The Effects of Financial Literacy on Financial Planning for Young Professionals

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Preparing for the Future: The Effects of Financial Literacy on Financial Planning for Young Professionals

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PREPARING FOR THE FUTURE: THE EFFECTS OF FINANCIAL LITERACY ON
FINANCIAL PLANNING FOR YOUNG PROFESSIONALS

By:

Tanay Singh

Submitted in Partial Fulfillment
of the Requirements for
Graduation with Honors from the
South Carolina Honors College

May 2020

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Thesis Summary:

Purpose – Many people between the age of 20 and 34 have not considered planning financially for the future in any significant capacity and in doing so, they limit their potential savings. The purpose of this study is to examine what financial expectations are for people in the early stages of their career and determine if improving financial literacy and revealing financial realities helps to produce more accurate or realistic expectations. Ultimately, the goal is to better prepare participants in the study for the working world and increased responsibilities outside of the college/university environment by getting them to start thinking about financial planning topics.

Methods – Participants took an initial survey that gathers their current financial information as well as their financial expectations and perceptions. This information was then used to generate individual financial plans using Northwestern Mutual®'s financial planning software. After sending each participant who completed the survey a financial plan along with a two-page document explaining common financial planning topics, participants took a second survey that gathered information on whether their perceptions have changed. The information from the surveys and financial plans was then analyzed through SAS® Studio software utilizing non-parametric statistical tests.

Results – The data showed that before students were exposed to the financial literature, there were significant differences at some level (either short term or long term) for the gender and educational background subgroups, but not the economic background subgroup. Additionally, on an individual level of the strata of the subgroups, subjects seemed to underestimate the amounts they needed for both the retirement funds and emergency funds with the following differences being significant underestimations: retirement funds for female subjects, emergency funds for

female subjects, retirement funds for subjects with BRM¹ (Business related majors and minors), emergency funds for subjects with NBRM (Non-Business related majors and minors), and retirement funds for subjects with HIB (High-income backgrounds). After they were exposed to the financial literature, the strata within the subgroups were no longer significantly different on any level which indicates that being exposed to similar financial literature may make people's expectations both more realistic and more uniform. Each individual stratum difference was also either closer to 0 or became positive (or both) which indicated that subjects' expectations were more realistic, and they expected they needed more than they previously did.

The study indicated that financial literature can significantly change one's perceptions about financial services and potentially spur them to think more about financial topics. There was also a drastic drop in financial confidence regarding retirement goals after subjects reviewed financial literature. This indicates that the younger demographic may not have a realistic grasp of what they need for retirement and that revealing what they need make them realize how much planning goes in to reaching their financial goals.

Implications – The findings may mean that financial literature may make the overall population reach a similar level of financial literacy with that level being higher than it was before the financial literature was introduced. This could have significant implications regarding how to mitigate issues such as the gender and wage gap and show that more information may lead to more educated decisions being made regarding financial management. It may also support the concept of introducing more financial information at a younger age so that the effects of financial literacy can be seen earlier rather than later.

¹ Business Related Majors and Minors are defined as all majors and minors in the Darla Moore School of Business at the University of South Carolina as of Spring 2020.

Introduction:

Personal Motivation:

After working in several financial industries, especially the banking industry where I was able to see firsthand the state of the financial situations of young people in the Columbia, SC area, I realized just how unprepared many young professionals are in planning for their future. Many people in the 18-25 age range had savings well below the standard practice of six-month emergency savings. As well as that, I constantly saw articles on how people don't have enough savings or efficient financial management which can lead to people not being able to live the lives they want to. For this reason, I secured an internship with Northwestern Mutual® where I could observe the financial planning practices of people in various income ranges and backgrounds. Through the position and the company's assistance on my study, I could take this interest in financial planning and receive more information on the field so that I could help my peers make the most of their finances. I've always been involved in community service and other service-oriented activities, so this seemed like the perfect opportunity to bring my educational and personal motivations together. During the final stages of the study, the significance and potential implications seemed even more prominent in the wake of the COVID-19 crisis where many people who were not financially prepared experienced hardships in maintaining their standard of living. By providing this sort of information, I hoped to help provide documentation on how financial literacy and proper planning could mitigate the effects of events that are outside of one's control. I also hoped that showing the effects of a study like this could tangibly display how exposure to this sort of information can get people to start thinking about financial topics they were previously unaware of.

Overview:

Young professionals make up more than one-fourth of the existing workforce, and that percentage is increasingly steadily as many baby boomers are beginning to reach retirement age. In essence, they are the future of the professional workforce. They are more likely to be college graduates, more likely to be racially and ethnically diverse, and more likely to work in growing industries. However, they also face a plethora of challenges for people just starting their careers and beginning to develop their future goals. Although there are a multitude of jobs available, the rate of young professionals entering the workforce outpaces the rate of entry-level jobs being made available. For the positions that are available, young professionals are often either overqualified and not making the best use of their experience and potential or are underqualified and can't take on the higher-level positions that are being vacated by an aging population. This conundrum coupled with higher costs of living, difficulty in budgeting, and crippling student debt (among various other issues) results in a generation that is often overwhelmed financially (Palmer 2008, 51-52).

With so many issues facing them, young professionals often have not considered planning for the future or how they should distribute their wealth to reach their financial goals (Concepcion 2016, 24-25). By the time they do consider these topics, young professionals between the age of 20 and 34 fail to benefit from tens to hundreds of thousands of dollars in potential savings. This study aims to explore the impact of financial planning for people in various backgrounds and to improve awareness of available financial services optimized to maximize future savings. The main purpose is to show the benefits of financial planning at a young age and the effects that financial literacy regarding these planning topics can have on reaching an individual's future goals.

From previous studies conducted on similar topics, the people involved in the study are expected to have a more realistic outlook on their financial future during the second survey. There are three subgroups of the population that seek to be explored: gender, economic background and educational background. For the subgroups analyzed, those from low-income backgrounds (hereby referred to as LIB), women, and business-related majors or minors (hereby referred to as BRM) are expected to be those that end up with financial expectations (after the second survey) that most closely match the model. This is because research indicates that women and those with financially unstable backgrounds tend to be more conservative in their financial outlook and thus tend to save in a more efficient manner (Hanna and Lindamood 2010). Previous studies have also shown that those with backgrounds in financial fields tend to have a better understanding of planning for the future. These three subgroups would likely have the closest financial plan to the model in both the first and second survey. Accordingly, those from a high-income background (hereby referred to as HIB), men, and non-business-related majors or minors (hereby referred to as NBRM) are expected to have the biggest difference between financial expectations in the first survey and the second survey. In essence, they have the most to learn because of their specific backgrounds, so I predict that they are also the ones that will change their viewpoints the most once they have more information available to them.

A study such as this one would show if there is a tangible benefit of increasing financial literacy from a young age. In particular, it could show how different backgrounds affect the way people save and whether different subgroups are more receptive to change when viewing data than other subgroups. This study delves a little deeper than other studies in that it observes financial perceptions closer to the root of their development rather than farther along in the process. In other words, it seeks to see to what degree explanatory variables affect financial planning in the

initial stages of financial development as well as the degree that age factors into people's perceptions about their financial future. Additionally, it attempts to see if some demographics may be more unprepared than others. By analyzing whether gender, economic background, and educational background play a significant factor in how accurate financial expectations are, it may give other researchers an idea of where to focus their efforts on increasing financial literacy. This is especially important in the fields of financial advising and investments as professionals in those fields need to have a better understanding of the growing client base of young professionals. By understanding how people from different backgrounds, different financial expectations, and different perceptions may think, financial planners can create plans that are more efficiently tailored towards an individual's goals, especially since financial planning is such a personalized process.

Note on the Data:

Since the information in this study deals with an individual's financial information and is therefore sensitive data, the data set provided is a heavily edited version of the raw responses from the surveys. For example, much of the information such as account balances used to create the financial plans is not included in order to ensure confidentiality. Although this may limit future reproduction of the study to an extent, it was a necessary precaution to retain the private information of those involved in the study. There were many non-responses to questions as well as invalid responses (such as a statement when a numerical value was requested) that were edited for readability and proper analysis. Any non-responses or invalid responses were replaced with a "." in the dataset.

Method:

In order to research the effects that knowledge of financial options has on young adults, surveys were constructed to determine if perceptions change after people are made aware of the reality of their financial future versus their expectations of what they need to do to reach their financial goals. Research seems to indicate that when people have more knowledge about financial planning options and what they need to do to save appropriately, they will adjust their expectations to be more realistic and in turn be better prepared to reach their financial goals (Orman 2017, 51-60). This study will assess whether people from different backgrounds have different perceptions about their financial future and to what extent targeted financial education can productively alter those perceptions.

This study involved current (as of Spring 2020) University of South Carolina undergraduate students. Surveys were released through Qualtrics XM Survey Software by two professors at the university, Dr. Eric A. Powers and Dr. Neil Levens. They respectively taught classes in the Darla Moore School of Business and the College of Arts and Sciences. The participants (hereby referred to as subjects for uniformity with the datasets and to further ensure confidentiality) completed an initial survey that recorded their financial information and financial expectations. This information was then entered into Northwestern Mutual®'s financial planning software to generate individualized financial plans for each subject. These plans were sent to each subject through contact information provided in the first survey along with a two-page document explaining common financial topics in the planning industry. After subjects were given some time to review the materials, a second survey was administered that gathered their financial expectations and perceptions after being exposed to the financial information.

Participants:

For a study of this caliber, a large sample size was preferred. For this reason, Dr. Powers and Dr. Levens were chosen to release the surveys since they taught classes with large seating capacities. Since they also taught in different departments, they were chosen in order to get a diverse sample (at least in terms of field of study) for the surveys. As an incentive to ensure a high participation rate, extra credit was offered by the professors to students who completed the surveys. Subjects were assigned a number depending on when they attempted the first survey, and through this process 276 subjects were obtained. However, due to incomplete responses and duplicate responses, only 200 subjects could be considered “valid” for any level of analysis. As the study is geared towards young professionals, the ages of participants ranged from 18-24 with one subject aged 39. There were 90 males who comprised 45% of the usable dataset, 108 women who comprised 54% of the usable dataset and two subjects that chose the option “Prefer not to answer” who comprised 1% of the usable dataset. Subjects came from a variety of ethnic and economic backgrounds as well. There were subjects from each class level (Freshman, Sophomore, Junior, and Senior) as well as a subject that had attended college for 6+ years and a subject that attended college for 22+ years. Subjects came from a variety of educational majors and minors ranging from Accounting to Psychology. Testing on these subjects began in January 2020 and continued through April 2020. The details of the subject information can be found in the attached documents.

Survey 1:

The first survey was released on January 30, 2020 and closed on March 23, 2020 (with allowances for partially completed responses to be finished). It consisted of 30 questions focused on gathering information in three categories: Demographic Information, Financial Planning Information, and Financial Expectations Information. The Demographic Information category gathered data that would be used to subset the data in analysis as well as provide some of the foundation for the financial plan. The Financial Planning Information category collected information on the bulk of the data used to create the financial plan while the Financial Expectations Information Category gathered data that would be used for significance comparison. The questions (along with predetermined answer choices if applicable) are listed below and separated according to category.

Demographic Information

1. What is your first name?
2. What is your last name?
3. What is your email?
4. What is/are your majors?
5. What is/are your minors?
6. What year of school are you in?
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
 - e. Other (Please Specify)

7. What gender do you identify as?
 - a. Male
 - b. Female
 - c. Prefer not to answer
 - d. Other (Please Specify)
8. How old are you?
9. What is your ethnicity? (Please select all that apply)
 - a. American Indian or Alaskan Native
 - b. Asian or Pacific Islander
 - c. Black or African American
 - d. Hispanic or Latino
 - e. White or Caucasian
 - f. Prefer not to answer
 - g. Other (Please Specify)
10. Where do you plan on living after graduation? (Best guess is okay)
 - a. Northeast (Maine, Massachusetts, Rhode Island, Connecticut, New Hampshire, Vermont, New York, Pennsylvania, New Jersey, Delaware, Maryland)
 - b. Southeast (West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Arkansas, Louisiana, Florida)
 - c. Midwest (Ohio, Indiana, Michigan, Illinois, Missouri, Wisconsin, Minnesota, Iowa, Kansas, Nebraska, South Dakota, North Dakota)
 - d. Southwest (Texas, Oklahoma, New Mexico, Arizona)

- e. West (Colorado, Wyoming, Montana, Idaho, Washington, Oregon, Utah, Nevada, California, Alaska, Hawaii)
- f. Undecided
- g. Outside of US (Please Specify)

11. What is your family's household income?

- a. What is your family's household income?
- b. Less than \$20,000
- c. \$20,000-\$44,999
- d. \$45,000-\$149,999
- e. \$150,000-\$199,999
- f. Greater than \$200,000

Financial Planning Information

12. What do you expect to be the starting salary of your first job?

- a. \$0 - \$20,000
- b. \$20,000 - \$40,000
- c. \$40,000 - \$60,000
- d. \$60,000 - \$80,000
- e. \$80,000-\$100,000
- f. \$100,000+

13. What is the total amount of assets you have? Please list amount in text box.

- a. Checking account
- b. Savings account
- c. Investing account

14. How much do you expect to add to these accounts each year?
 - a. Checking Account
 - b. Savings Account
15. What types of debt do you have? Please list amount in text box.
 - a. Credit Card Debt
 - b. Student Loan Debt
 - c. Other Loan
16. Which of the following types of insurance do you plan to purchase?
 - a. Whole Life Insurance
 - b. Term Life Insurance
 - c. Long-Term Disability Insurance
17. What do you expect your total expenses per year to be in your second year of employment?
18. How much annual disposable income do you expect to have (after taxes and expenses) in your second year of employment?
19. How much do you believe you must have in a six-month emergency fund?
20. What percentage of income would you put in an employer-sponsored retirement plan (Specifically a 401(k))?
21. What percentage of income would you put in an individual retirement plan (Specifically a Roth IRA)?
22. At what age do you plan to retire?
23. How long do you think your retirement savings will last?
 - a. 0-10 years

- b. 10-15 years
 - c. 15-20 years
 - d. 20-25 years
 - e. More than 25 years
24. How large of a retirement fund do you believe you will need to accumulate to retire for those years?

Financial Expectations Information

25. How confident do you feel about your knowledge about financial topics (i.e. financial planning, insurance, investments, taxes, etc.)
26. What do you consider your level of risk?
27. How likely do you think you are to reach your goals for retirement?
28. Investments can go up or down in value. By how much could the total value of all your investments go down before you would begin to feel uncomfortable?
- a. Any fall would make me uncomfortable
 - b. 10%
 - c. 20%
 - d. 33%
 - e. 50%
 - f. More than 50%
29. Which of the following portfolios would you be most likely to choose?
- a. Portfolio A: Earns a 5% return or a 0% loss
 - b. Portfolio B: Earns a 15% return or a 5% loss
 - c. Portfolio C: Earns a 25% return or a 10% loss

- d. Portfolio D: Earns a 35% return or a 15% loss
 - e. Portfolio E: Earns a 45% return or a 20% loss
30. Assume you just won a million dollars in the lottery. Would you take a lump sum right now for \$1 million and pay the government \$350,000 (35% tax rate), or would you prefer \$75,000 per year for ten years tax free?
- a. \$1 million lump sum minus \$350,000 in taxes
 - b. \$75,000 per year for ten years tax-free

After receiving and reviewing this survey, there were 276 attempts with 200 “valid” responses that would be usable for analysis. Beside the incomplete responses, there were several duplicate responses for subjects. If answer choices were not drastically different, the most complete or the oldest response was analyzed (in that order). Subject 22 and Subject 223 were omitted entirely since their responses were drastically different. Two issues were noted during response collection during the survey. Since every response was not given a “required” parameter, several questions were left blank in subjects responses, but the survey was still marked as complete. As well as that, while reviewing the answers provided by subjects, an issue was determined with the phrasing and potential answer choices for questions. When the survey was issued, it was released with the options to put text as well as numerical input. This led to several questions that required a numerical input for analysis such as, “24. How large of a retirement fund do you believe you will need to accumulate to retire for those years?” being answered with a response like, “a large amount.” It was made clear that either the questions needed to specify the input type or the survey software itself would need to restrict the input type to get usable responses. To attempt to remedy that discrepancy, emails were sent to the subjects who answered in such a way to ask for further clarification. Due to time constraints, the survey could not be reissued to get appropriate

responses, but several subjects responded with clarifications on their previous responses and the dataset was updated accordingly. For those subjects who did not submit a clarification, their input was replaced with a “.” in the dataset so that the rest of their information could still be utilized. Since the discrepancy was noted during the survey response collection process and over 100 responses had already been submitted, the survey was not adjusted mid-process to ensure that the previously submitted responses were not biased. The second survey was adjusted accordingly to require every question to be answered and the input type was noted beforehand. The responses themselves were labelled according to level of completeness. A “no fill” label meant the survey was completed sufficiently. A “yellow” fill label meant that the survey was completed with sufficient information to generate a financial plan but was missing some of the data needed for analysis. A “red” fill label meant that the survey was completed with insufficient information to generate a financial plan. A “purple” fill was added later for responses that had enough information to generate a financial plan but were overlooked due to the COVID-19 crisis limiting data collection and financial plan generation.

Financial Plan:

The second phase of the study was the generation of financial plans for everyone that completed the first survey with sufficient responses. Through my internship with Northwestern Mutual®, I was given access to financial planning tools that could be used to construct a draft plan given input. Initially, several responses from the first survey were intended to establish a risk profile for the individual so that the plan could match the risk profile in its modelling, but due to my restriction as an intern I wasn't able to access that portion of the financial planning software. It required the possession of financial licenses that I hadn't acquired yet.

Financial planning is an incredibly individualized process, and the sheer amount of data needed to do a completely accurate one would require far more than the 30 questions in the first survey. Therefore, to create the financial plans, many assumptions had to be made. These assumptions are listed below.

Assumptions:

- Good credit score (≥ 680)
- Non-smoker
- No partner, no kids
- Rent based on average rent price of intended living region (Southeast = \$826.92, West = \$1026.91, Northeast = \$1369.73, Midwest = \$748.67, Southwest = \$768.75, Undecided = \$1025, Europe = \$1411.59, Indonesia = \$218.85, China Guangzhao = \$443.81)
- Income is ceiling of answer choice provided on survey (i.e. if subject selected an expected income of "\$40,000-\$60,000" the plan was generated as if their income was

\$60,000. For users that provided the choice “\$100,000+” the plan was generated with an income of \$120,000)

- Take home frequency of income is biweekly (every two weeks)
- No other income outside of what was listed on the survey and no tax-allowances
- No pre-paycheck benefits
- Employer 401k match is 100% up to 3% of income
- If funds were added to a Roth IRA, they were added monthly
- Student loan debt assumption: Federal standard term length of 15 years with an annual interest rate of 6%
- * Subjects had at least \$1 in assets or liabilities
- * Long-term disability insurance provided 75% of income as a benefit with a monthly fee of $(\text{income} * .01) / 12$
- * Some form of life insurance required
- Whole life insurance of \$100,000 with a monthly fee of \$30
- Term life insurance of \$100,000 with a monthly fee of \$15
- Standard discretionary expenses of \$1000 per month
- Expenses in retirement are the same as expenses in the present
- Maximum age of retirement is 85

* The financial planning survey required long-term disability insurance and life insurance to be included in the plan. Subjects that did not select those choices on the survey had long-term disability insurance and whole life insurance recommended to them based on the calculations/standards above. The software also required at least \$1 in assets or liabilities to run

the plan, so if a subject hadn't included any amounts in their checking accounts, savings accounts, investing accounts, credit card debts, student loan debts, or other loan debts, an amount of \$1 was entered into a checking account since it wouldn't significantly affect the financial plan modelling.

Several of these assumptions would likely not hold in real life. For example, many people plan to start a family, most, if not all, jobs offer pre-paycheck benefits, discretionary expenses are often higher than \$1000 depending on residency, there are numerous fixed expenses outside of just rent and financial security, etc. As well as that, several assumptions are invalid on a person to person basis. Life insurance is recommended based on someone's needs such as providing for their family or paying off a property in the event of a loss of income; there is no "required" amount of life insurance to have. Individuals have varying degrees of income and fixed expenses such as rent that could differ depending on where they are located. However, with the level of complexity that these additional factors bring, it was not feasible to gather all that additional data for the scope of this study. Besides that, these plans are intended to give subjects a rough approximation of what they would need to do financially based on those conditions. It was stated multiple times that this plan has numerous assumptions and is likely an underestimation of what people would actually need. It was also recommended that subjects go see a full-time financial advisor to generate a plan that's more accurate to them since, as stated earlier, as an intern I couldn't provide the full suite of financial planning capabilities.

The financial planning software itself also makes a lot of assumptions in its modelling for information that was not provided. It used an assumed rate of growth of 5.46% for retirement accounts (very conservative) and an assumed rate of growth of 1.25% for accounts like checking accounts. It also used an assumed rate of 15% interest for credit cards that is on the lower end of

the scale. Through the software there are options to input rates specific to an individual, but as stated previously some accommodations had to be made due to the scope of the study. There were numerous other assumptions not visible to the user that was used in calculations of the model projections.

Initially, two plans were to be made for each subject that sufficiently completed the survey: one using the lower end of their expected income range out of college and one using the upper end of their expected income range. Again, only the upper end plan was created because of time constraints due to the impact of COVID-19. Since the purpose of the financial plan was to show respondents a rough estimate of their financial needs, it was deemed sufficient to use only the upper end since the amounts projected were possibly an underestimation.

Additionally, several subjects had to have adjustments made to their financial plans for the plans to be created. They either had too unrealistic expectations in how they wanted to save, or the costs for their respective incomes were too high for an efficient plan to be generated. As a result, modifications had to be made to those plans to account for that. The subjects whose plans were affected are listed below along with explanations and reasonings for why their plans were adjusted. Adjustments were commonly needed to be made for subjects who listed an income of “\$0-\$20,000.” Although plans were still made for these subjects, they were ultimately excluded from the study since some of their changes were too unrealistic (such as monthly discretionary costs of \$250) which led to the overall sample being 187 eligible subjects.

- Subject 13: Brokerage account caused debt financing because of tax implications.
Account was excluded in order to generate the plan.

- Subject 39: Debt financing caused due to costs. Discretionary spending was reduced to \$750 from \$1000 for the plan to be generated.
- Subject 47: Debt financing caused due to costs. Discretionary spending was reduced to \$750 from \$1000 for the plan to be generated.
- Subject 58: Debt financing caused due to costs. Discretionary spending was reduced to \$250 from \$1000 for the plan to be generated.
- Subject 66: Debt financing caused due to costs. Discretionary spending was reduced to \$250 from \$1000 for the plan to be generated.
- Subject 109: Debt financing caused due to costs. Discretionary spending was reduced to \$250 from \$1000 and rent was adjusted to \$826.92 per month for the plan to be generated.
- Subject 195: Brokerage account caused debt financing because of tax implications. Account was excluded in order to generate the plan.
- Subject 199: Debt financing caused due to costs. Discretionary spending was reduced to \$250 from \$1000 for the plan to be generated.
- Subject 209: Debt financing caused due to costs. Discretionary spending was reduced to \$250 from \$1000 and rent was adjusted to \$826.92 per month for the plan to be generated.
- Subject 223: Debt financing caused due to costs. Discretionary spending was reduced to \$250 from \$1000 and rent was adjusted to \$826.92 per month for the plan to be generated. Savings account annual contribution was also reduced to 0 and retirement age was changed to 65.

- Subject 228: Debt financing caused due to costs. Discretionary spending was reduced to \$250 from \$1000 and rent was adjusted to \$826.92 per month for the plan to be generated.
- Subject 251: Debt financing caused due to costs. Discretionary spending was reduced to \$250 from \$1000 for the plan to be generated.

The primary values used in the study for analysis were the total retirement fund and total six-month emergency fund produced by the plans. There are many more datapoints in each financial plan that could be used, but these two datapoints were chosen since they can be seen as representative of short-term financial planning (emergency fund) and long-term financial planning (retirement fund). This way, the effect of explanatory factors like gender, economic background, and educational background could also be seen on a scale of time.

Two-Pager:

This document was produced in order to provide more information on financial topics in general. Many responses by subjects from the first survey indicated that even if they wanted to provide an answer, they didn't feel comfortable doing so since they didn't know enough to answer adequately. The two-pager aimed to combat that by explaining the difference between different financial planning mediums as well as providing information that may be relevant for subjects such as the average income for a college student. The intent of this piece of information was to improve subjects' financial literacy before making their final decisions on the second survey and to help accomplish the study's goal of making subjects more financially aware of options they had available to them. The two-pager is listed on the following page in the same format as it was distributed to students.

Following the creation of the financial plans and two-pager, each subject for whom a financial plan was created was sent an email with their respective financial plan and the two-pager. They were given several days to review it before the second survey was released.

Financial Planning Information:

For those of you who don't know too much about financial planning, retirement accounts, savings, etc. here is some information to improve your financial literacy! Please note that these are just the basics, financial planning is incredibly complex, and it would be incredibly beneficial to investigate these things in more detail.

Cost of Living:

According to the U.S. Census Bureau, this is how income levels are classified

Household Income Range	Millions of Households	% of Total	Comments
Less than \$20,000	19.7	15%	Below or near poverty level
\$20,000 - \$44,999	28.7	23%	Low income
\$45,000 - \$139,999	57.7	45%	Middle class
\$140,000 - \$149,999	2.6	2%	Upper middle class
\$150,000 - \$199,999	9.0	7%	High income
\$200,000+	9.9	8%	Highest tax brackets
TOTAL	127.5	100%	

The average rent for a 1-bedroom apartment (as of 2018) in the United States is \$1025.

The states with the highest average rent are on the coasts (or in the Pacific) with the highest rents being in Washington, D.C. with an average rent of \$2,358, Massachusetts at \$2,139, Rhode Island at \$1,732, Hawaii at \$1,676, and New York at \$1,633.

The states with the lowest average rent are in the Plains or Southwest with the lowest rents being in South Dakota with an average rent of \$525, New Mexico at \$576, Arkansas at \$582, and Oklahoma at \$613.

Retirement Accounts:

Traditional vs. Roth: You may often see these prefixes before the type of a retirement account. The key difference is that with a traditional account, you are taxed when you take the money out of the account and with a Roth account, you are taxed when you put the money in the account.

401(k): This type of retirement account is often offered by employers (mostly because they get tax benefits because of it). Most employers (at a minimum) match the contributions that you make to this account up to 3% of your salary (i.e. if you contribute 3% of your salary, your employer would add 3% from their end for a total savings of 6% of your salary). As of 2020, the maximum employee contribution per year is \$19,500 or, if you are age 50 or older, \$25,000.

Traditional IRA: A traditional individual retirement account is a type of retirement account that an individual owns. Anyone earning income under the age of 70 ½ can contribute to it.

Roth IRA: A Roth individual retirement account is another type of retirement account that an individual owns. Currently, there are no age restrictions for when you can contribute.

The maximum amount you can contribute per year to your Roth and traditional IRA is \$6,000 or, if you are age 50 or older, \$7,000. This money grows tax-free within the account.

If you withdraw money from an IRA before age 59½, you are usually subject to an early-withdrawal penalty of 10%. For a traditional IRA, you can take start making withdrawals at age 59 ½ and are required to start making withdrawals at age 72 at the latest. You can withdraw contributions from a Roth IRA at any point, but earnings are more complicated.

NOTE: Rules regarding maximum contributions and income limits for IRAs change each year, so definitely check before you contribute!

Life Insurance:

Term Life: This type of life insurance is primarily used if you only want to be covered for a certain amount of time (ex. 10 years, 20 years, etc.) and for specific financial concerns, like mortgages. These policies usually have the cheapest premiums, but once the policy expires you lose any potential payout. The only value they provide is a death benefit.

Whole Life: This is a type of permanent life insurance that can serve multiple purposes such as being used as a death benefit, a basis for estate planning, and a retirement fund. Besides providing money when you pass away, this type of life insurance also builds cash value which is invested and grows tax-free that you can use while you are alive. The premiums you pay are typically much higher than term life since it offers coverage for an undetermined amount of time and has multiple uses.

Disability Insurance:

Short Term Disability Insurance: This type of insurance pays a portion of your salary for short periods of time such as for 3 months, 6 months, or 1 year. It comes into effect if you have a disability that will last a short period of time such as sickness or a broken bone.

Long-Term Disability Insurance: This type of insurance pays a portion of your salary for long periods of time such as two years, five years, 10 years, to age 65, or for life, depending on the policy. They typically come into effect because of a major illness or accident such as cancer or losing a limb.

Fun Facts and Additional Information:

The average starting salary of a college graduate is \$50,944 according to the NACE.

The average student loan debt (as of 2017) is \$37,172.

You can start receiving Social Security benefits as early as age 62. The amount you receive increases for each year you postpone receiving benefits up until full retirement age. You must work at least 10 years to receive social security benefits in retirement.

You are eligible for Medicare (a federal health insurance program) once you reach age 65.

Survey 2:

The second survey was released on March 27, 2020 and closed on April 14, 2020. It consisted of 10 questions focused on gathering questions regarding the impact of the financial plan and two-pager on perceptions and expectations for financial planning. There were 119 responses with 89 “valid” responses that were used for analysis. The questions are listed below.

1. What is your first name?
2. What is your last name?
3. What is your email?
4. After reviewing the information from the model and 2-pager, how confident do you feel about your knowledge of financial topics? (i.e. financial planning, insurance, investments, taxes, etc.)
5. After reviewing the information from the model and 2-pager, what do you consider your level of risk?
6. After reviewing the information from the model and 2-pager, how likely do you think you are to reach your goals for retirement?
7. After reviewing the information from the model and 2-pager, to what extent did you change your savings and retirement viewpoints?
8. After reviewing the information from the model and 2-pager, how much do you believe you must have in a six-month emergency fund?
9. After reviewing the information from the model and 2-pager, how large of a retirement fund do you believe you will need to accumulate to meet your goals?
10. If this information changed your perceptions about financial services and financial planning, please describe how it has done so below.

This information was used in the analysis section to determine whether opinions were changed and/or people's financial literacy was improved. Most of the questions are quantitative, but the final question was qualitative so for the dataset it was assigned a value depending on the response given. For responses that included the following phrases or similar phrases, the subject was assigned a value of "Y" and if the response did not include them, a value of "N".

- It changed my perception
- I have a better understanding
- This has showed me
- It taught me a lot about
- I was unaware/didn't realize that
- This made me realize
- It helped me visualize

SAS® Studio Code/Process:

To analyze the data, SAS® Studio was used since it is an efficient tool for analyzing and presenting large datasets. The code is listed in Appendix A with explanations of each portion in the comments. The results of the executed code are listed in a supporting document. The following is a brief summary of the code and what it does.

- The first portion of the code imports the excel file and creates a new dataset for analysis. This dataset converts the relevant character variables to numeric variables so that they can be used for analysis and also creates several variables that are calculated using the difference of previous variables to attempt to normalize the data distribution. An additional dataset is created from the first dataset that only contains relevant values from the second survey.
- The second portion of the code contains the bulk of the analyses. PROC NPAR1WAY is used to perform multiple non-parametric tests for analyzing the sample data by subgroups. PROC UNIVARIATE is also used to perform multiple non-parametric tests for analyzing the sample data by different strata of the subgroups.
- The third and final portion of the code gathers summary data from the survey and analyzes it using simpler methods than the second portion.

Results:

Before explaining the results of the SAS® code, the methodology will be explained. For this dataset, since there was a multitude of factors, sample sizes, and potentially non-normal distributions, it was difficult to establish a standard test to determine the differences between strata. In an ideal situation, a multiple regression statistical test would be constructed that factors in each variable and its effect on the data. However, for the scope of this study, that is simply not feasible since there are so many variables. As well as that, since the distributions may be non-normal and sample sizes may not be sufficient, the usual regression inferences may not be valid. This was partially accounted for by running the analysis on the differences of values instead of simply the value themselves, but there were still some non-normal trends in the data. What was used instead to account for the uncertainty of the data were the Wilcoxon rank-sum tests and the Wilcoxon signed-rank tests. Both are non-parametric tests that are implemented for different situations. The Wilcoxon rank-sum test is preferred when all the observations from both comparison groups are independent of each other, the responses are ordinal, the distributions of both populations are equal under the null hypothesis and the distributions of both populations are unequal under the alternate hypothesis. Essentially, this test establishes if one of the two samples is stochastically greater than the other. This test is similar to the ordinary parametric two-sample t-test on the rankings of the data. The Kruskal-Wallis test by ranks can also be used as an extended form of the Wilcoxon rank-sum test if analysis was to be done on three or more variables. The Wilcoxon signed-rank test is preferred when data are paired and come from the same population, each pair is chosen randomly and independently, and the data are measured on at least an interval scale. This test is similar to the paired Student's t-test for dependent samples. Although the data doesn't perfectly match those conditions for every set of analyses, this is the

closest test to determine whether the differences between groups are significant without constructing a complex model. These tests have a lot of allowances, so they are adequate for this set of data especially with them being non-parametric tests. If a significant p-value is obtained from a Wilcoxon rank-sum test, it indicates that one of the samples stochastically dominates the other sample. If a significant p-value is obtained from a Wilcoxon signed-rank test, it indicates whether two dependent samples were selected from populations having the same distribution i.e. if there is a difference in medians values between the two dependent samples.

For the first set of analyses, the PROC NPARIWAY statement was used to establish if there was a significant difference between subgroups utilizing Wilcoxon rank-sum tests. For the second set of analyses, the PROC UNIVARIATE statement was used to establish if each strata of the subgroup had significantly different expectations from the model. For the remaining set of data, simple means were taken to determine the overall influence of the study. This includes analysis of the difference of medians through PROC UNIVARIATE applied to the overall sample to determine if topics of interest such as whether subjects' perceptions were changed due to the information provided were significant. Both tests analyzed the medians of the datasets (medians are used over means when the data may be skewed or otherwise non-normal).

For the analysis below, Subject 50, Subject 60, and Subject 172 were removed from the dataset since their responses for some values were significantly influencing the data. There were several additional datapoints that may have been outliers, but they weren't deemed too different from the data and allowed to remain in the dataset although it may slightly skew the findings. Originally, the two subjects that chose the "Prefer not to answer" choice were included in the analysis and the Kruskal-Wallis test was used to account for them, but since they had such a negligible effect

on the data and the Wilcoxon rank-sum test is generally more accurate, they were removed from the dataset as well.

If there was a difference of within \$100,000 of projected values for retirement funds and within \$1,000 of projected values for emergency funds, the difference was considered to be relatively close to the projected values produced by the model.

The following tests were conducted to determine if there was a significant difference among subgroups for each analysis level. These tests were conducted using the Wilcoxon rank-sum test and the results are shown in Table 1. When the multitude of statistical tests were run, the following conclusions were gathered for each subgroup and variable being tested at the 5% level: For this set of analyses, the differences between the Survey 1 expectations and the model projections for retirement funds were calculated for each strata of a subgroup. These differences were then compared to each other to determine if a subgroup's preconceived financial expectations in the long-term were different among different strata.

- The Wilcoxon Two – Sample Test indicates that the differences in medians of male subjects and female subjects are significant and appear to be different from each other. It appears that male subjects overestimated the amount of their projected retirement funds on average while female subjects underestimated the amount of their projected retirement funds on average.
- The Wilcoxon Two – Sample Test indicates that the differences in medians of subjects with BRM and subjects with NBRM are not significant and appear not to differ from each other. It appears that the subjects with BRM overestimated the amount of their projected retirement funds on average while the subjects with NBRM underestimated the amount of their projected retirement funds on average.
- The Wilcoxon Two – Sample Test indicates that the differences in medians of subjects with LIB and subjects with HIB are not significant and appear not to differ from each other. It appears that the subjects with LIB overestimated the amount of their projected retirement funds on average while the subjects with HIB underestimated the amount of

their projected retirement funds on average and were relatively close to their projected values.

For this set of analyses, the differences between the Survey 1 expectations and the model projections for emergency funds were calculated for each strata of a subgroup. These differences were then compared to each other to determine if a subgroup's preconceived financial expectations in the short-term were different among different strata.

- The Wilcoxon Two – Sample Test indicates that the differences in medians of male subjects and female subjects are significant and appear to be different from each other. It appears that male subjects overestimated the amount of their projected emergency funds on average while female subjects underestimated the amount of their projected emergency funds on average and were relatively close to their projected values.
- The Wilcoxon Two – Sample Test indicates that the differences in medians of subjects with BRM and subjects with NBRM are significant and appear to be different from each other. It appears that the subjects with BRM underestimated the amount of their projected emergency funds on average and were relatively close to their projected values while the subjects with NBRM overestimated the amount of their projected emergency funds on average.
- The Wilcoxon Two – Sample Test indicates that the differences in medians of subjects with LIB and subjects with HIB are not significant and appear not to differ from each other. It appears that both the subjects with LIB and the subjects with HIB overestimated the amount of their projected retirement funds on average with the subjects with HIB having values that were relatively close to their projected values.

For this set of analyses, the differences between the Survey 2 expectations and the model projections for retirement funds were calculated for each strata of a subgroup. These differences were then compared to each other to determine if a subgroup's financial expectations in the long-term were different among different strata after improving their financial literacy.

- The Wilcoxon Two – Sample Test indicates that the differences in medians of male subjects and female subjects are not significant and appear not to differ from each other. It appears that both male subjects and female subjects overestimated the amount of their projected retirement on average.
- The Wilcoxon Two – Sample Test indicates that the differences in medians of subjects with BRM and subjects with NBRM are not significant and appear not to differ from each other. It appears that the both subjects with BRM and the subjects with NBRM overestimate the amount of their projected retirement funds on average.
- The Wilcoxon Two – Sample Test indicates that the differences in medians of subjects with LIB and subjects with HIB are not significant and appear not to differ from each other. It appears that both the subjects with LIB and the subjects with HIB overestimated the amount of their projected retirement on average.

For this set of analyses, the differences between the Survey 2 expectations and the model projections for emergency funds were calculated for each strata of a subgroup. These differences were then compared to each other to determine if a subgroup's financial expectations in the short-term were different among different strata after improving their financial literacy.

- The Wilcoxon Two – Sample Test indicates that the differences in medians of male subjects and female subjects are not significant and appear not to differ from each other. It appears that male subjects and female subjects overestimated the amount of their projected emergency funds on average.
- The Wilcoxon Two – Sample Test indicates that the differences in medians of subjects with BRM and subjects with NBRM are not significant and appear not to differ from each other. It appears that both the subjects with BRM and the subjects with NBRM overestimated the amount of their projected emergency funds.
- The Wilcoxon Two – Sample Test indicates that the differences in medians of subjects with LIB and subjects with HIB are not significant and appear not to differ from each other. It appears that both the subjects with LIB and the subjects with HIB overestimated the amount of their projected retirement funds.

Table 1:

The results in this table indicate whether two different strata within a subgroup are significantly different from each other for both the long-term (Retirement funds) and the short-term (Emergency Funds) for both Survey 1 and Survey 2

Type of Analysis*	Z – Score	p-value	Female Mean Difference	Male Mean Difference	Significant?
S1GD - Retirement	2.1487	0.0317	-298,263.41	566,698.25	Yes
S1GD – Emergency	2.7855	0.0053	-885.00	5,979.06	Yes
S2GD – Retirement	0.0355	0.9717	64,266.43	196,805.62	No
S2GD – Emergency	1.0058	0.3145	5,238.00	12,599.52	No
			BRM Mean Difference	NBRM Mean Difference	
S1EBD – Retirement	1.1116	0.2663	254,333.02	-167,587.85	No
S1EBD – Emergency	2.3662	0.00180	-907.88	7,569.89	Yes
S2EBD – Retirement	-0.3180	0.7505	128,806.02	105,311.78	No
S2EBD – Emergency	1.0523	0.3052	6,637.95	13,553.47	No
			LIB Mean Difference	HIB Mean Difference	
S1FBD – Retirement	0.7783	0.4364	603,190.30	62,069.47	No
S1FBD – Emergency	-0.3428	0.7318	1,258.33	727.61	No
S2FBD – Retirement	0.4505	0.6524	262,811.86	111,512.43	No
S2FBD – Emergency	0.3660	0.7144	8,298.60	9,514.48	No

*The type of analysis is interpreted as follows:

- S1GD – Retirement: This is the analysis done for the differences between Survey 1 expectations and model projections for retirement funds regarding the gender subgroup.
- S2EBD – Emergency: This is the analysis done for the differences between Survey 2 expectations and model projections for emergency funds regarding the educational background subgroup
- S1FBD – Emergency: This is the analysis done for the differences between Survey 1 expectations and model projections for emergency funds regarding the financial background subgroup
- The remaining types of analysis are similarly interpreted

The following tests were conducted to determine if there was a significant difference in Survey 1 expectations and model projections among values for each strata of the subgroups. These tests were conducted using the Wilcoxon signed rank test and the results are shown in Table 2. When the multitude of statistical tests were run, the following conclusions were gathered for each strata and variable being tested at the 5% level:

For this set of analyses, the differences between the Survey 1 expectations and the model projections for retirement funds and emergency funds were calculated for each strata of the gender subgroup. These differences were then tested to see if the preconceived financial expectations in the long-term and short-term were significantly different from the projected model for different strata.

- The Signed Rank test indicates that the differences in medians of male subject preconceived expectations and model projections are not significant and appear not to differ from each other for retirement funds. It appears that male subjects underestimated the amount of their projected retirement funds based on the median.
- The Signed Rank test indicates that the differences in medians of female subject preconceived expectations and model projections are significant and appear to be different from each other for retirement funds. It appears that female subjects significantly underestimated the amount of their projected retirement funds based on the median.
- The Signed Rank test indicates that the differences in medians of male subject preconceived expectations and model projections are not significant and appear not to

differ from each other for emergency funds. It appears that male subjects underestimated the amount of their projected emergency funds based on the median.

- The Signed Rank test indicates that the differences in medians of female subject preconceived expectations and model projections are significant and appear to be different from each other for emergency funds. It appears that female subjects significantly underestimated the amount of their projected emergency funds based on the median.

For this set of analyses, the differences between the Survey 1 expectations and the model projections for retirement funds and emergency funds were calculated for each strata of the education background subgroup. These differences were then tested to see if the preconceived financial expectations in the long-term and short-term were significantly different from the projected model for different strata.

- The Signed Rank test indicates that the differences in medians of subjects with BRM preconceived expectations and model projections are not significant and appear not to differ from each other for retirement funds. It appears that subjects with BRM underestimated the amount of their projected retirement funds based on the median.
- The Signed Rank test indicates that the differences in medians of subjects with NBRM preconceived expectations and model projections are significant and appear to be different from each other for retirement funds. It appears that subjects with NBRM significantly underestimated the amount of their projected retirement funds based on the median.

- The Signed Rank test indicates that the differences in medians of subjects with BRM preconceived expectations and model projections are significant and appear to be different from each other for emergency funds. It appears that subjects with BRM significantly underestimated the amount of their projected emergency funds based on the median.
- The Signed Rank test indicates that the differences in medians of subjects with NBRM preconceived expectations and model projections are not significant and do not appear to be different from each other for emergency funds. It appears that subjects with NBRM underestimated the amount of their projected emergency funds based on the median.

For this set of analyses, the differences between the Survey 1 expectations and the model projections for retirement funds and emergency funds were calculated for each strata of the financial background subgroup. These differences were then tested to see if the preconceived financial expectations in the long-term and short-term were significantly different from the projected model for different strata.

- The Signed Rank test indicates that the differences in medians of subjects with LIB preconceived expectations and model projections are not significant and appear not to differ from each other for retirement funds. It appears that subjects with LIB underestimated the amount of their projected retirement funds based on the median.
- The Signed Rank test indicates that the differences in medians of subjects with HIB preconceived expectations and model projections are significant and appear to be different from each other for retirement funds. It appears that subjects with HIB

significantly underestimated the amount of their projected retirement funds based on the median.

- The Signed Rank test indicates that the differences in medians of subjects with LIB preconceived expectations and model projections are not significant and appear not to differ from each other for emergency funds. It appears that subjects with LIB underestimated the amount of their projected emergency funds based on the median.
- The Signed Rank test indicates that the differences in medians of subjects with HIB preconceived expectations and model projections are not significant and do not appear to be different from each other for emergency funds. It appears that subjects with HIB underestimated the amount of their projected emergency funds based on the median.

Table 2:

The results in this table indicate whether a stratum had expectations significantly different from the model projections for both the long-term (Retirement funds) and the short-term (Emergency Funds) for Survey 1

Type of Analysis*	S statistic	p-value	Median Difference	Significant?
S1MD – Retirement	-77	0.5656	-456,605.00	No
S1FD – Retirement	-757.5	<.0001	-645,310.00	Yes
S1MD – Emergency	126.5	0.4126	-1,635.00	No
S1FD – Emergency	-629.5	0.0003	-5,343.00	Yes
S1BRMD – Retirement	-369.5	0.0819	-548,202.00	No
S1NBRMD – Retirement	-358	<.0001	-602,200.00	Yes
S1BRMD – Emergency	-596.5	0.0082	-4,938.00	Yes
S1NBRMD – Emergency	45.5	0.6911	-1,492.00	No
S1LIBD – Retirement	-8.5	0.4316	-259,034.00	No
S1HIBD – Retirement	-416.5	0.0137	-558,455.00	Yes
S1LIBD – Emergency	-15	0.2661	-1,817.00	No
S1HIBD – Emergency	-89.5	0.6329	-1,892.00	No

*The type of analysis is interpreted as follows:

- S1MD – Retirement: This is the analysis done for the differences between Survey 1 expectations and model projections for retirement funds for males.
- S1FD – Retirement: This is the analysis done for the differences between Survey 1 expectations and model projections for retirement funds for females.
- S1BRMD – Retirement: This is the analysis done for the differences between Survey 1 expectations and model projections for retirement funds for BRM.
- S1NBRMD – Retirement: This is the analysis done for the differences between Survey 1 expectations and model projections for retirement funds for NBRM.
- S1LIBD – Emergency: This is the analysis done for the differences between Survey 1 expectations and model projections for emergency funds for LIB.
- S1HIBD – Emergency: This is the analysis done for the differences between Survey 1 expectations and model projections for emergency funds for HIB.
- The remaining types of analysis are interpreted similarly

The following tests were conducted to determine if there was a significant difference in Survey 2 expectations and model projections among values for each strata of the subgroups. These tests were conducted using the Wilcoxon signed rank test and the results are shown in Table 3. When the multitude of statistical tests were run, the following conclusions were gathered for each strata and variable being tested at the 5% level:

For this set of analyses, the differences between the Survey 2 expectations and the model projections for retirement funds and emergency funds were calculated for each strata of the gender subgroup. These differences were then tested to see if the financial expectations in the long-term and short-term were significantly different from the projected model after improving their financial literacy for different strata.

- The Signed Rank test indicates that the differences in medians of male subject expectations after improving financial literacy and model projections are not significant and appear not to differ from each other for retirement funds. It appears that male subjects accurately estimated the amount of their projected retirement funds based on the median.
- The Signed Rank test indicates that the differences in medians of female subject expectations after improving financial literacy and model projections are not significant and appear not to differ from each other for retirement funds. It appears that female subjects accurately estimated the amount of their projected retirement funds based on the median.
- The Signed Rank test indicates that the differences in medians of male subject expectations after improving financial literacy and model projections are not significant

and appear not to differ from each other for emergency funds. It appears that male subjects overestimated the amount of their projected emergency funds based on the median.

- The Signed Rank test indicates that the differences in medians of female subject expectations after improving financial literacy and model projections are not significant and appear not to differ from each other for emergency funds. It appears that female subjects underestimated the amount of their projected emergency funds based on the median.

For this set of analyses, the differences between the Survey 2 expectations and the model projections for retirement funds and emergency funds were calculated for each strata of the education background subgroup. These differences were then tested to see if the financial expectations in the long-term and short-term were significantly different from the projected model after improving their financial literacy for different strata.

- The Signed Rank test indicates that the differences in medians of subjects with BRM expectations after improving financial literacy and model projections are not significant and appear not to differ from each other for retirement funds. It appears that subjects with BRM accurately estimated the amount of their projected retirement funds based on the median.
- The Signed Rank test indicates that the differences in medians of subjects with NBRM expectations after improving financial literacy and model projections are not significant and appear not to differ from each other for retirement funds. It appears that subjects with

NBRM underestimated the amount of their projected retirement funds based on the median.

- The Signed Rank test indicates that the differences in medians of subjects with BRM expectations after improving financial literacy and model projections are not significant and appear not to differ from each other for emergency funds. It appears that subjects with BRM accurately estimated the amount of their projected emergency funds based on the median.
- The Signed Rank test indicates that the differences in medians of subjects with NBRM expectations after improving financial literacy and model projections are not significant and do not appear to be different from each other for emergency funds. It appears that subjects with NBRM overestimated the amount of their projected emergency funds based on the median.

For this set of analyses, the differences between the Survey 2 expectations and the model projections for retirement funds and emergency funds were calculated for each strata of the financial background subgroup. These differences were then tested to see if the financial expectations in the long-term and short-term were significantly different from the projected model after improving their financial literacy for different strata.

- The Signed Rank test indicates that the differences in medians of subjects with LIB expectations after improving financial literacy and model projections are not significant and appear not to differ from each other for retirement funds. It appears that subjects with LIB accurately estimated the amount of their projected retirement funds based on the median.

- The Signed Rank test indicates that the differences in medians of subjects with HIB expectations after improving financial literacy and model projections are not significant and appear not to differ from each other for retirement funds. It appears that subjects with HIB overestimated the amount of their projected retirement funds based on the median.
- The Signed Rank test indicates that the differences in medians of subjects with LIB expectations after improving financial literacy and model projections are not significant and appear not to differ from each other for emergency funds. It appears that subjects with LIB overestimated the amount of their projected emergency funds based on the median.
- The Signed Rank test indicates that the differences in medians of subjects with HIB preconceived expectations and model projections are not significant and do not appear to be different from each other for emergency funds. It appears that subjects with HIB overestimated the amount of their projected emergency funds based on the median.

Table 3:

The results in this table indicate whether a stratum had expectations significantly different from the model projections for both the long-term (Retirement funds) and the short-term (Emergency Funds) for Survey 2

Type of Analysis*	S statistic	p-value	Median Difference	Significant?
S2MD – Retirement	10.5	0.7956	0.00	No
S2FD – Retirement	13	0.8123	0.00	No
S2MD – Emergency	43	0.1973	102.00	No
S2FD – Emergency	-3.5	0.9441	-948.00	No
S2BRMD – Retirement	33	0.6630	0.00	No
S2NBRMD – Retirement	-2.5	0.9323	-136,521.00	No
S2BRMD – Emergency	19	0.7700	0.00	No
S2NBRMD – Emergency	26.5	0.2201	302.00	No
S2LIBD – Retirement	3.5	0.5625	0.00	No
S2HIBD – Retirement	2.5	0.9652	6559.00	No
S2LIBD – Emergency	4.5	0.3125	989.00	No
S2HIBD – Emergency	70.5	0.1296	458.00	No

*The type of analysis is interpreted as follows:

- S2MD – Retirement: This is the analysis done for the differences between Survey 2 expectations and model projections for retirement funds for males.
- S2FD – Retirement: This is the analysis done for the differences between Survey 2 expectations and model projections for retirement funds for females.
- S2BRMD – Retirement: This is the analysis done for the differences between Survey 2 expectations and model projections for retirement funds for BRM.
- S2NBRMD – Retirement: This is the analysis done for the differences between Survey 2 expectations and model projections for retirement funds for NBRM.
- S2LIBD – Emergency: This is the analysis done for the differences between Survey 2 expectations and model projections for emergency funds for LIB.
- S2HIBD – Emergency: This is the analysis done for the differences between Survey 2 expectations and model projections for emergency funds for HIB.
- The remaining types of analysis are interpreted similarly

From the remaining portion of code, it appears that the average viewpoint change on financial planning was 5.876404 which indicates that subjects' viewpoints changed moderately from the information gained in the study. Out of 87 subjects whose responses from the second survey were analyzed, 57 of the subjects indicated that the study changed their perceptions on financial services and financial planning which indicates that 65.51724137931% of the subjects found the study informative.

The following analyses were done using PROC UNIVARIATE and the Wilcoxon signed rank test with significance determined at the 5% level:

The means of the financial knowledge confidence level on a scale of 1-10 appeared to increase by a median of 2.00 points with a p-value of $<.0001$, the means of the risk level on a scale of 1-10 appeared to increase by a median of 0.00 points with a 0.9812, and the means of the retirement goal confidence level on a scale of 1-100 appeared to decrease by a median of 64.00 points with a p-value of $<.0001$. The means of the expectations of the amount required for retirement funds increased by a median of 100000 with a p-value of 0.0701 and the means of the expectations of the amount required for emergency funds increased by a median of 2000.00 with a p-value of 0.0459. This indicates that based on the median, a subject's level of financial knowledge was significantly improved, the risk level stayed approximately the same, and their confidence that they would reach their retirement goals significantly dropped. It also indicates that the median amount required for retirement funds increased (albeit not significantly at the 5% level). Additionally, the median expectation of the amount required for an emergency fund increased significantly.

Table 4:

The results of this table show analysis done on the overall dataset instead of a particular stratum or subgroup. This indicates the overall impact for each of the types of analysis.

Test of Analysis	S statistic	p-value	Mean	Median	Significant?
Financial Knowledge Confidence Change	1188	<.0001	1.772727	2.00	Yes
Risk Level Change	-3.5	0.9812	.011236	0.00	No
Retirement Goal Confidence Change	-2002.5	<.0001	-61.6742	-64.00	Yes
Retirement Fund Expectation Change	210	0.0701	-158740	100,000.00	No
Emergency Fund Expectation Change	199.5	0.0459	8087.547	2,000.00	Yes

Conclusions and Further Study:

This study attempted to analyze an extremely complex topic of financial services. There were a variety of potentially confounding variables involved as well as a multitude of assumptions in the methodology. The data was also analyzed using a generic testing procedure instead of a customized one built for the study. The following conclusions should be interpreted and critiqued with these considerations in mind.

Note: The conclusions regarding retirement funds may be slightly skewed due to several responses that listed \$10,000,000 as their expected financial retirement fund where the next closest value was \$5,000,000. These retirement fund amounts were not considered significant compared to the other outliers that were excluded (\$20,000,000, \$50,000,000) so the datapoints remained in the analysis.

Additional Note: The following conclusions are based off median values instead of mean values since the data is potentially non-normal.

For every level of analysis of the preconceived notions for the individual strata of the three subgroups (so 6 strata total and 12 levels of analysis), the subjects underestimated what they needed for retirement accounts and emergency funds based on the median. Although only half of these were significantly different from the projections (differences in: retirement funds for female subjects, emergency funds for female subjects, retirement funds for subjects with BRM, emergency funds for subjects with NBRM, and retirement funds for HIB), this indicates that overall people in the younger demographic are unaware of just how much they need for both long-term and short-term goals.

From the analysis, it appears that before being exposed to the financial models and two-pager, men and women have significantly different expectations regarding both retirement funds and emergency funds. However, men had a more conservative outlook on an individual level (i.e. their median difference was higher) than women for both retirement funds and emergency funds which was the opposite of what was originally expected. This may indicate that men are more inclined towards preparing for larger financial goals both in the short term and the long term. It may also support conclusions from previous studies that men are overall more financial literate than women, and thus would have more realistic expectations (Lusardi, 2017).

Subjects with BRM did not have a significantly different outlook on retirement funds than subjects with NBRM. Regarding emergency funds, however, subjects with BRM had a significantly less conservative outlook than subjects with NBRM as expected. This may indicate that subjects with BRM don't have vastly different outlooks on financial planning in the long-term than subjects with NBRM, but subjects with NBRM may be more inclined towards preparing financially for the short term.

Interestingly enough, subjects from LIB and HIB did not differ significantly regarding both retirement funds and emergency funds. Subjects from LIB had a more conservative outlook in both criteria though both strata overestimated what they needed to save. This may indicate that financial background is not as much of an influencing factor as previously believed. However, the confounding factor of having a higher-level education may play a part in this conclusion so if a study could be conducted on the difference in expectations between certain income people with higher-level education versus certain income people with no higher-level education, it may be add credence to this conclusion. Previous studies have been done on the differences in financial literacy levels between those with less than a college degree and those with a college degree (it

was found that those with less than a college degree were much more likely to respond incorrectly to financial knowledge questions). However, many of those studies have been done for people at different stages of life instead of only the people in the early adulthood stage of life that this study focuses on (Lusardi, 2017).

From the analysis, it appears that after being exposed to the financial models and two-pager none of the strata of the subgroups being compared were significantly different from each other regarding either retirement funds or emergency funds. This may be an indicator that increased financial literacy helps close the gap between strata that were initially significantly different. For the individual levels of analysis, the median values for each stratum were either closer to 0 than before the materials were presented to them or were positive (or both). This may indicate that overall the financial literature influenced respondents to save more and have a more conservative outlook on financial planning. Again, since the financial plans are generated based on multiple assumptions, it's difficult to identify the degree to which these conclusions are accurate.

From the additional, simpler analysis done, it appears that subjects' financial perceptions were changed in a theoretical way as well. Through the analysis, their viewpoints were changed on average to a moderate extent and approximately two-thirds of the relevant second survey respondents indicated that the study changed their perceptions on financial services and financial planning. As well as that, they indicated that their financial knowledge increased significantly as well which indicates that the study accomplished the goal of making people more aware of financial topics. The risk level didn't change significantly which may be attributed to the lack of risk profiles being prominent in the study itself (i.e. this is a potential avenue for further study if risk profiles were able to be incorporated). However, subject's confidence in reaching their financial goals dropped significantly after viewing the literature. This may substantiate

conclusions from previous studies that the younger demographic is unprepared for their financial future or have limited financial planning strategies (Poynton, 2015). By being shown what, at a minimum, they need to do to achieve their financial goals, it may have shaken subjects' confidence in adequately preparing for retirement and reaching their financial goals. Ideally, this change in perception would spur those subjects to research more about financial topics and get a better understanding of finance in general.

Between the second and the first survey, expectations for the amount required for a retirement fund increased insignificantly while expectations for the amount required for an emergency fund increased significantly. Though the increase in expectations for an emergency fund is a positive impact, it would have been more beneficial overall for subjects to increase their expectations for a retirement fund. However, their expectations increased, and the p-value was close to the .05 benchmark, so if the potential outliers were removed from the first survey expectations, a more significant impact may be seen.

Overall, this study seems to show that financial literacy has a positive effect on people's expectations regarding financial topics. It appears to reduce the difference between one's expectations and the rest of the population, essentially making the level of financial knowledge positively more uniform as well as increasing an individual's level of financial knowledge. This study gave subjects with little financial knowledge exposure to a limited amount of financial literature and still saw a significant effect in some cases, so it hints at what the benefits of exposure to a full suite of financial literature could be. This study showed that financial literacy can positively influence financial perceptions at an early stage in one's career. Additionally, much of the data collected went unused for levels of analysis that were not able to be explored due to time constraints or software limitations, so it leaves room for further study and potential

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correlations to be found. For this reason, the dataset and SAS code are provided with this study for reproduction and exploration of other correlations and insights.

Critiques:

There are several areas where this study could be improved. Below is a list of critiques that are acknowledged along with solutions if applicable.

- This study relied on input from college students that have not necessarily had exposure to many of the financial topics discussed in the information provided. As a result, there were several unrealistic responses that were recorded that resulted in outliers skewing the data. Although the goal was to see what students' inherent perceptions were, if an extremely high or extremely low value was included it may mask the actual impact of increasing financial literacy. If the data was retained in the analysis, it may have led to the analysis leading to an incorrect conclusion. This may be addressed by providing a limited amount of financial literature beforehand so that respondents have a working knowledge of the information they are being surveyed on and ideally reduce the number of outliers in the data. Then additional, more in-depth financial literature could be provided to determine if there's a difference.
- For the surveys themselves, answer choices were accepted in either character or numeric format. This allowed the room for extraneous input that could not necessarily be analyzed without extrapolation. By limiting the form of input in any further studies, it may lead to more relevant data being produced and more accurate analysis as a result.
- Similarly, several questions were apparently unclear on what type of response they were seeking. If questions could be rephrased so that the desired output is clear, that would be recommended.

- Additionally, on the first survey, not every answer choice was required to be answered. This was originally done since not every piece of information gathered is relevant to every individual (for example, not everyone has an investing account). However, this led to far more incomplete answers than originally thought and financial plans were not able to be generated for everyone even though subjects had “completed” the survey. By making essential questions required in any further studies, a more complete dataset may be created.
- There were numerous assumptions required to generate the financial plans. This was due to having the number of questions limited on the first survey to ensure that enough potential respondents completed it as possible as well as the inherent complexity of financial planning. If a survey could be constructed to limit the amount of assumptions and/or a model could be created that limited the amount of assumptions, that would be recommended.
- Due to the COVID-19 crisis, responses may have been affected in the second survey since people tend to be more conservative during economic downturns. If the first survey and the second survey could be released in similar socioeconomic conditions, that would be recommended.
- Sample size was limited in the study due to time restraints resulting from the sheer amount of time required to generate a financial plan for each subject. If it was possible to construct more plans and distribute surveys of this format to more people, that would be recommended.

Bibliography:

Hanna, Sherman D., and Suzanne Lindamood. "Quantifying the Economic Benefits of Personal Financial Planning." SSRN Scholarly Paper. Rochester, NY: Social Science Research Network, July 18, 2010.

The authors, researchers in the Consumer Sciences Department at Ohio State University, attempt to estimate the monetary value of ideal financial advice and whether the benefit is worth the cost. It is easy to evaluate one's wealth increase but difficult to quantify protecting wealth or smoothing consumption, so they do so by evaluating an individual's Certainty Equivalent Wealth (CEW) and seeing how it compares to their expected utility levels. As follows, they use this analysis tool to compare optimal and naïve planning decisions. They find that the value of the advice given varies with how conservative or liberal an individual is regarding risk. The data seems to indicate that less risk-averse a household is, the more valuable advice is to increase wealth, which is important for young professionals since they tend to match that description.

Concepcion, John N. "Young and Indebted: A Closer Look at the Future of Young Professionals." *Journal of Financial Planning* 29, no. 9 (September 2016): 24–25.

This journal article addresses five strategies that financial planners can use to help young professionals properly prepare for the future. It considers workplace education, college courses, behavioral finance, open dialogue, and past behavior. It is primarily intended to give options to financial planners to help guide young adults in establishing healthy financial practices early on, but also indirectly gives young professionals an idea of the direction they should take regarding money management and savings benefits. It also addresses the importance of financial literacy for young people since studies such as one

done by Wells Fargo indicate that only a slight majority of millennials have started saving for retirement, even though many say that they have learned from the impact of the recession. This article points directly to the significance of financial planning for young professionals and the potential benefits planning early on can yield.

Guyton, Jonathan. "Of Policies and Products." *Journal of Financial Planning* 23, no. 2 (February 2010): 32–35.

This journal article from the *Journal of Financial Planning*, authored by a CFP at Cornerstone Wealth Advisors Inc., discusses new and revamped financial products in the financial planning world. He notes that in response to new insights and breakthroughs, financial processes are mostly changed rather than financial products themselves. Most financial planners tend to continue using existing financial products. They simply choose processes that are broad enough to encompass unforeseen events but still specific enough that actions can be taken quickly. He emphasizes that financial planning should account for multiple factors such as investment management, tax implications, retirement optimization, factors that are often not diversified efficiently by young professionals.

Parrish, Steve. "Permanent Life Insurance in Financial Planning: Time for a New Model." *Journal of Financial Service Professionals* 68, no. 6 (November 2014): 30–32.

The author, a member of Principal Financial Group and someone who has been involved in the financial services industry for over 39 years, illustrates how new technology allows more detailed presentations of life insurance data. He emphasizes, similar to an earlier article by Guyton cited above, how the insurance industry has not changed as much as the overall financial industry has in the past few decades. Although the life insurance

industry has changed slightly in the way that the products are evaluated to account for newer discoveries like the effects of smoking, the way that they are marketed, and the practices associated with the industry have changed drastically to respond to societal and market environment progressions. He focuses this article mostly on life insurance agents, but also illustrates the concepts in such a way that potential clients can understand how their policies come to be.

Orman, Suze. "Suze Orman's Guide to Retirement." *Money* 46, no. 10 (November 2017): 51–60.

This article written by Suze Orman, known for the Suze Orman Financial Group and The Suze Orman Show, articulates the importance of preparing for retirement as well as the lifestyle changes once reaching retirement age. A key point she addresses is that many people don't consider that life expectancy has been on the rise the past few decades and financial plans should change accordingly. She expresses that it is no longer sufficient to plan for retirement in an individual's early sixties since many people are living far beyond the 15-20 year retirement period they may have initially planned for. The article also emphasizes how laying the foundation early on to work longer and save more is of utmost importance. She highlights the underlying threat of unexpected events such as health issues or drains on savings that may hinder one's initial plan and how preparing for those possibilities is beneficial, especially at an earlier age. She acknowledges that millennials often sign up for programs but don't know the details of them, like when they contribute to their workplace 401(k) plan but don't know the minutiae of how it's diversified. This addresses an underlying, but prevalent problem in which young

professionals don't know what financial products entail when setting them up early in their careers.

Palmer, Kimberly. "Tight Budgets, Hard Choices." *U.S. News & World Report* 144, no. 12 (April 28, 2008): 51–52.

This journal article offers a general overview of problems and complications facing young professionals just starting their careers. It focuses on issues such as student loan debt, expensive housing prices, and the difficulty of budgeting while in an entry-level position. Liz Pulliam Weston, author of *Easy Money*, states that some concerns young professionals have like student loan debt aren't as significant as they may seem. Because student loans tend to have low interest rates (unless it is a high-interest private loan), it may be more beneficial for younger people to invest in high yield accounts that would offset the costs of the loans and be better for their financial future because of the higher rate. Concepts like this are key to consider in financial planning for young adults since many people tend to act rashly about loans because of the heavy societal pressure to pay them off. The article overall seems to indicate that it is acceptable to take on debt and some liabilities to jump-start an individual's future, as long as that financial liability is properly managed.

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Appendix A:

```
/* Honors Thesis Analysis
   Tanay Singh
   04/23/2020
*/

/* Used for troubleshooting */
options mlogic mprint symbolgen;

/*Imports the datafile */
PROC IMPORT DATAFILE = '/home/u43530209/Honors_Thesis/Honors Thesis
Importable - No Name.xlsx'
DBMS = xlsx OUT = complete REPLACE; GETNAMES = YES;
RUN;

/*Creates adjusted dataset without confounding entries*/
DATA cleandatafirst;
SET complete;
WHERE Adjusted EQ "N" AND Duplicate EQ "N" AND Incomplete EQ "N" and
Gender NE "Prefer not to answer"
AND Subject NE "50" AND Subject NE "60" AND Subject NE "172";
DROP Adjusted Duplicate Incomplete;
/*Adjustments made to variables so they can be read and used as
numeric variables
instead of character variables */
alt0 = INPUT(Subject, 8.); DROP Subject; RENAME alt0 = Subject;
alt1 = INPUT(Age, 8.); DROP Age; RENAME alt1 = Age;
alt2 = INPUT(Emergency_Fund, 8.); DROP Emergency_Fund; RENAME alt2 =
Emergency_Fund;
alt3 = INPUT(Retirement_Age, 8.); DROP Retirement_Age; RENAME alt3 =
Retirement_Age;
alt4 = INPUT(Retirement_Fund, 8.); DROP Retirement_Fund; RENAME alt4 =
Retirement_Fund;
alt5 = INPUT(Financial_Knowledge_Confidence, 8.); DROP
Financial_Knowledge_Confidence; RENAME alt5 =
Financial_Knowledge_Confidence;
alt6 = INPUT(Risk_Level, 8.); DROP Risk_Level; RENAME alt6 =
Risk_Level;
alt7 = INPUT(Retirement_Goal_Confidence, 8.); DROP
Retirement_Goal_Confidence; RENAME alt7 = Retirement_Goal_Confidence;
alt8 = INPUT(Projected_Retirement_Fund, 8.); DROP
Projected_Retirement_Fund; RENAME alt8 = Projected_Retirement_Fund;
```

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```
alt9 = INPUT(Projected_Emergency_Fund, 8.); DROP
Projected_Emergency_Fund; RENAME alt9 = Projected_Emergency_Fund;
alt10 = INPUT(Post_FK_Confidence, 8.); DROP Post_FK_Confidence; RENAME
alt10 = Post_FK_Confidence;
alt11 = INPUT(Post_Risk_Level, 8.); DROP Post_Risk_Level; RENAME alt11
= Post_Risk_Level;
alt12 = INPUT(Post_RG_Confidence, 8.); DROP Post_RG_Confidence; RENAME
alt12 = Post_RG_Confidence;
alt13 = INPUT(Viewpoint_Change, 8.); DROP Viewpoint_Change; RENAME
alt13 = Viewpoint_Change;
alt14 = INPUT(Post_Emergency_Fund, 8.); DROP Post_Emergency_Fund;
RENAME alt14 = Post_Emergency_Fund;
alt15 = INPUT(Post_Retirement_Fund, 8.); DROP Post_Retirement_Fund;
RENAME alt15 = Post_Retirement_Fund;
```

```
/* Additional variables created that will be used for analysis */
LENGTH ModelRFDiff 8. ModelEFDiff 8. PostRFDiff 8. PostEFDiff 8.
CompRFDiff 8. CompEFDiff 8.
Business_Related $4. Income_Level $4. ;
ModelRFDiff = Retirement_Fund - Projected_Retirement_Fund;
ModelEFDiff = Emergency_Fund - Projected_Emergency_Fund;
PostRFDiff = Post_Retirement_Fund - Projected_Retirement_Fund;
PostEFDiff = Post_Emergency_Fund - Projected_Emergency_Fund;
```

```
FKDiff = Post_FK_Confidence - Financial_Knowledge_Confidence;
RiskDiff = Post_Risk_Level - Risk_Level;
RGDiff = Post_RG_Confidence - Retirement_Goal_Confidence;
RFDiff = Post_Retirement_Fund - Retirement_Fund;
EFDiff = Post_Emergency_Fund - Emergency_Fund;
```

```
IF Business_Minor EQ "Y" OR Business_Major EQ "Y" THEN
Business_Related = "Y";
ELSE Business_Related = "N";
```

```
IF Family_Household_Income EQ "Less than $20,000" OR
Family_Household_Income EQ "$20,000-$44,999"
THEN Income_Level = "Low";
ELSE IF Family_Household_Income EQ "$150,000-$199,999" OR
Family_Household_Income EQ "Greater than $200,000"
THEN Income_Level = "High";
RUN;
```

```
/*This dataset has to do with the second survey analysis portion */
```

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```
DATA cleandatasecond;  
SET cleandatafirst;  
WHERE Second_Survey_Completed = "Y";  
RUN;
```

```
/* This set of analyses determines if there is a significant  
difference between the model projections and  
Survey 1 expectations when partitioned into different subgroups*/
```

```
PROC NPAR1WAY DATA=cleandatafirst;  
CLASS Gender;  
VAR ModelRFDiff;  
RUN;
```

```
PROC NPAR1WAY DATA=cleandatafirst;  
CLASS Business_Related;  
VAR ModelRFDiff;  
RUN;
```

```
PROC NPAR1WAY DATA=cleandatafirst;  
CLASS Income_Level;  
VAR ModelRFDiff;  
RUN;
```

```
PROC NPAR1WAY DATA=cleandatafirst;  
CLASS Gender;  
VAR ModelEFDiff;  
RUN;
```

```
PROC NPAR1WAY DATA=cleandatafirst;  
CLASS Business_Related;  
VAR ModelEFDiff;  
RUN;
```

```
PROC NPAR1WAY DATA=cleandatafirst;  
CLASS Income_Level;  
VAR ModelEFDiff;  
RUN;
```

```
/* This set of analyses determines if there is a significant  
difference between Survey 2 expectations and  
Model projections when partitioned into different subgroups*/
```

```
PROC NPAR1WAY DATA=cleandatasecond;  
CLASS Gender;  
VAR PostRFDiff;
```

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```
RUN;
```

```
PROC NPAR1WAY DATA=cleandataset2;  
CLASS Business_Related;  
VAR PostRFDiff;  
RUN;
```

```
PROC NPAR1WAY DATA=cleandataset2;  
CLASS Income_Level;  
VAR PostRFDiff;  
RUN;
```

```
PROC NPAR1WAY DATA=cleandataset2;  
CLASS Gender;  
VAR PostEFDiff;  
RUN;
```

```
PROC NPAR1WAY DATA=cleandataset2;  
CLASS Business_Related;  
VAR PostEFDiff;  
RUN;
```

```
PROC NPAR1WAY DATA=cleandataset2;  
CLASS Income_Level;  
VAR PostEFDiff;  
RUN;
```

```
/* This portion of code determines if there is a significant  
difference between the Survey 1 expectations and  
Model projections for each strata */
```

```
PROC UNIVARIATE DATA = cleandataset1;  
VAR ModelRFDiff;  
WHERE Gender EQ "Male";  
RUN;
```

```
PROC UNIVARIATE DATA = cleandataset1;  
VAR ModelRFDiff;  
WHERE Gender EQ "Female";  
RUN;
```

```
PROC UNIVARIATE DATA = cleandataset1;  
VAR ModelEFDiff;  
WHERE Gender EQ "Male";  
RUN;
```

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```
PROC UNIVARIATE DATA = cleandatafirst;
VAR ModelEFDiff;
WHERE Gender EQ "Female";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatafirst;
VAR ModelRFDiff;
WHERE Business_Related EQ "Y";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatafirst;
VAR ModelRFDiff;
WHERE Business_Related EQ "N";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatafirst;
VAR ModelEFDiff;
WHERE Business_Related EQ "Y";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatafirst;
VAR ModelEFDiff;
WHERE Business_Related EQ "N";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatafirst;
VAR ModelRFDiff;
WHERE Income_Level EQ "Low";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatafirst;
VAR ModelRFDiff;
WHERE Income_Level EQ "High";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatafirst;
VAR ModelEFDiff;
WHERE Income_Level EQ "Low";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatafirst;
VAR ModelEFDiff;
WHERE Income_Level EQ "High";
RUN;
```



```
/* This portion of code determines if there is a significant
difference between the Survey 2 expectations and
Model projections for each strata */
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostRFDiff;
WHERE Gender EQ "Male";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostRFDiff;
WHERE Gender EQ "Female";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostEFDiff;
WHERE Gender EQ "Male";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostEFDiff;
WHERE Gender EQ "Female";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostRFDiff;
WHERE Business_Related EQ "Y";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostRFDiff;
WHERE Business_Related EQ "N";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostEFDiff;
WHERE Business_Related EQ "Y";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostEFDiff;
WHERE Business_Related EQ "N";
RUN;
```

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```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostRFDiff;
WHERE Income_Level EQ "Low";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostRFDiff;
WHERE Income_Level EQ "High";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostEFDiff;
WHERE Income_Level EQ "Low";
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR PostEFDiff;
WHERE Income_Level EQ "High";
RUN;
```

```
/* This portion of code gathered some statistics about the overall
sample */
```

```
PROC SQL noprint;
SELECT MEAN(Viewpoint_Change) into :avgchange FROM cleandatafirst;
SELECT count(*) INTO :yeschange FROM cleandatafirst WHERE
Perception_Change EQ "Y";
SELECT count(*) INTO :nochange FROM cleandatafirst WHERE
Perception_Change EQ "N";
```

```
%LET impact = %SYSEVALF(&yeschange/(&yeschange + &nochange));
%PUT impact = &impact;
%PUT Average viewpoint change is &avgchange;
```

```
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR FKDIFF;
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;
VAR RiskDIFF;
RUN;
```

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```
PROC UNIVARIATE DATA = cleandatasecond;  
VAR RGDIFF;  
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;  
VAR RFDIFF;  
RUN;
```

```
PROC UNIVARIATE DATA = cleandatasecond;  
VAR EFDIFF;  
RUN;
```