Project 1: Financial Well-being in America 2017

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Summary:

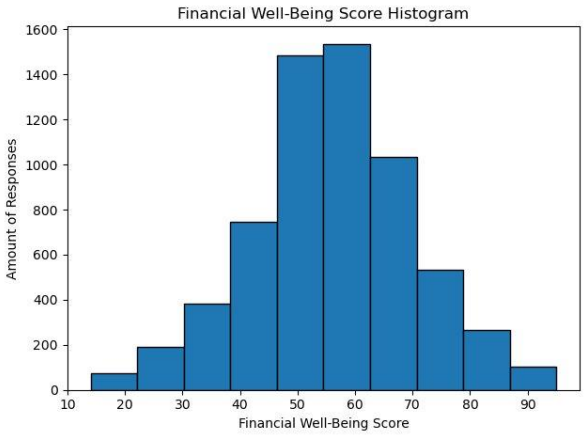
Our team decided to conduct our analysis on the "Financial Well-Being in America (2017)" dataset, which we obtained from Data.gov. This dataset was created from a survey, and it includes questions related to financial intelligence, financial habits, people's views on finances, and questions regarding people's health, skills, age etc. We wanted to get a sense of the variable data in the dataset to assist us in fully understanding what factors impact the financial wellbeing of people in America.

Analysis synopsis:

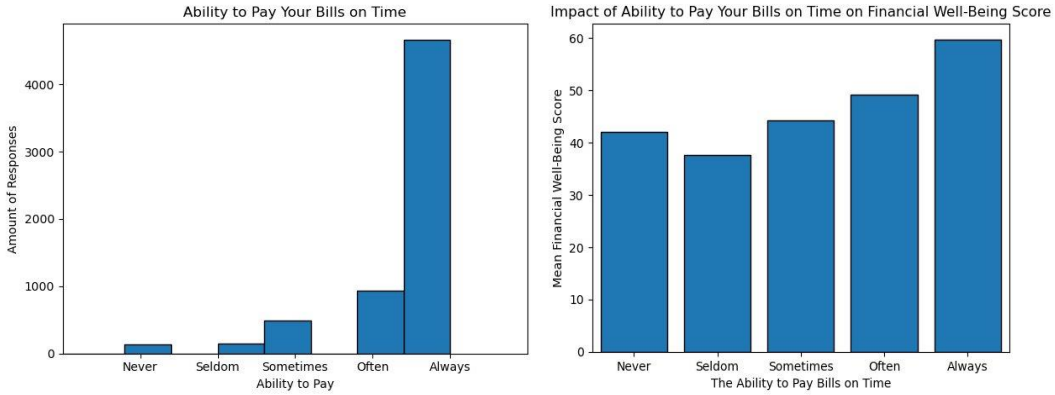
To do this, we looked at the shape of the data to see how many rows and columns there were. After this, we checked how many empty pieces of data were in the dataset. To our surprise, there were no pieces of data that had no value. After digging into the dataset further, we learned that this is because any question that was not answered in the survey was immediately given a -4 or -1 value. Our team then dropped all data with a -4 or -1 as its value since these pieces of data meant that the survey question was not answered.

Additionally, we looked at the different column names to see which variables we wanted to take a closer look at. We then made separate data frames for our data once our team decided what variables to investigate. This made working with the specific variables easier. In this process, we would rename columns so that they were clearer. We chose to analyze variables by picking which we thought impacted the financial well-being score the most.

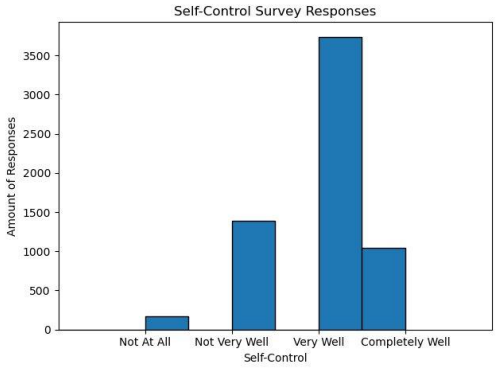
Financial Well-being Variable: The most important variable to our study was the financial well-being score which was a score from 0 to 100 that was created by aggregating all the survey answers, weighing the answers, and giving scores based on how good the person's financial situation was. This score was incredibly important because it was a baseline for how well-off people were financially. This then could be used to compare all other variables to see which variables have the largest impact on the financial well-being score. We created a histogram for the financial well-being score. It had a normal distribution.

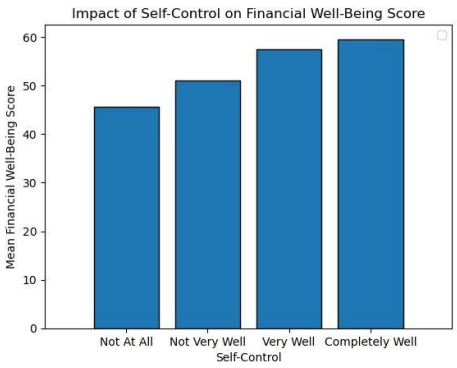


We hypothesized that the following variables had the highest positive correlation with the financial well-being score.

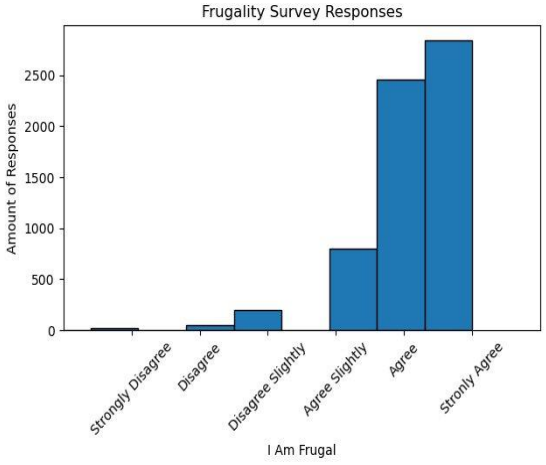


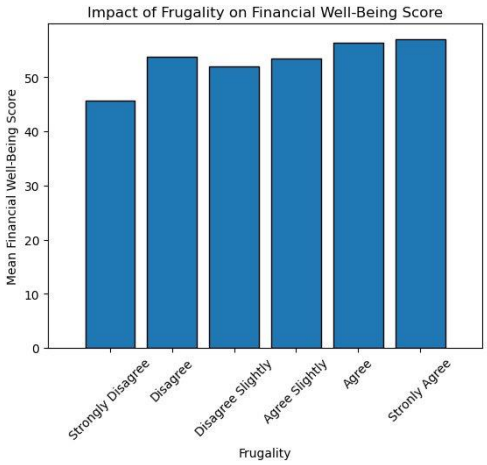
<u>Ability to pay your bills on time variable:</u> We created a histogram to see the distribution of the response which was a right skewed distribution. We then took the average financial well-being score for all the responses and learned that on average if an individual could pay their bills on time, then they would have a higher financial well-being score than if they chose the other options. Interestingly, individuals who answered that they could never pay their bills on time had a higher average financial well-being score than those who answered saying they seldom can pay their bills. We then took the correlation between the financial well-being score and the ability to pay your bills on time and the correlation was a 0.42 which was a moderate positive correlation.



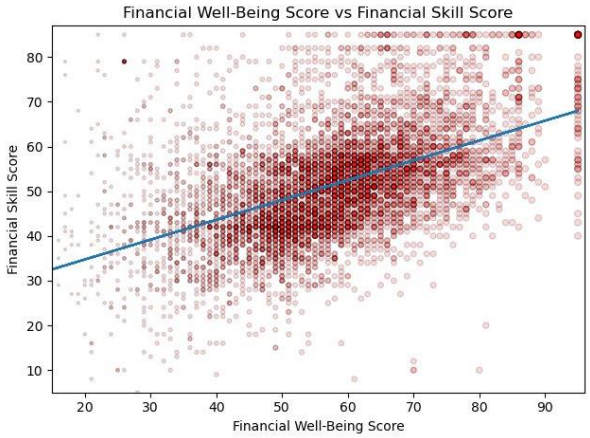


Self-Control Variable: We compared it to the financial well-being score. The self-control question asked on a scale from 1 to 4 how much self-control they had 1 being none and 4 being complete control. We took the average financial well-being score for each response and found that if you thought you had a higher level of self-control, you on average would have a higher financial well-being score. This agreed with our hypothesis, because we thought that if someone had self-control, then they would not make impulsive financial decisions and therefore have a higher financial well-being score.



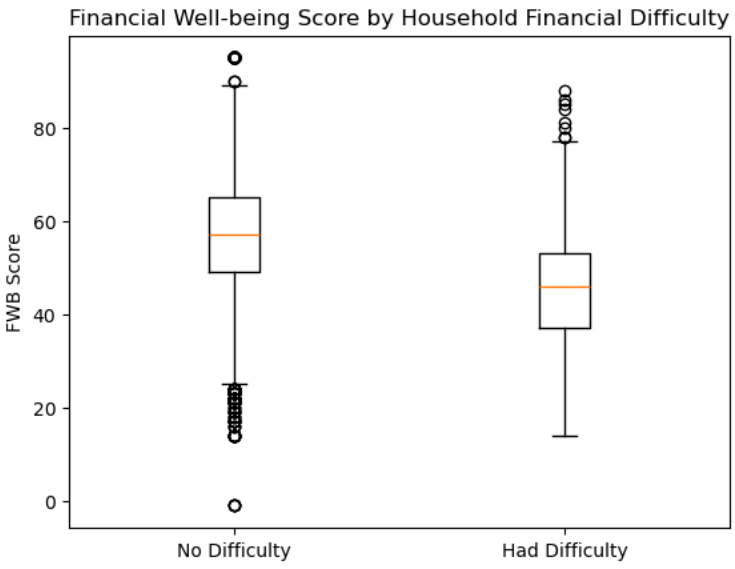


Frugality Variable: This survey question asked on a scale from 1 to 4 how frugal you were 1 being not at all and 4 being completely frugal. We hypothesized that the more someone said they were frugal the better their financial well-being score they would get. This is because if someone is frugal, they reuse items instead of buying new ones and therefore they spend less money. Based on the average financial well-being score for each response, frugality did not have a strong connection between how high your financial well-being score was. The correlation between these two variables was 0.1 which was not what we hypothesized.



The next variables we looked at were their **financial well-being score** and the **financial skill score**. Every survey received one of these scores which graded them on the individual's financial skills and their overall financial well-being. Both variables were rated from 0 to 100. By creating a scatterplot and adding a line of best fit, we were able to see that there was a positive correlation between having a higher financial skill score and having a higher financial well-being score. These two variables had a correlation of 0.5 which is a moderate positive correlation. This means that usually when the financial skill score increased, then the financial well-being score also increased

Financial Well-being Score with Household Financial Difficulty or No Difficulty - "Shocks" Variable

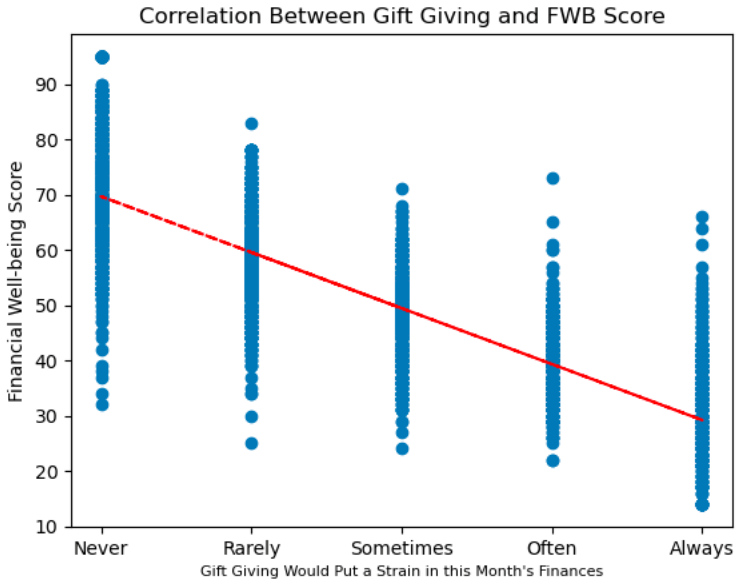


This box plot displays the distribution of Financial Well-being (FWB) Scores across two categories: those who have had no difficulty and those who have had difficulty with household finances.

The median FWB Score for those with no difficulty is higher than for those with difficulty, indicated by the orange line within each box. This suggests that having no financial difficulty is associated with a higher financial well-being score.

The box plot suggests that financial difficulties are associated with a broader and generally lower range of Financial Well-being Scores. However, there are exceptions, with some individuals in both groups having scores that deviate significantly from the median of their respective categories.

Financial Well-Being (FWB) Score: "Gift Giving Would Put a Strain in this Month's Finances" Variable



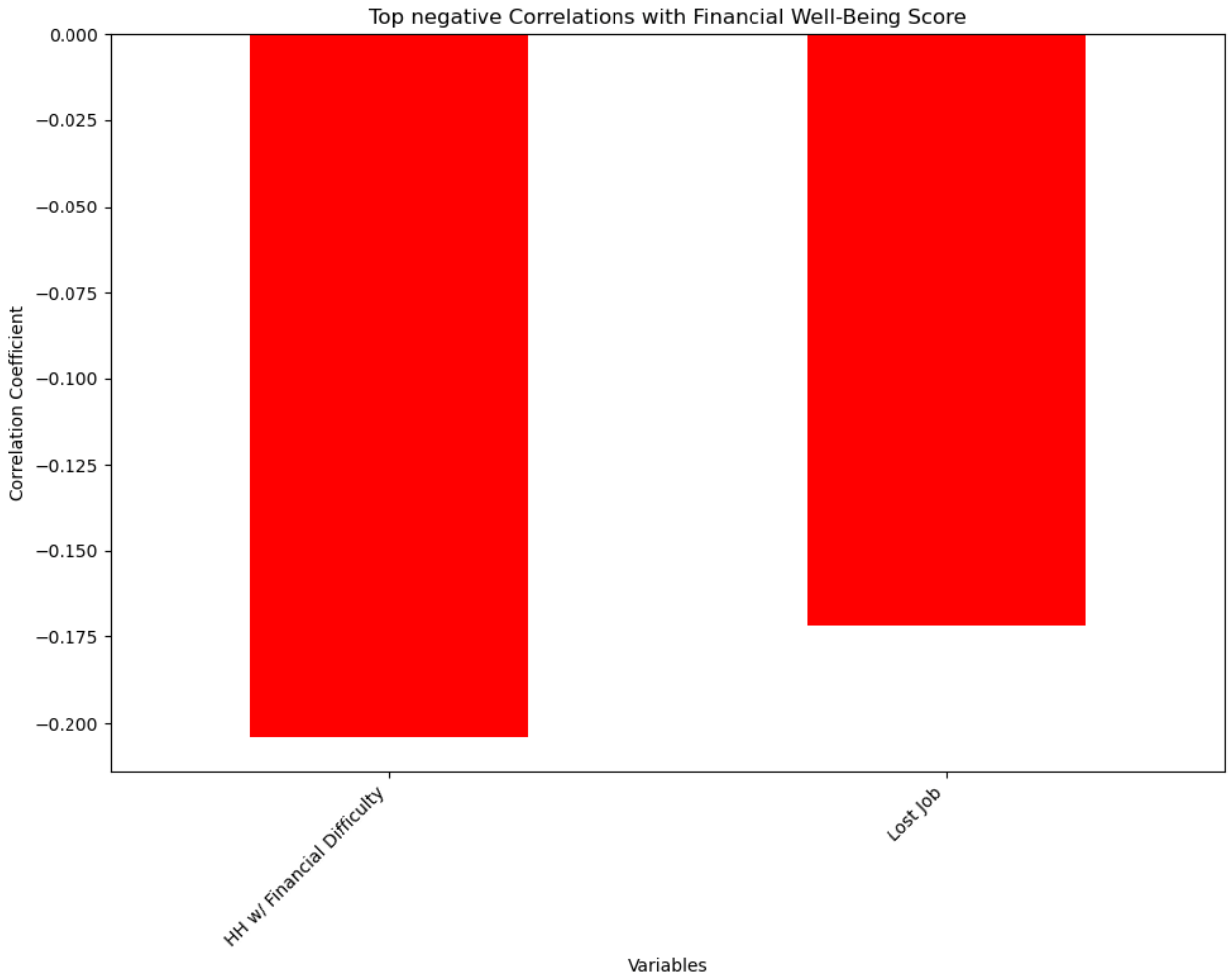
This scatter plot with a trend line depicts the correlation between gift-giving and Financial Well-being (FWB) Scores across five categories based on how often gift-giving would put a strain on that month's finances: Never, Rarely, Sometimes, Often, Always.

The red trend line indicates a negative correlation between the frequency of financial strain due to gift-giving and FWB Score. As the frequency of financial strain from gift-giving increases (from "Never" to "Always"), the average FWB Score decreases.

The plot suggests a general trend where individuals who never or rarely experience financial strain from gift-giving tend to have higher FWB Scores, and those who often or always

experience this strain tend to have lower scores. This could imply that the ability to give gifts without financial strain is an indicator of overall financial well-being. However, the presence of outliers indicates that the relationship is not absolute and other factors likely play a significant role in an individual's financial well-being.

Top Negative Correlations with Financial Well-Being (FWB) Score: "HH w/ Financial Difficulty" & "Lost Job" Variables

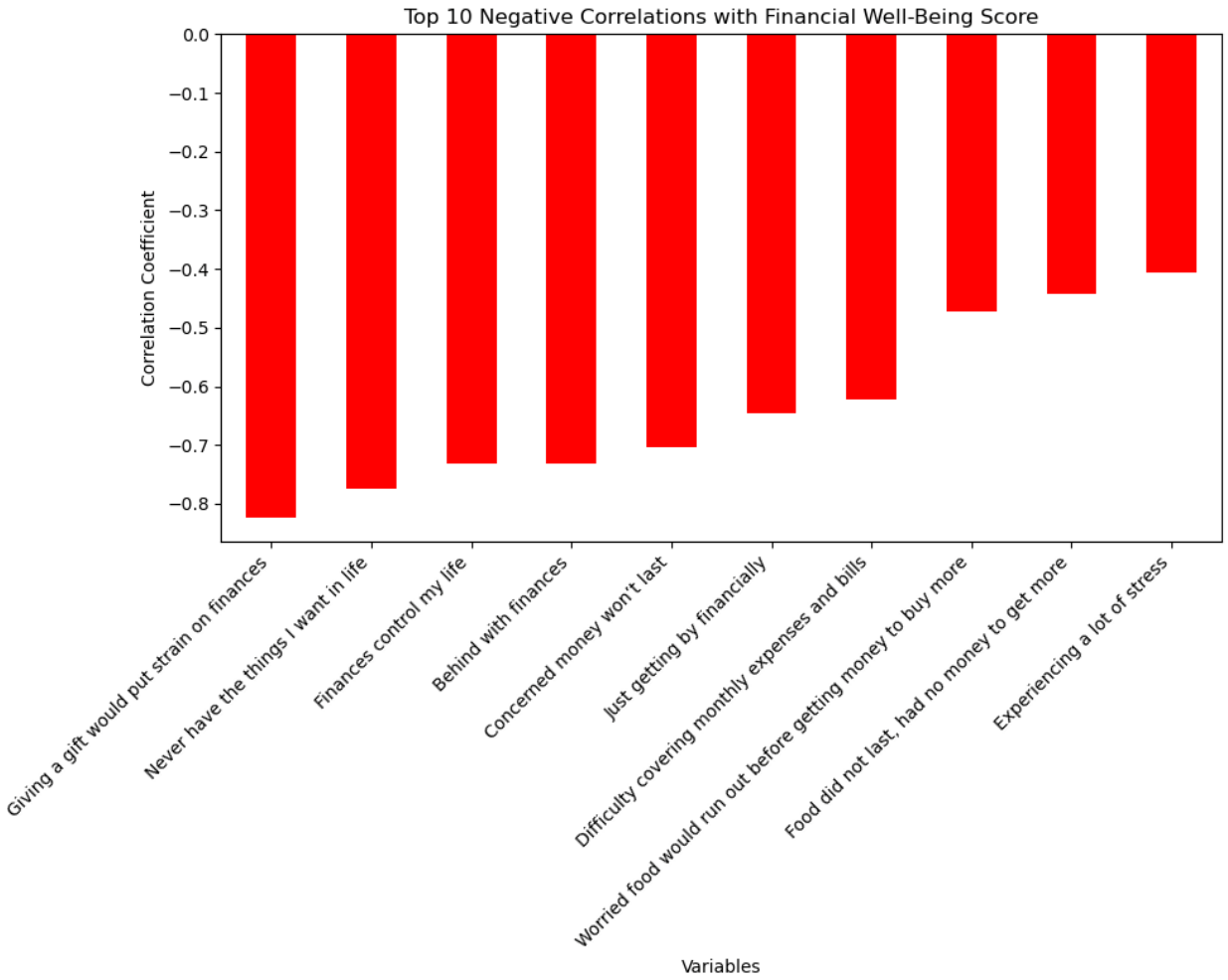


This bar chart represents the top negative correlations with Financial Well-being (FWB) Score for two variables: household financial difficulty ("HH Financial Difficulty") and job loss ("Lost Job").

The correlation coefficients both appear to be between -0.15 and -0.20. The correlation coefficients for both variables are relatively close in magnitude, suggesting that both have a similarly strong negative relationship with financial well-being.
The chart suggests that household financial difficulty and job loss are both negatively associated with an individual's financial well-being, with neither one being markedly more significant than the other based on this data. These findings support the intuitive idea that

increased financial stressors, such as difficulty paying bills or unemployment, are likely to diminish an individual's overall financial well-being.

Top 10 Variables with Negative Correlations to Financial Well-Being (FWB) Score



This bar chart illustrates the top 10 variables with negative correlations to Financial Well-being (FWB) Score.

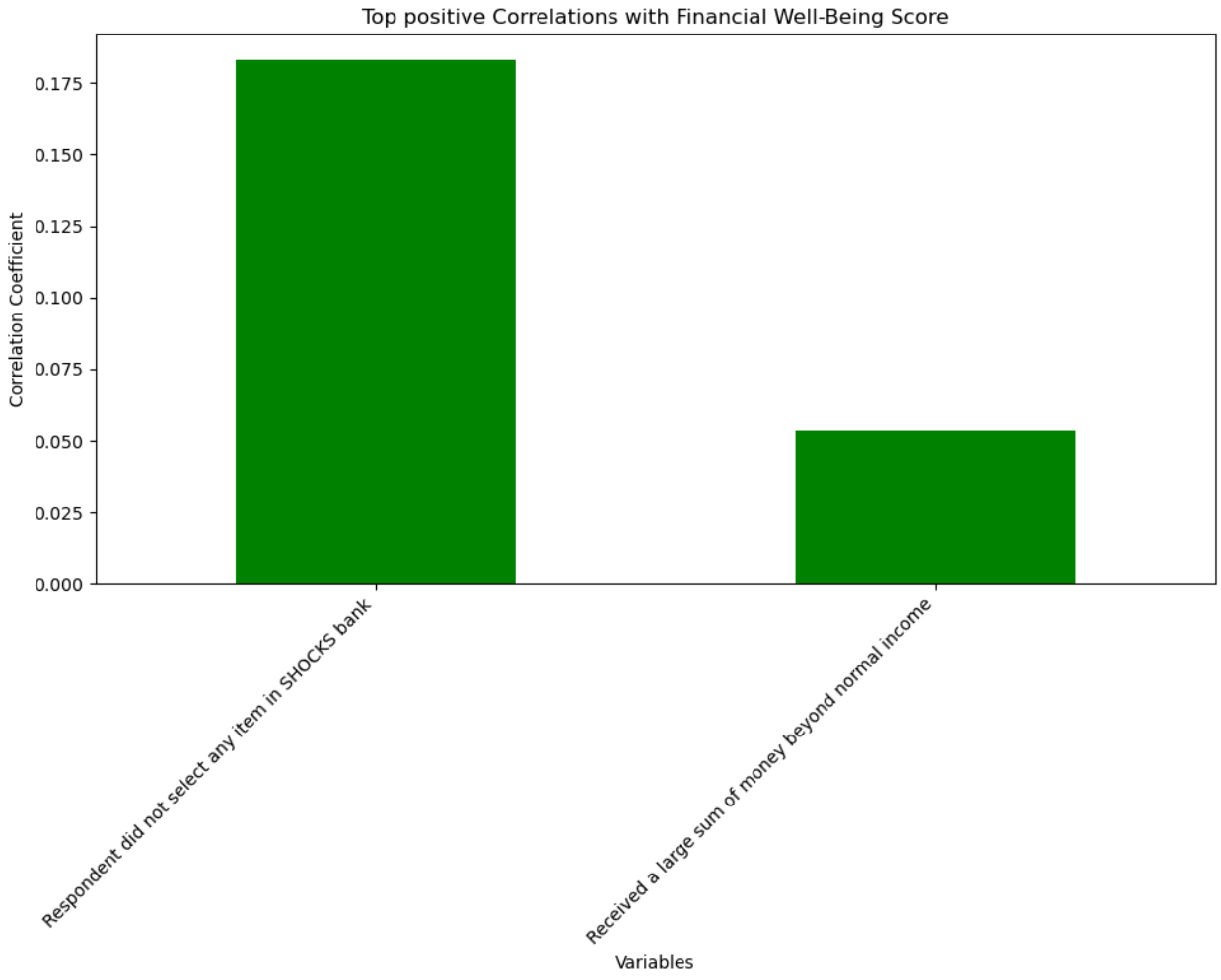
All variables depicted have a negative correlation with FWB Score, meaning that as these factors increase or occur more frequently, the FWB Score tends to decrease.

The correlation coefficients range from approximately -0.1 to nearly -0.8, indicating a wide range of negative impacts on FWB Score, with some variables having a much stronger negative relationship than others.

This chart indicates that variables related to financial strain, lack of financial freedom, and psychological stress about finances are significantly negatively correlated with financial well-being. The stronger negative correlations, especially those closer to -0.8, suggest

these factors are particularly impactful. It implies that interventions aimed at reducing financial strain and stress could potentially have a large positive effect on financial well-being.

Top Positive Correlations with Financial Well-Being (FWB) Score: "Respondent did not select any item in SHOCKS Bank" & "Received a large sum of money beyond normal income" Variables



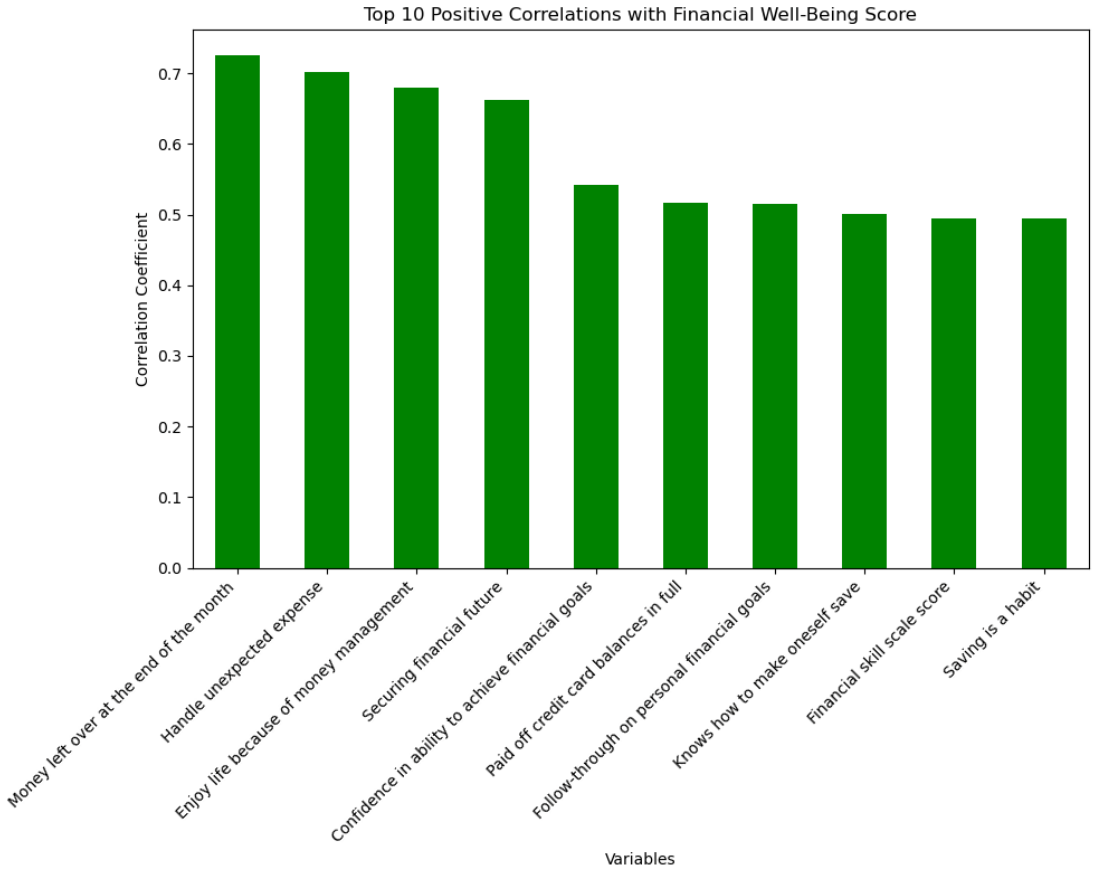
This bar chart shows the top positive correlations with Financial Well-Being Score for two variables: "Respondent did not select any item in SHOCKS Bank" and "Received a large sum of money beyond normal income".

The first variable has a noticeably higher positive correlation with the Financial Well-Being Score compared to the second one. This implies that respondents who did not report any significant negative financial shocks (as presumably captured by the "SHOCKS Bank" survey item) have a stronger association with higher financial well-being. The second variable, "Received a large sum of money beyond normal income," also shows a positive

correlation, suggesting that receiving additional income is associated with higher financial well-being, though the impact is less than not having financial shocks.

This chart highlights the importance of financial stability and the positive impact of additional income. It shows that while unexpected income can enhance financial well-being, the absence of negative financial events is a stronger indicator of financial health. This suggests that strategies aimed at minimizing financial disruptions may be more effective in promoting financial well-being than those focused solely on increasing income.

Top 10 Variables with Positive Correlations to Financial Well-Being (FWB) Score



The bar chart presents the top 10 variables with positive correlations to Financial Well-being (FWB) Score.

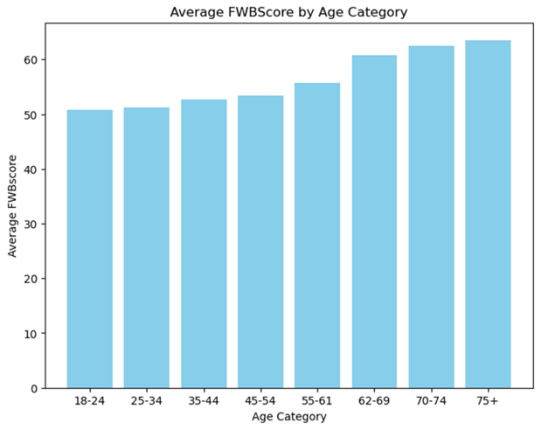
All ten variables show a positive correlation with FWB Score, indicating that higher values or occurrences of these variables are associated with higher FWB Scores. The correlations range from just above 0.2 to nearly 0.7, suggesting varying degrees of association with financial well-being.
The variable with the highest correlation to FWB Score appears to be "Money left over at the end of the month", suggesting that having surplus money is the strongest predictor among the listed factors for a higher FWB Score. The second and third highest correlations are

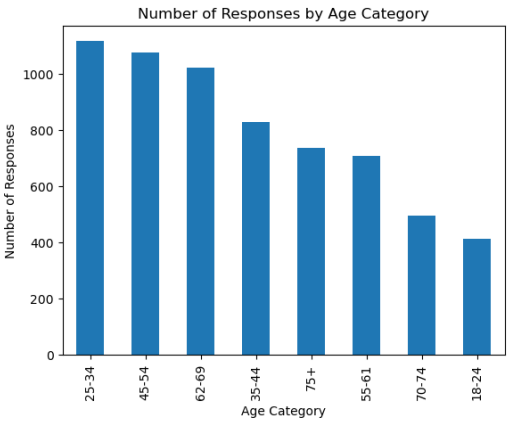
"Handle unexpected expenses" and "Enjoy life because of money management", respectively, indicating that the ability to handle financial emergencies and enjoying life due to good money management are also strongly linked to financial well-being.
Paid off credit card balances in full" and "Financial skills score" are included in the list, indicating that debt management skills and general financial literacy or skills are important contributors to FWB Score.

This chart reinforces the concept that effective money management, the ability to deal with financial surprises, and maintaining positive financial habits are all correlated with a higher sense of financial well-being.

We wanted to further understand the outcome of the survey by analyzing the average highest and lowest financial well-being score for various variables, as listed below.

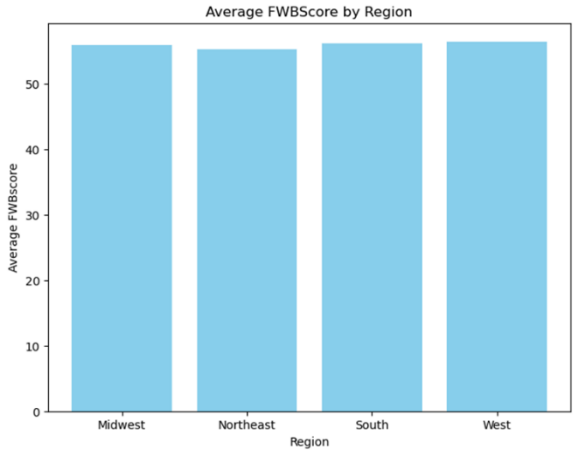
Age category variable: We analyzed the data by converting it into age group categories using a defined dictionary, and then we calculated the average financial well-being score for each group. By mapping the age values, we created a new column for the age categories and next used the pivot table to calculate the mean (average) financial wellbeing score for each age category. Finally, we plotted the outcome using a histogram which visualizes the distribution of average financial wellbeing score across age groups, indicating that financial wellbeing tends to increase with age, with the highest average score observed in the 75+ age category.
However, upon further analysis of the number of responses by age group showed significantly low number of responses for 75+ age group, which makes it difficult to
However, further analysis of the number of responses by age group showed a significantly low number of responses for the 75+ age group, which makes it difficult to conclude that the above is valid for this data set. This concise analysis provides insights into the demographic composition of the surveyed population, particularly regarding age distribution.

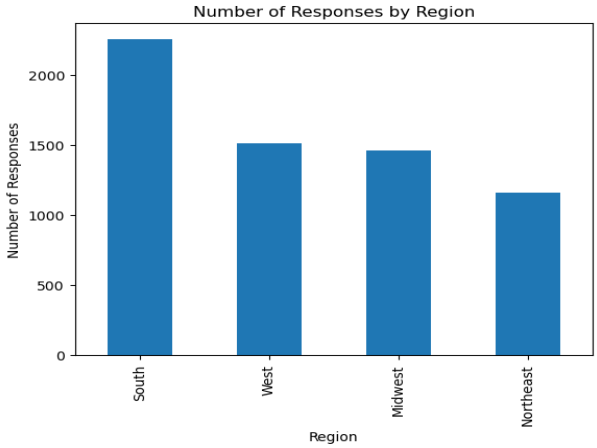




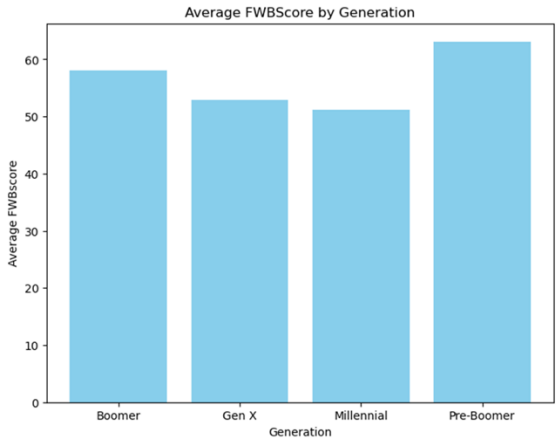
Region Variable: We used the same method as above to calculate the average financial wellbeing for each region in America and the output for this calculation led to understanding that the West region has the highest average and the Northeast the lowest. This analysis provides insights into how financial well-being varies across geographic regions, aiding in the identification of areas where financial support or intervention may be necessary. There is not a big difference among regions.

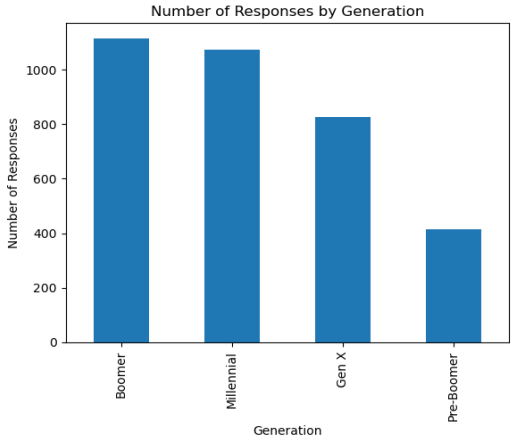
We also looked at the survey response for each region and noticed that the South region has the highest response rate, the Northeast has the lowest.





Generation Variable: We analyzed this variable using the same method as above, and the results are similar to the results le. The Pre-Boomer has the highest financial average score, and the millennial generation has the lowest. However, regarding the number of respondents, the pre-boomer has the lowest.

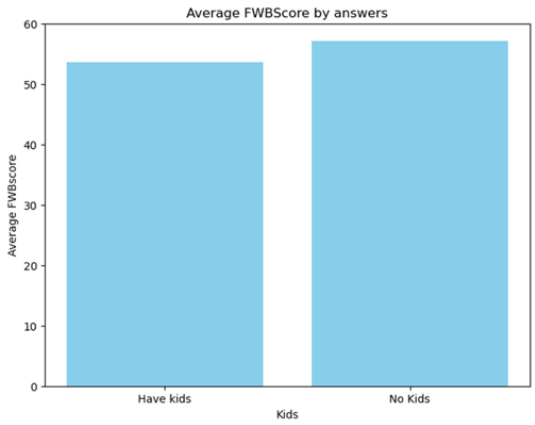


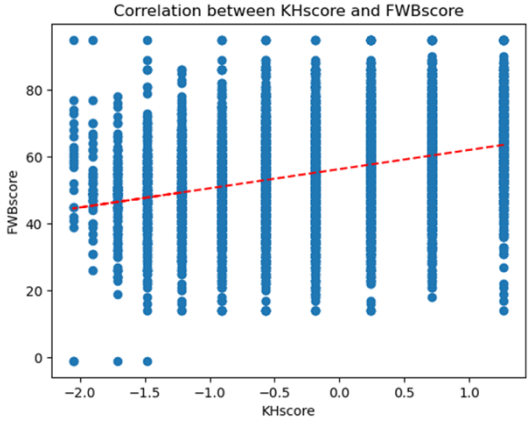


We also looked at two more variables to see its impact on the financial well-being score. Based on the dataset and the calculation, there is a weak positive correlation among these two variables.

Kids/No Kids Variable: We analyzed the association between respondents' parental status and their financial well-being scores. It initially categorizes respondents as either having kids or not, creating a new column for this classification. We then calculated the average financial well-being score for each parental status using a pivot table. This analysis offers insights into the potential influence of parental status on financial well-being, however the difference between the two is not as much. Also based on the dataset we will have to bring in other variables and do a multi-column analysis.

KHscore (Knoll and Houts Financial knowledge scale score) variable: Here, we wanted to understand if financial knowledge impacted the financial score. Based on our analysis, there is a positive correlation. However, we cannot conclude that there is a causation, as we will have to look at other columns and values within the dataset to compare with the KHscore variable.





Conclusion/Summary

Our analysis sought to identify variables with a moderate to strong correlation to financial well-being. While our initial hypothesis considered a broad set of factors, the results highlighted that the most significant correlations were not universally spread across all anticipated areas. Notably, financial skills, the ability to navigate life's shocks, and maintaining savings underscored their importance to financial well-being. On the other hand, the impact of having children, frugality, and self-control, while relevant, did not exhibit as robust a correlation as expected.

The analysis underscores the importance of financial buffer—having accessible funds for unexpected needs correlates positively with financial well-being, underscoring its significance for peace of mind. Conversely, the pressure of non-essential spending is highlighted by the pronounced negative correlation seen with financial strain from gift-giving. These findings reveal a nuanced financial landscape where stability and discretionary spending have substantial but opposing effects on an individual's financial health.