

# Influences in Romantic Partner Decisions

Exploratory Data Analysis with Speed Dating Experiment Data

Course: Data 201A Fall 2020

Name: Sophia Zhang

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## Background

The dataset for this analysis is from the paper “Gender Differences in Mate Selection” by Columbia Business School professors Ray Fisman and Sheena Iyengar (1). Data was gathered from 552 participants in experimental speed dating events from 2002-2004. The attendees had a four minute "first date" with every other participant of the opposite sex. They were asked to rate their date on six attributes. The dataset also includes questionnaire data about demographics, beliefs on what is valuable in a mate and income information.

## Objective

The objective of this project is to determine which variables are desirable in a potential romantic partner. How variables actually influence selection of a partner and how they change between gender, and people with different income level.

## Data Summary

The variables that were used in the analysis are found in the table below.

They fall into two groups:

- i) The 6 attributes surveyed and their associated information: Attractiveness, Sincerity, Intelligence, Fun Ambition, Shared Interests
- ii) Personal identifiers such as: assigned ID number, gender, age, income

Participant refers to the person the observation is for, and date refers to their date during event.

Table 1: Variable Descriptions

Variable	Description
<i>General</i>	
id	participant id
pid	date's id
gender	participant gender, Female=0 Male=1
match	whether participant matched with his/her date (match=1 (both decision=1), no match=0)
Income	Annual income of participant
int_corr	the correlation coefficient between the participant's interests and their dates' interests
age	age of the participant
dec	decision of the participant (yes to second date; decision=1, no;decision=0)
age_o	age of the date
dec_o	decision of the date
<i>Attractiveness rating</i>	
attr1_1	how important is attractiveness to you in a date
attr	how attractive you find your date
attr_o	how attractive your date finds you

Variable	Description
<i>Sincerity rating</i>	
sinc1_1	how important is sincerity to you in a date
sinc	how sincere you find your date
sinc_o	how sincere your date finds you
<i>Intelligence rating</i>	
intel1_1	how important is intelligence to you in a date
intel	how intelligent you find your date
intel_o	how intelligent your date finds you
<i>Fun rating</i>	
fun1_1	how important is fun to you in a date
fun	how fun you find your date
fun_o	how fun your date finds you
<i>Ambition rating</i>	
amb1_1	how important is ambition to you in a date
amb	how ambitious you find your date
amb_o	how ambitious your date finds you
<i>Shared Interests</i>	
shar1_1	how important is shared interests to you in a date
shar	how ambitious you find your date
shar_o	how ambitious your date finds you

The raw data contained 8,378 rows (observations) and 195 columns (variables) in total. After cleaning and filtering the data set had 2973 rows × 31 columns. The data was filtered based on variables of interest (as stated above). Observations with missing data in the survey (NA values) were dropped since they were mostly qualitative perceptions and cannot be easily substituted.

## Analysis

The analysis is provided below in a series of question and answers, with supporting details and visualizations.

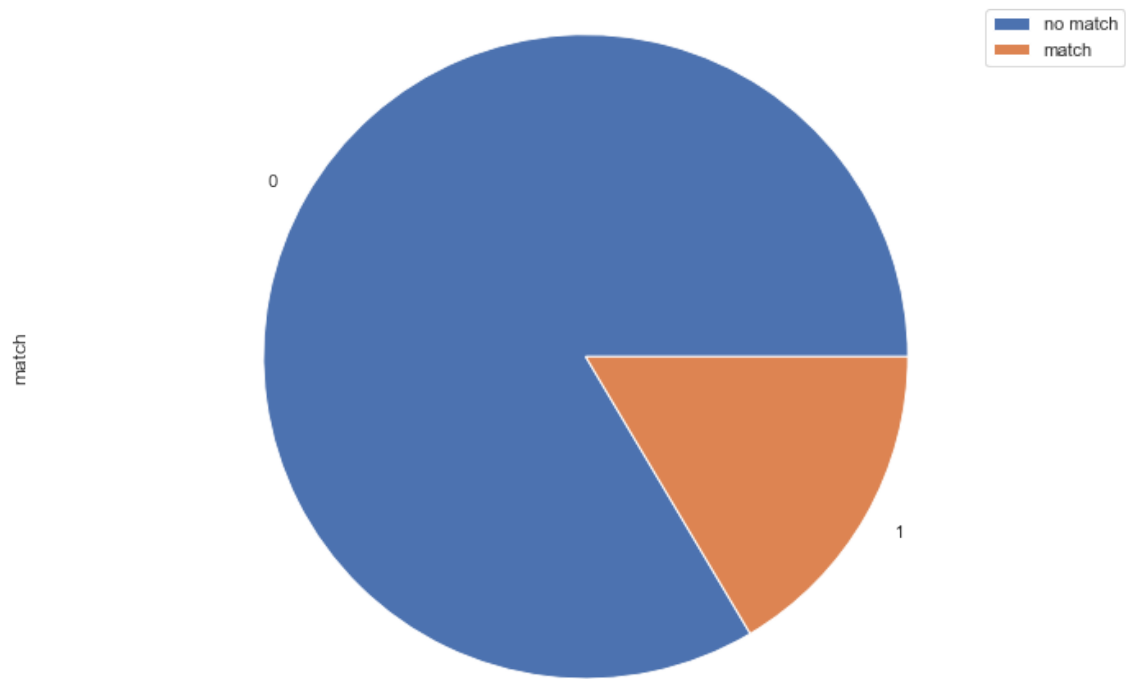
*Question: How hard is it to find a romantic match?*

Answer: Not very easy, only 1 in 6 find one.

From the total data, only 16.5% of all participants found a match, which is much less than if by chance (50%).

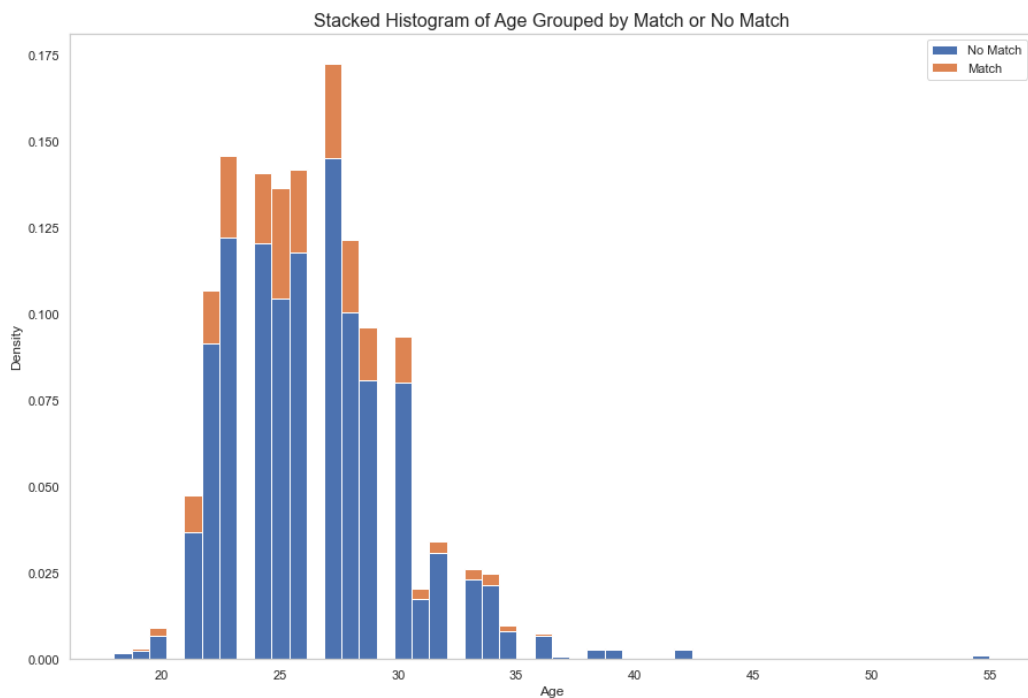
Table 2: Match Results

Date Result	Percent
Match (1)	16.5%
No Match (0)	83.5%



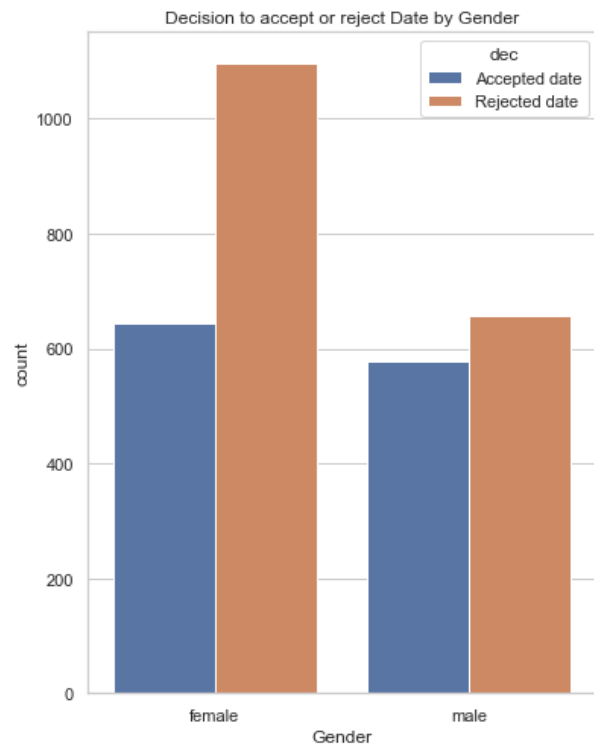
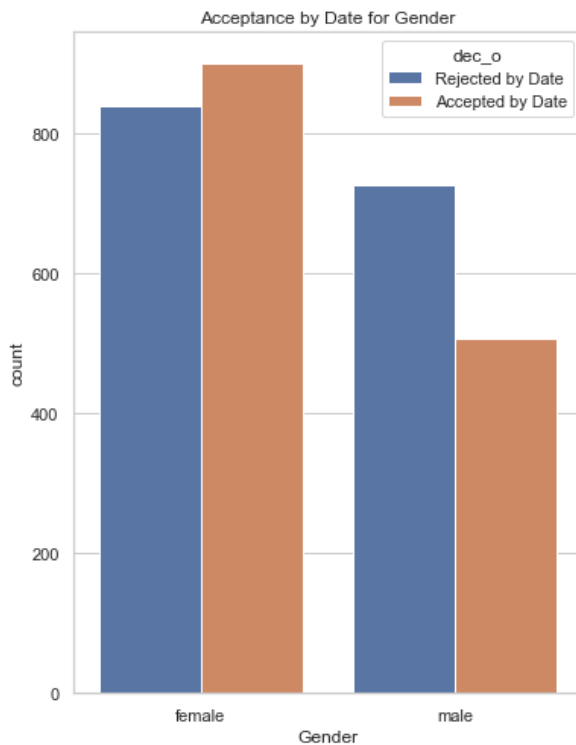
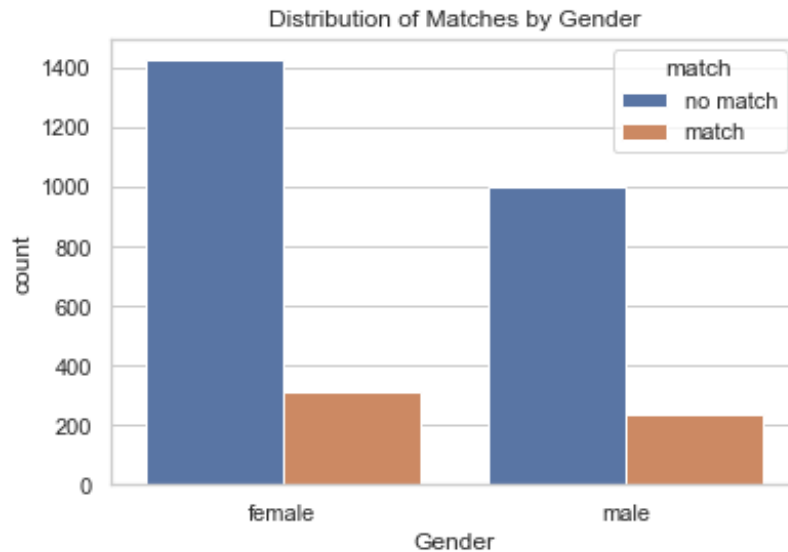
*Question: Is it harder to find a match as you get older?*

Answer: Yes, people older than 35 proportionally had almost no matches. This can also be attributed to the distribution of ages (less and less people to choose from in the older age groups).



*Question: Do women or men have better chance of finding a match?*

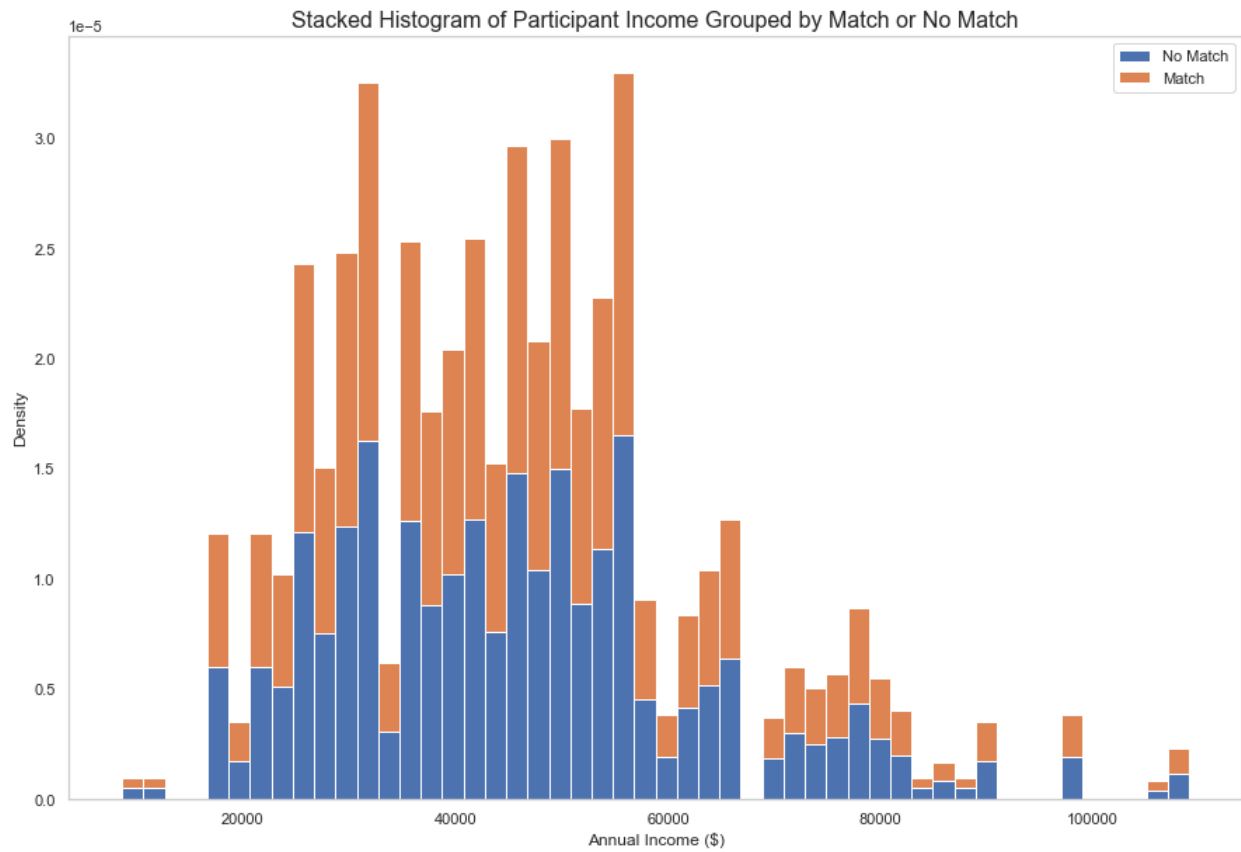
Answer: Surprisingly, women have proportionally less matches than men. But looking at the decisions of the participant and their date reveals that women are much more likely to be accepted by their date than men and more likely to reject their date.



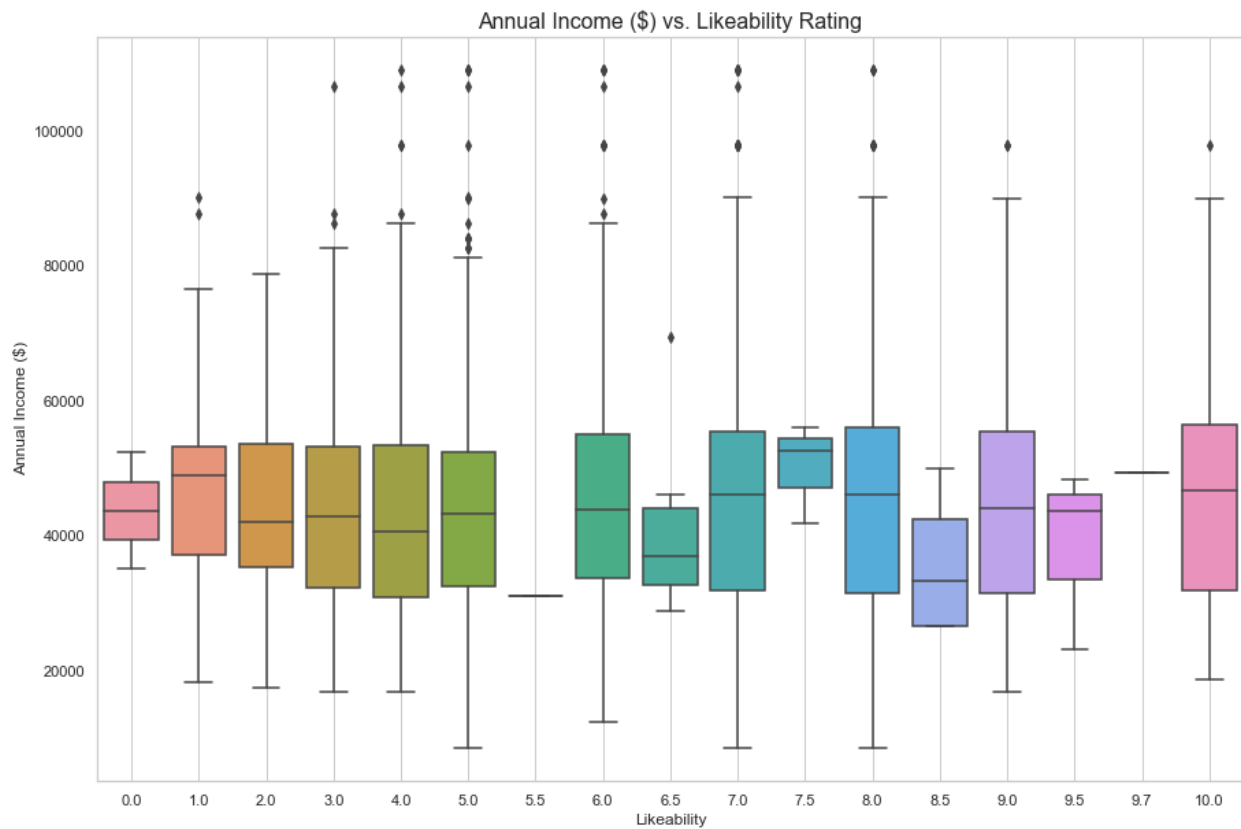
*Question: Does money buy you love?*

Answer: No, at least not on a first date.

Looking at the distribution of income, for those with matches and those without, one can see that the proportion of matches do not differ noticeably for those at the higher income levels.

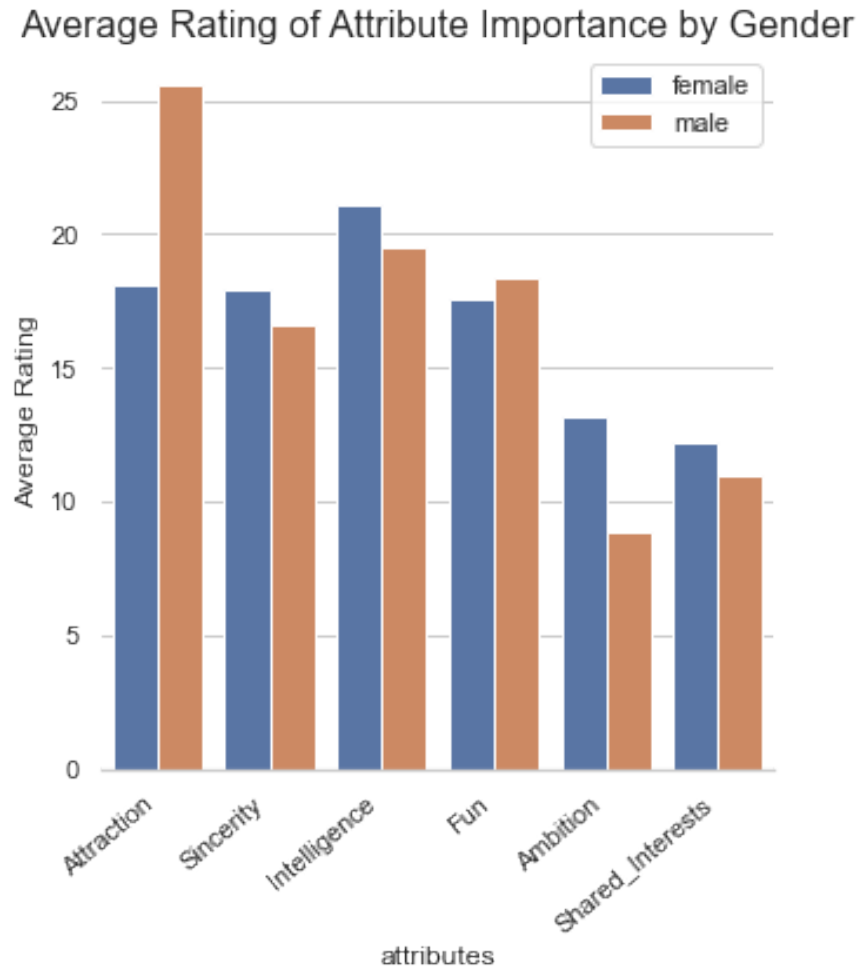


We can also look at how likeable the person comes off as to their date based on their income. Again there is no noticeable impact for top earners, and those in the wealthy category (over \$100,000) fall in the middle of the likeability scale.



*Question: How does the rating of importance of attributes in a date change with gender?*

Answer: On average, men rank attractiveness as the most important in a partner, while women rank intelligence as the most important. However, they are the top 2 attributes for both men and women. The biggest gap is in ambition, with men generally ranking ambition in a partner much lower than women.



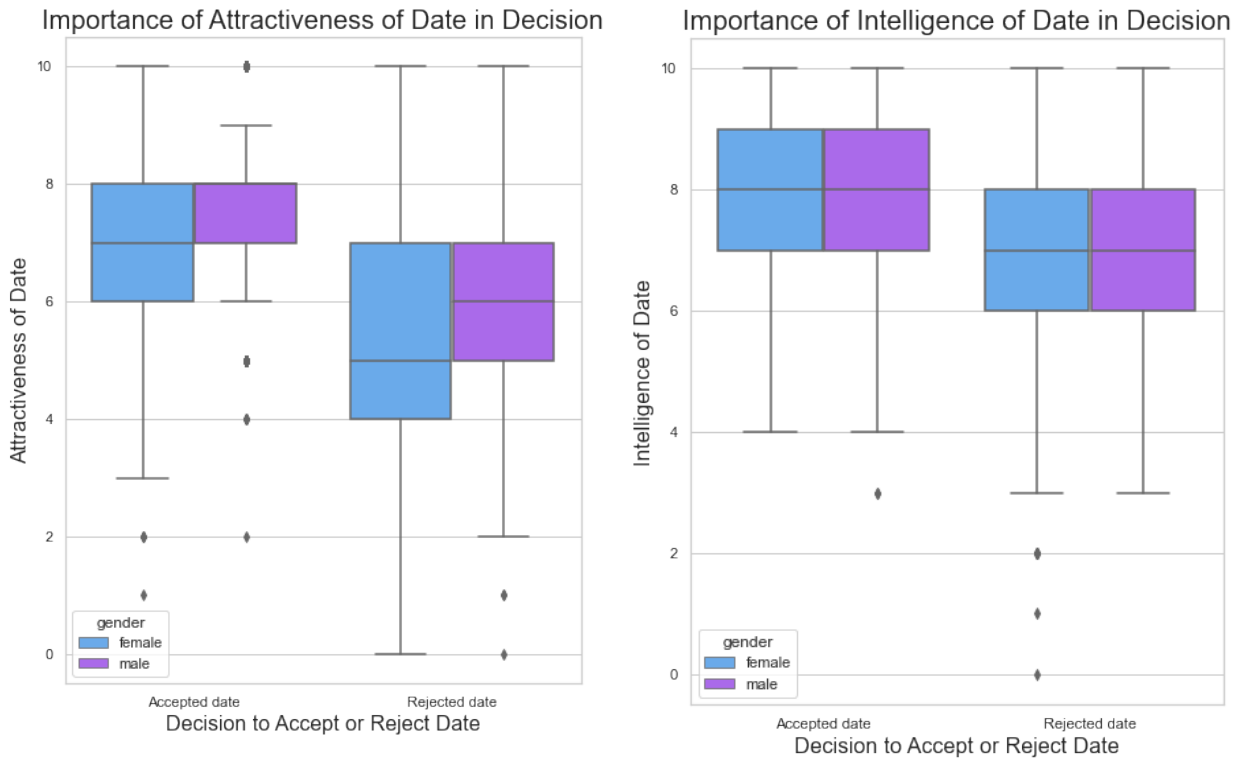
These are the rankings of the 6 attributes according to gender:

Table 3: Variable Importance Rank by Gender

Female	Male
Intelligence	Attractiveness
Attractiveness	Intelligence
Sincerity	Fun
Fun	Sincerity
Ambition	Shared Interests
Shared Interests	Ambition



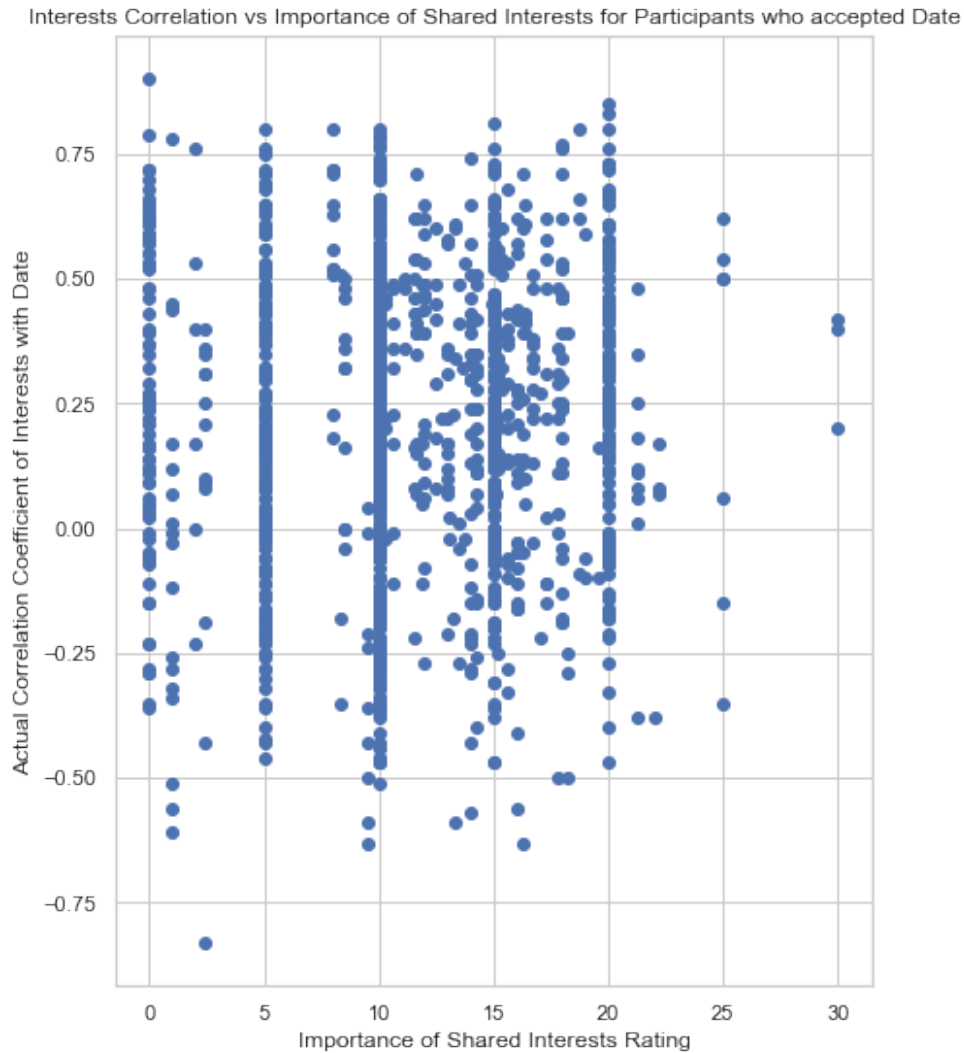
The top 2 attributes have different impacts by gender on the decision to accept or reject a date. Males tend to accept dates within a much narrower attractive range, while intelligence is weighted identically in the accept or reject decision by men and women.



*Question: Do people care if their partner has shared interests?*

Answer: No, even if people say they care about having common interests, their decision to select a date does not depend on it. The graph below shows data for participants who said yes to their date (decision to accept). The correlation coefficient of the participants interests with their date's interests is on the y-axis, a higher positive correlation means they have more shared interests, and vice versa. The rating of how important shared interests are to the participant is on the x-axis.

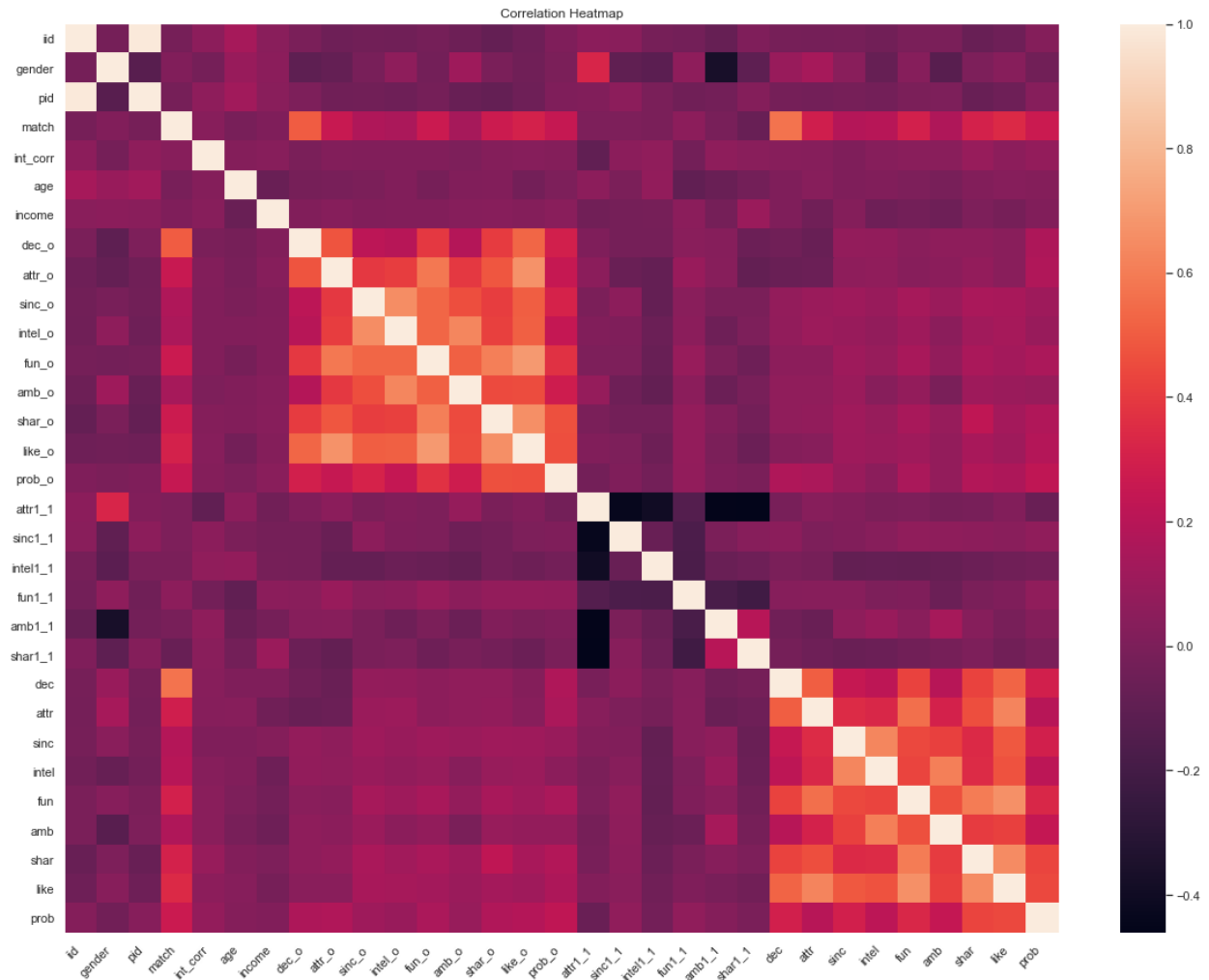
It was expected that the higher the importance rating, the higher the interests correlation would be for the participant's match. However, no distinct relationship can be seen, therefore the shared interests do not impact the decision to accept a date.



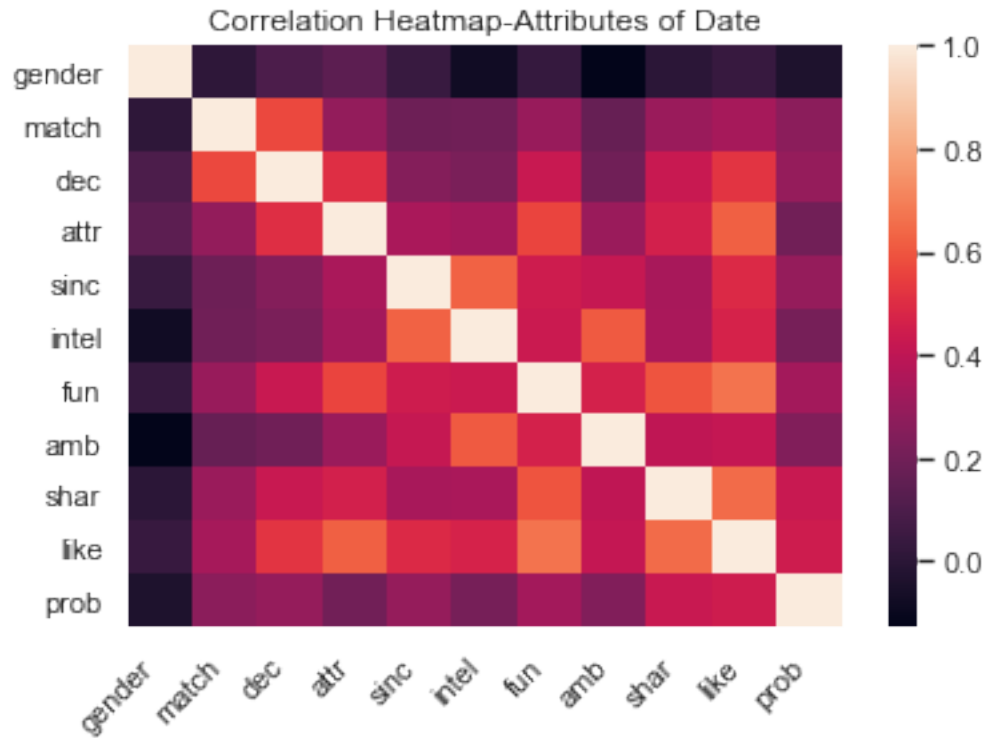
*Question: What are the correlations between variables?*

Answer: The figure below shows the correlations between all the variables in the cleaned dataset. At first glance, it is clear that the 6 attributes (attractiveness, sincerity, intelligence, fun, ambition, and shared interests) are positively correlated with each other and with the decision and match variable.

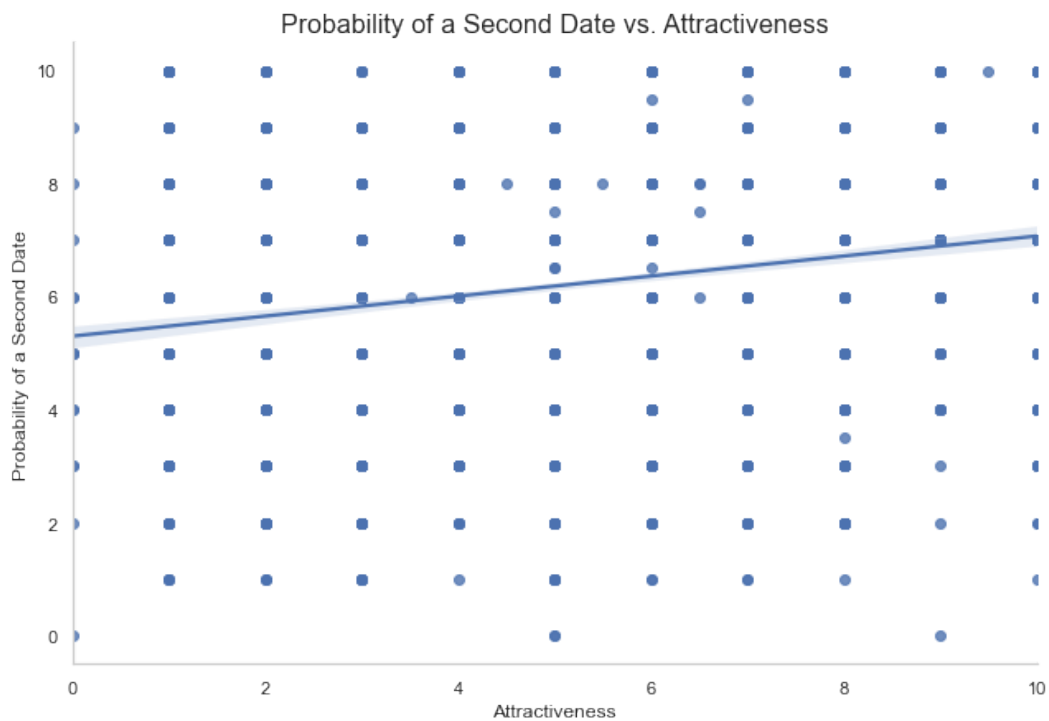
Gender plays a role as we've seen; males rank attractiveness very highly while females prefer ambitious partners. People who rate attractiveness as very important tend to also value fun more than intelligence, ambition, or sincerity.



By focusing in on the attributes of the date as rated by the participant we can see a clear correlation between the attributes. The variable correlated best with being liked by a participant is the date is fun, but when it comes to decision time, the date being attractive is more important.



The probability of the participant saying yes to a second date also shows a more positive relationship (when regressed) to the attractiveness of their date.



## Conclusion

In this data analysis, we explored data from a speed dating analysis and looked at variables which may tell us what attributes people desire in a potential partner, and how the match making process differs across groups. Overall, only 16.5% of all participants found a match, which shows that find a date is not easy! It gets even harder as people get older, with proportion of matches over age 35 dropping steeply.

A surprising finding is that women are less likely to find a match than men. But that is because women are much more picky than men and more likely to reject their date. Per popular belief, men tend to see attractiveness as the most important attribute in a partner, while for women it is intelligence. However, they are the top two attributes for both men and women.

These are the rankings of the 6 attributes according to gender:

<b>Female</b>	<b>Male</b>
Intelligence	Attractiveness
Attractiveness	Intelligence
Sincerity	Fun
Fun	Sincerity
Ambition	Shared Interests
Shared Interests	Ambition

We can conclude from the data that one's income does not significantly impact a person's chances of finding a match. The proportion of matches do not differ noticeably for those at the higher income levels. We can assume perhaps at least on the first few dates it's true, when it is hard to assess someone's financial status. Again, when it comes to likeability, there is no noticeable impact for top earners; rich or poor, you can still have great (or lacklustre) appeal.

Finally, when people say they want a partner with common interests, it is not necessarily reflected in their final decision. The data showed no distinct relationship between how highly shared interests are ranked by the participant and their decision to accept a date who shares their interests. Attributes are also correlated with each other; people who rate attractiveness as very important tend to also value fun more than intelligence, ambition, or sincerity. Logically, the more fun a person is the more likeable they are perceived, but when it comes to getting picked for a second date, being attractive still is a better predictor.

In general, the dataset showed a rather superficial view of the dating scene and supports the belief that good looks trumps personality a lot of the time. However keep in mind this is in the context of speed dating and may not translate directly to the longevity of a long term relationship.

## References

Dataset Source:

1. "Gender Differences in Mate Selection" Fisman R. and Iyengar, S.,  
<<https://www.kaggle.com/annavictoria/speed-dating-experiment>>, accessed September 25, 2020.