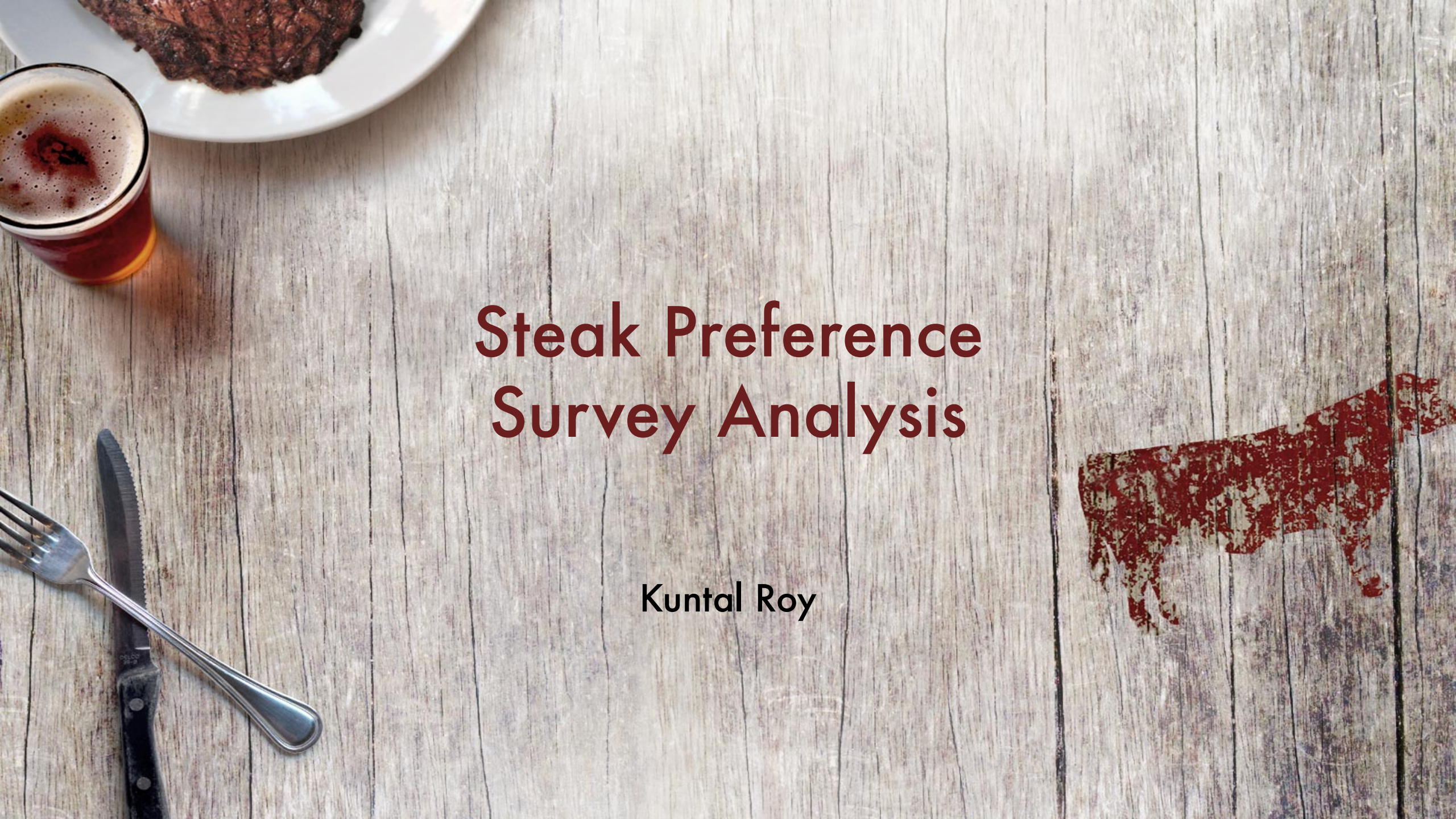


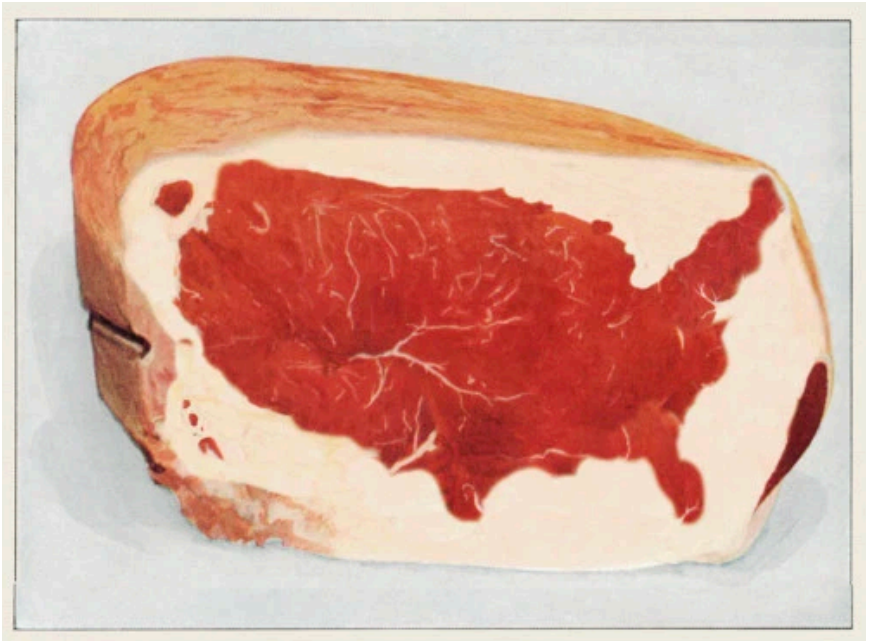
Steak Preference Survey Analysis

Kuntal Roy

Introduction

How do you like your steak to be cooked? Do you eat steak at all? Why do people order their steaks incinerated?

- These questions usually boggle the minds of a Steakhouse owner
- Americans consume about 25 billion pounds of beef annually
- In this simple analysis, I have analyzed a survey data
- This survey data of 550 people attempts to interpret and evaluate risk with steak rareness
- As part of the effort, I tried to draw conclusions on:
  - Demographics of the population sample
  - Relationship between steak rareness and demographics
  - Relationship between risk-taking behavior and steak rareness



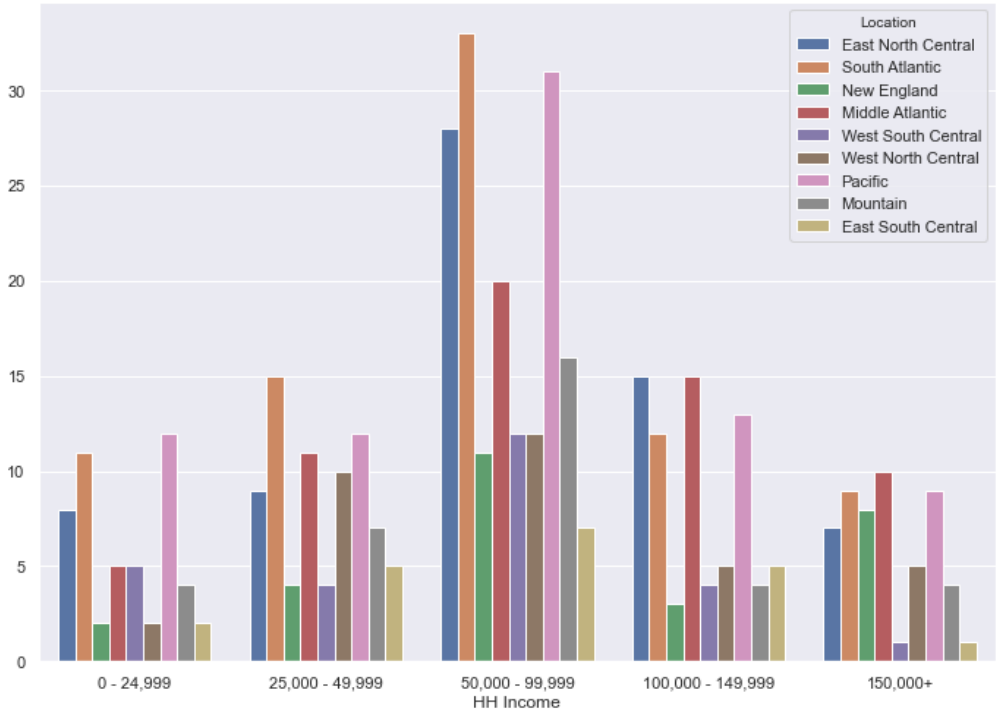
Assumptions

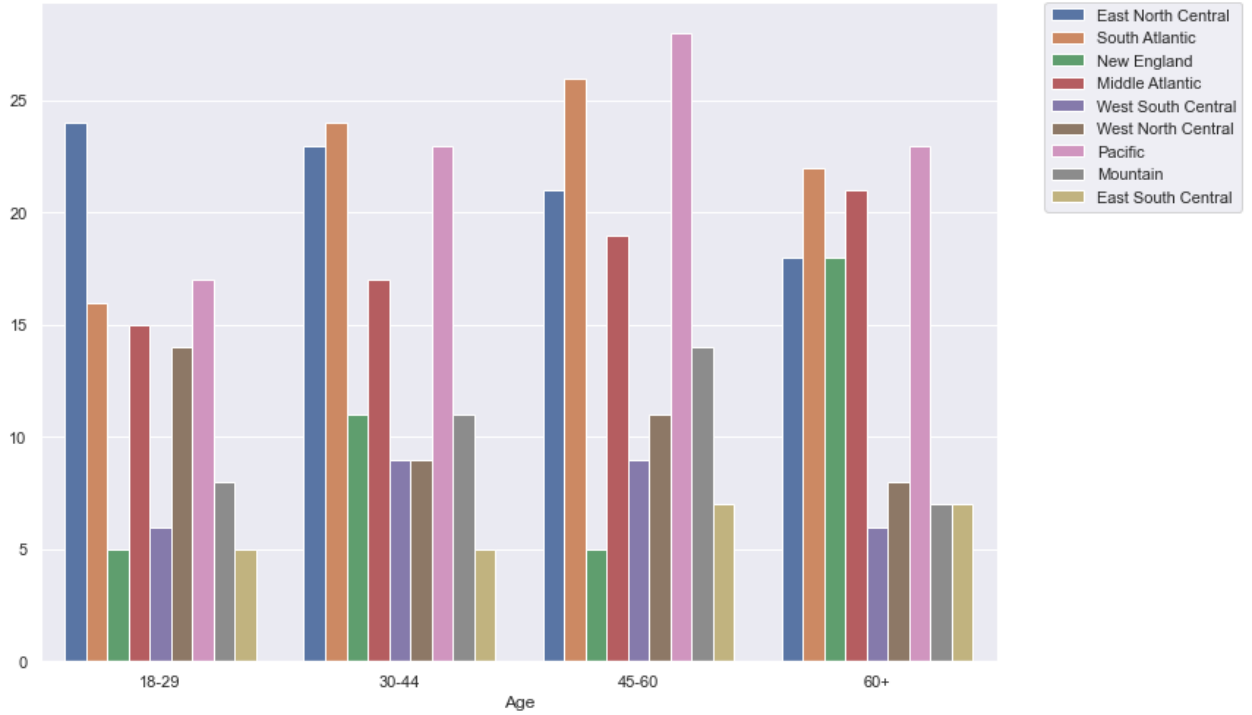
- All insights and conclusions are based on the sample survey. There is a possibility of selection bias impacting these conclusions.
- Initially, data was provided for 550 people. However, on performing data cleaning, 36 instances had missing data entries and hence, the final analysis was done on 514 people.
- Out of these 514 people, only 410 people said that they eat steak.

Data Cleaning

- Column names were reduced to single tokens for better data accesses for the analysis
- Data was de-duplicated at an overall level. No instances were deleted from this operation
- Missing values were removed. All rows which had no missing values for 12 columns were considered so that none of the risk, demographic and steak preference features are missing values
- Special characters in data values were removed and standardized for better readability of data in the charts
- Categorical Yes/No values were converted to binary form (1/0) to perform statistical operations on the data

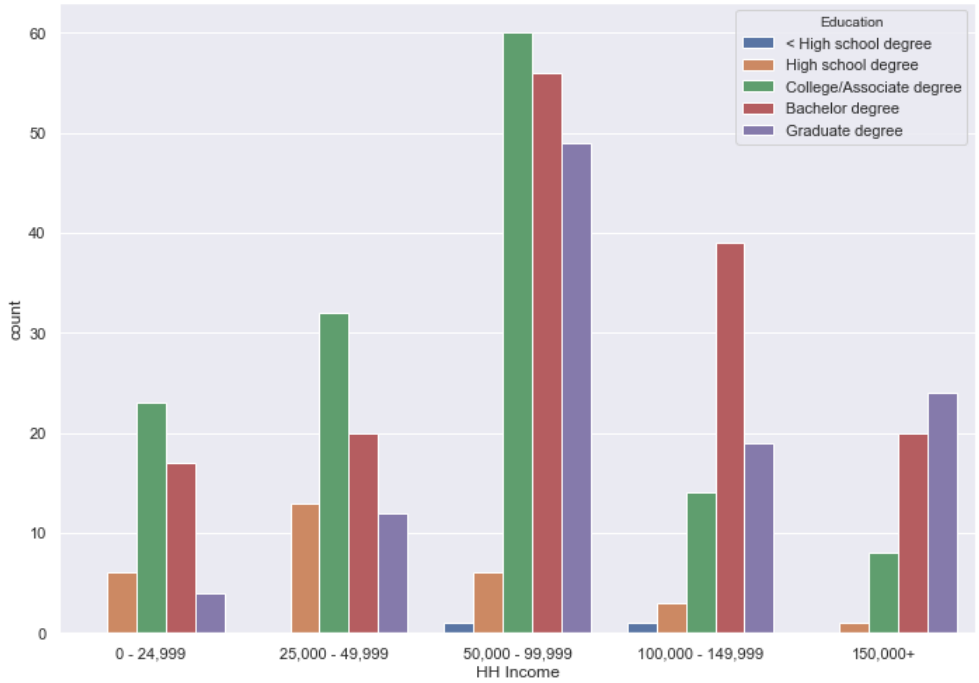
Demographic Analysis

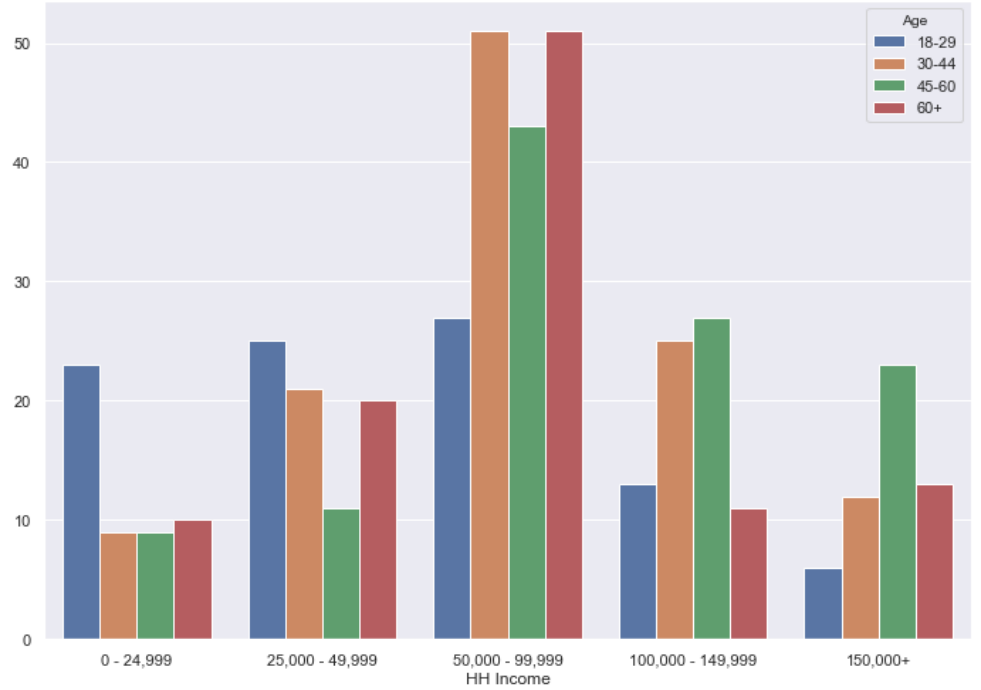




- Most people irrespective of the region they hail from fall within the income range of $50,000 - $100,000
- It can be easily concluded from the chart above that an average American household earns in that range
- All the regions have an ageing population except East & West North Central
- Income ranges follow a proper normal curve for the different regions

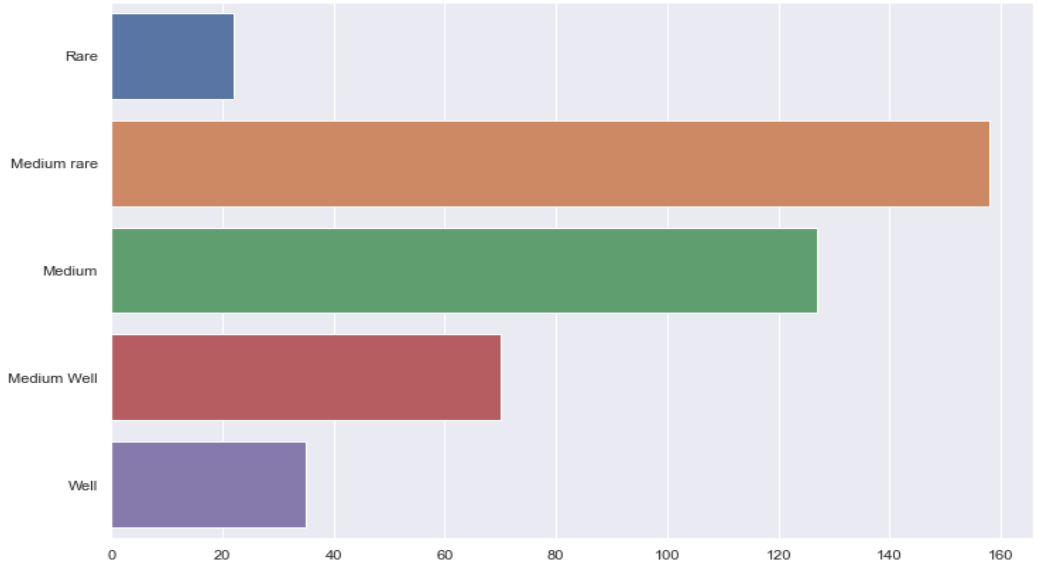
Demographic Analysis





- As people become more educated, they elevate the income of the household by a good margin
- Household income increases and then decreases for each age group, following a normalized curve
- Decreasing trend for less privileged (education & income) while increasing trend for more privileged
- Both the trends are similar to the data covering a larger population: (Link1) and (Link2)

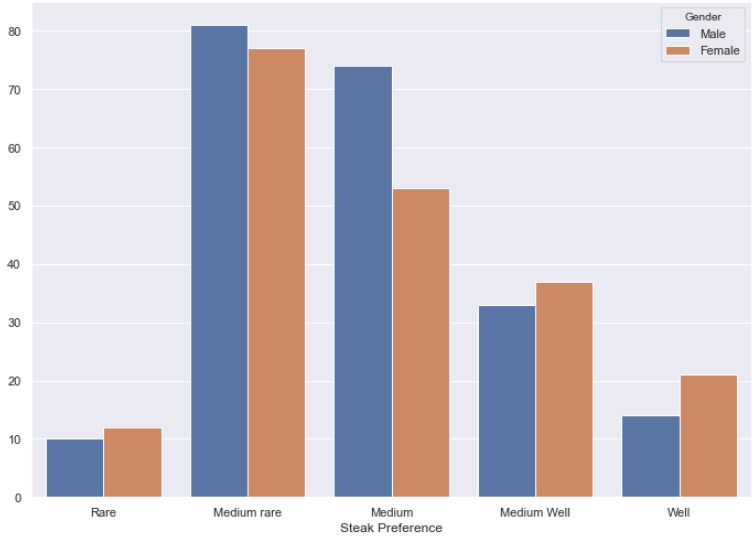
Steak Preferences

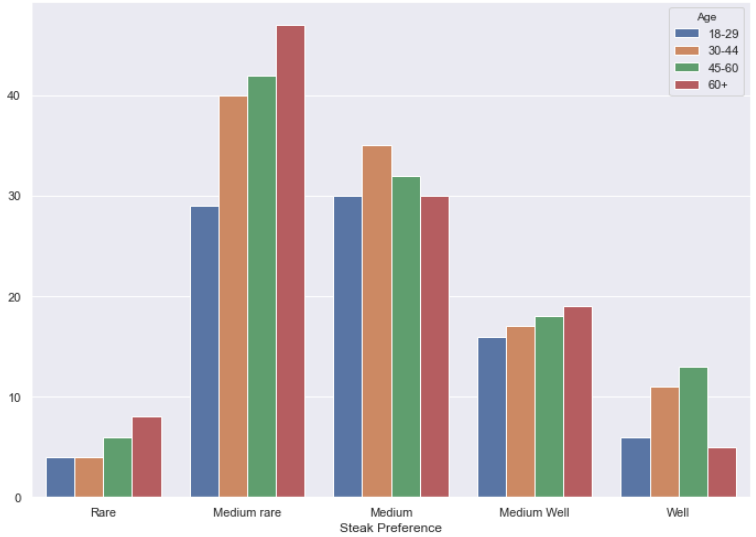


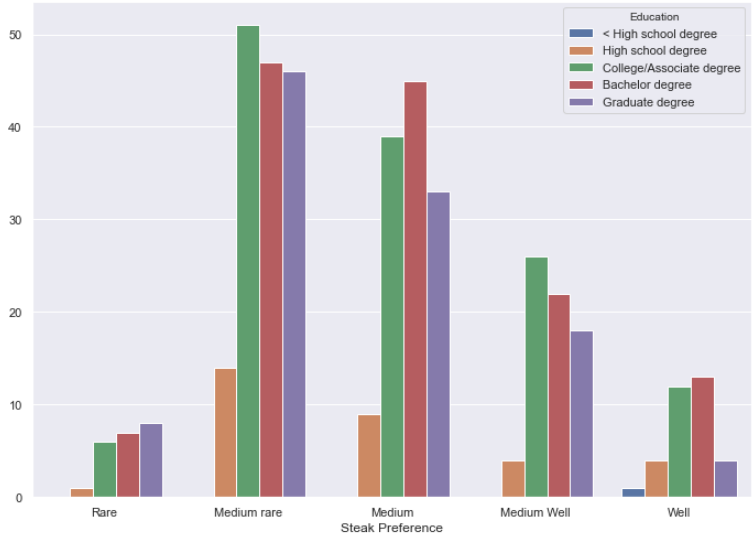
Steak?	Gender	# counts
Yes	Male	212
	Female	198
No	Male	34
	Female	70

- Medium rare to medium is the most preferred choice for steak rareness
- The vast majority (69%) like it somewhere in the ballpark of medium, with about twice as many people preferring medium-rare to medium-well

Steak Preferences

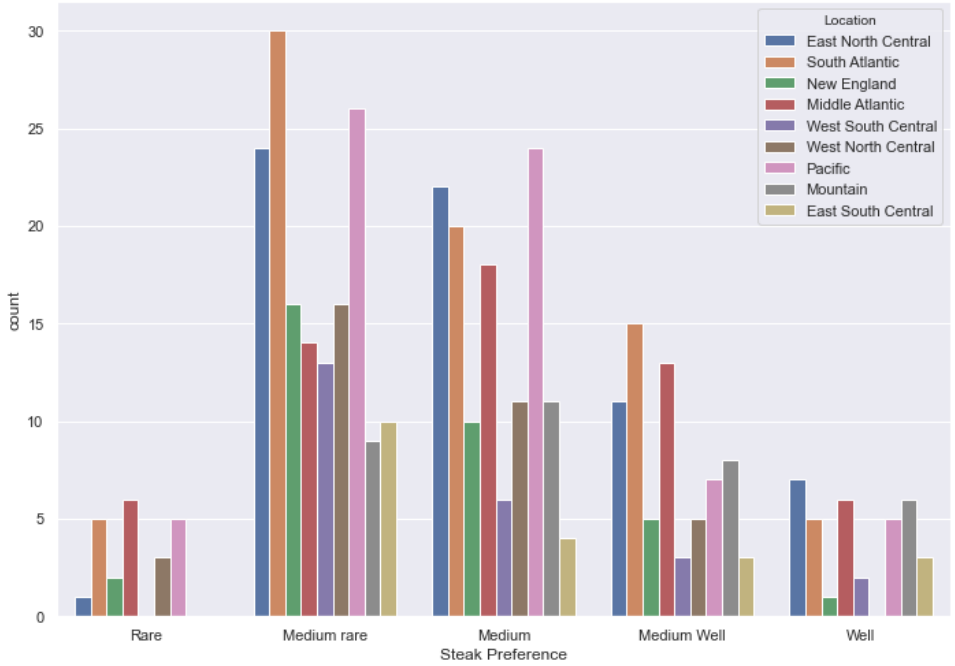


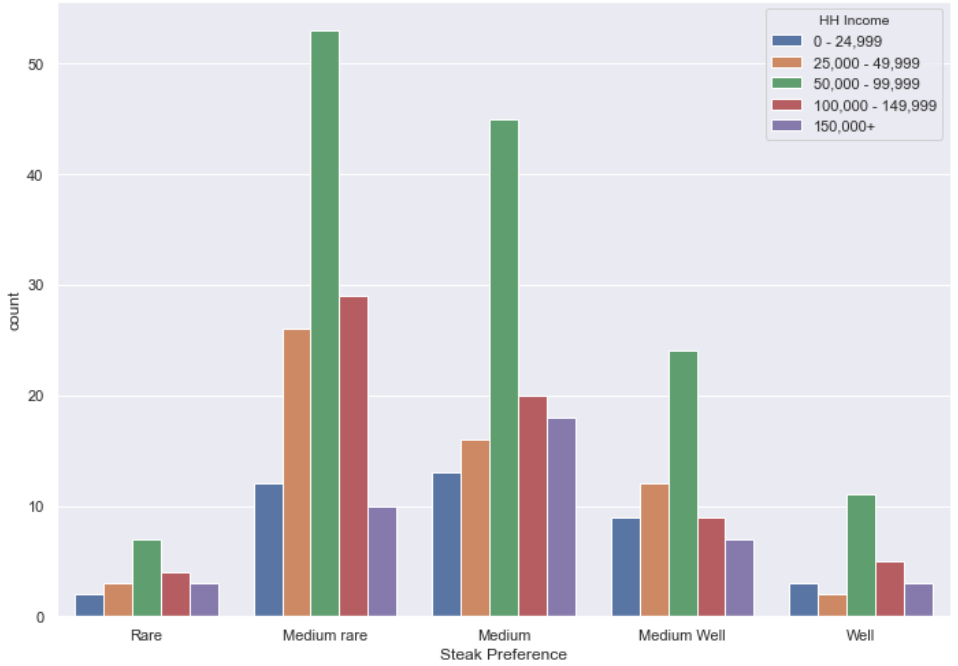




- No gender bias is observed regarding steak rareness, except that men prefer medium rare more
- Taste buds develop with age and experience and it is known that rarer meat is tastier and juicier (Link)
- With increasing age, people mostly prefer a less scorched steak: Increasing trends with age in rare and medium rare, while decreasing trends in medium and well
- With increasing qualifications and degrees, people prefer a more rarer meat variant

Steak Preferences





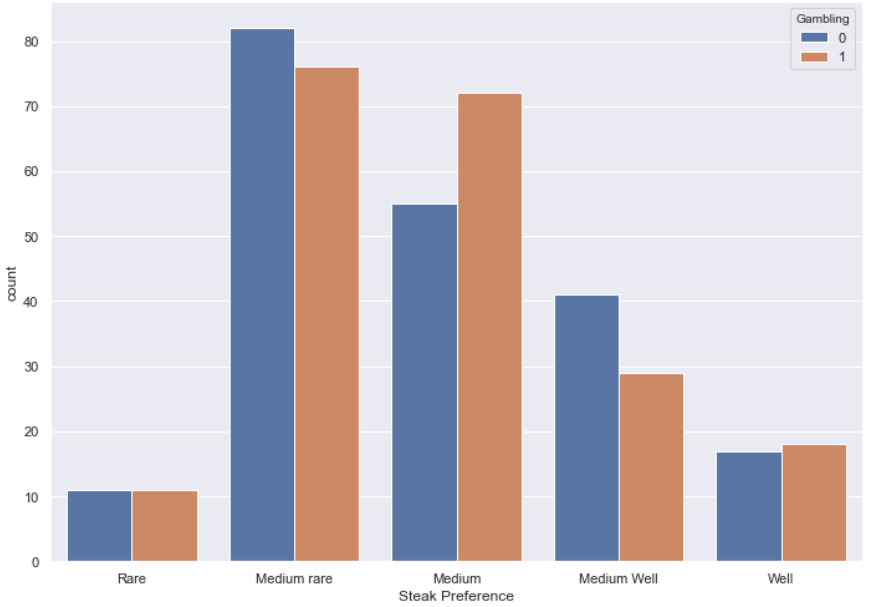
- Most regions prefer having their steak medium rare or medium, no bias observed compared to the sample
- Income groups do not provide any additional specific insights into steak preference; however income groups follow a normal curve for different preferences
- Higher income groups prefer medium steak compared to medium rare

Steak Preferences

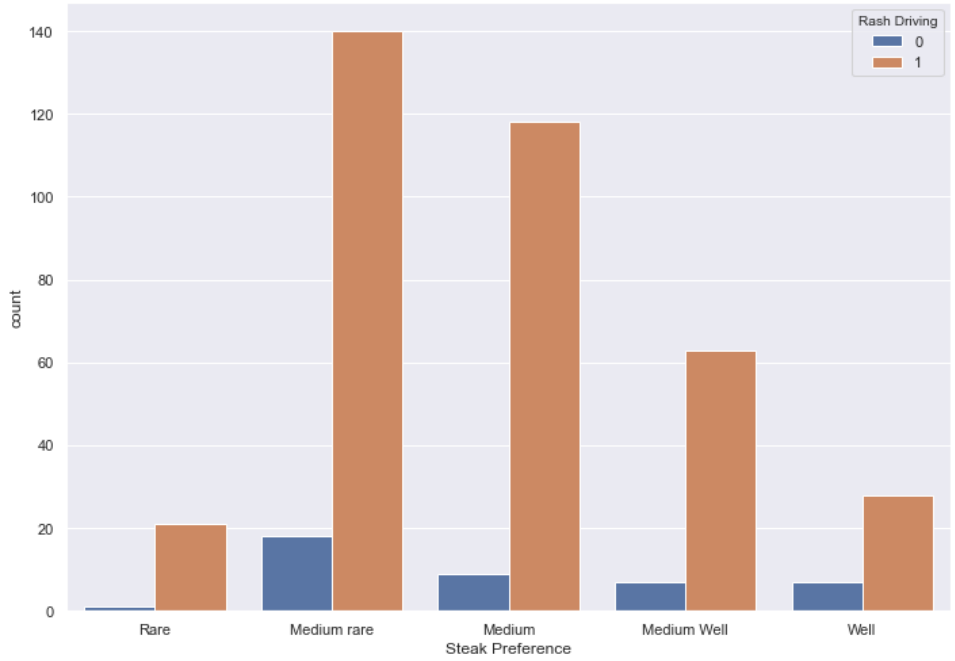
	ID	Lottery Survey	Smoking	Drinking	Gambling	Skydiving	Rash Driving	Cheated	Steak
ID	1.00	-0.03	-0.02	0.03	0.01	-0.01	-0.06	-0.01	0.04
Lottery Survey	-0.03	1.00	0.05	0.06	0.10	-0.03	0.01	-0.01	-0.04
Smoking	-0.02	0.05	1.00	0.10	0.20	0.01	-0.06	0.07	0.06
Drinking	0.03	0.06	0.10	1.00	0.23	-0.01	0.20	0.04	0.07
Gambling	0.01	0.10	0.20	0.23	1.00	-0.04	0.10	0.01	0.10
Skydiving	-0.01	-0.03	0.01	-0.01	-0.04	1.00	0.02	0.06	-0.02
Rash Driving	-0.06	0.01	-0.06	0.20	0.10	0.02	1.00	0.00	0.09
Cheated	-0.01	-0.01	0.07	0.04	0.01	0.06	0.00	1.00	-0.02
Steak	0.04	-0.04	0.06	0.07	0.10	-0.02	0.09	-0.02	1.00

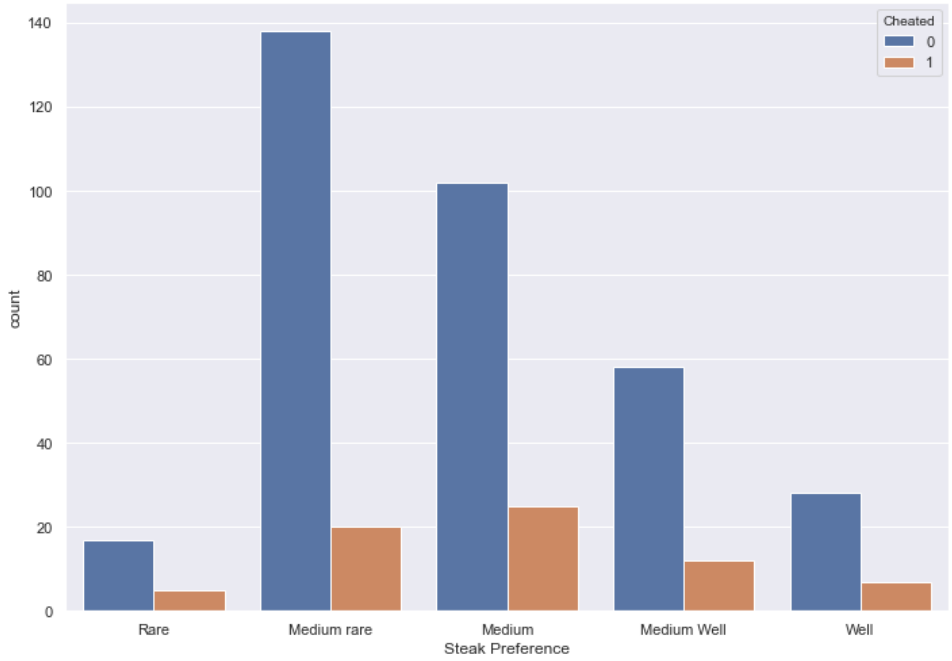
- Correlation matrix to draw relations & conclusions on people who eat steak and how they interpret risk
- Null hypothesis risk averse people prefer tougher, less juicy steak as there is a threat of food-borne illness
- As expected, drinking and gambling have a correlation between them, but there is weak correlation between Steak and smoking, drinking, rash driving & gambling

- On diving deep and checking each of the risk factors involved, people who love to gamble do not show any different trend than the general sample
- They prefer steak more medium than rare as we have observed in different population segments we observed while carrying out demographic segments



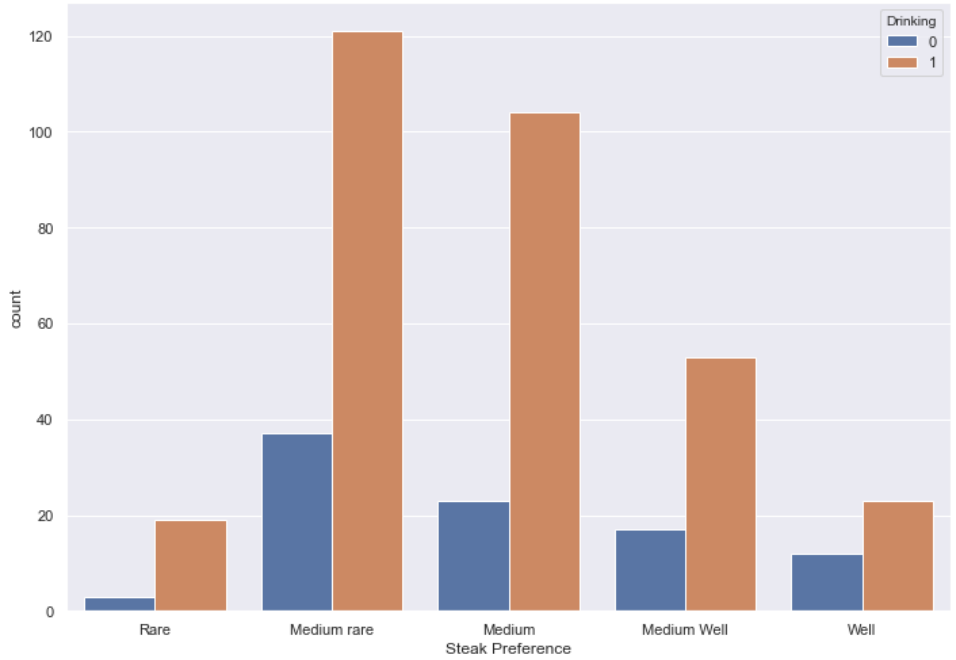
Steak Preferences

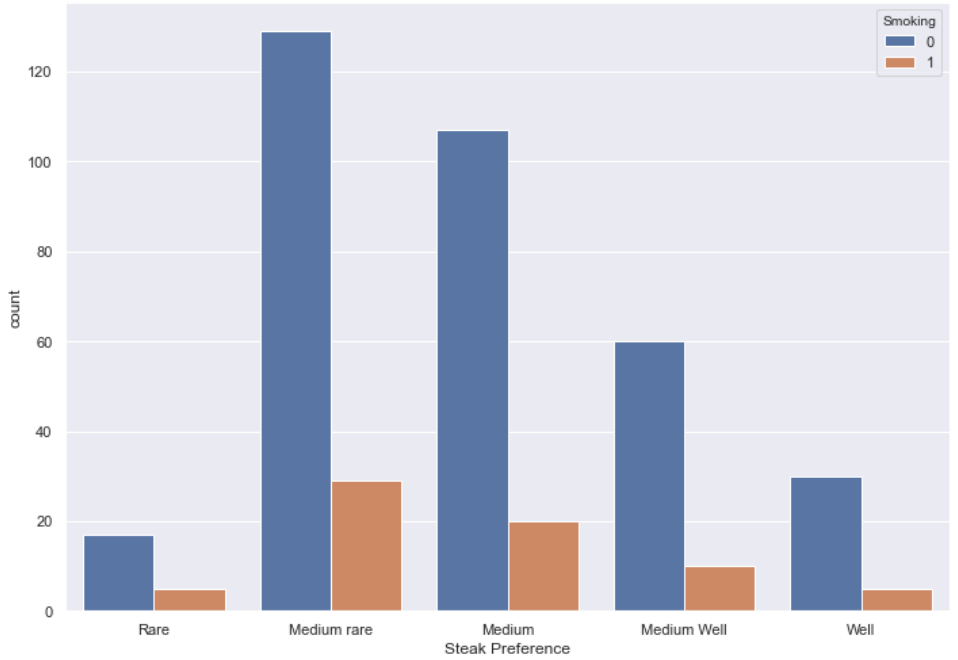




- *The good and the bad, nothing ugly*
- A good sign that a significant part of the sample never cheated on their significant other
- However, it is quite alarming to note that a lot many people drive rashly
- No significant trend observed here with steak preferences

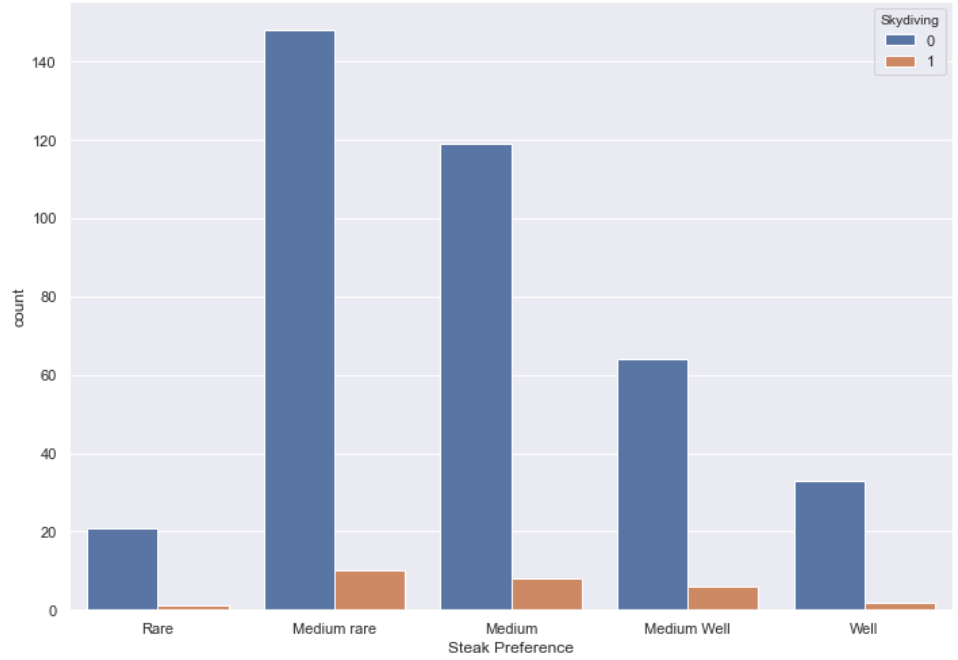
Steak Preferences

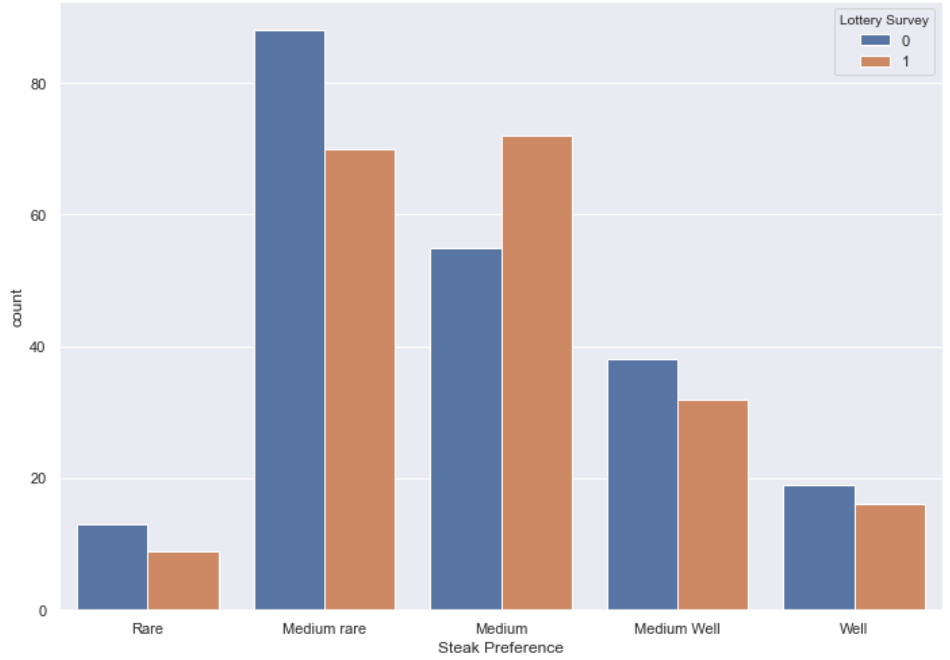




- Quite a high number of people who eat steak also drink
- The trend is quite the opposite in smoking where lesser number of people who eat steak are smokers
- When opening a new steakhouse, a bar counter should always be in the hindsight of the planner, whereas a smoking room, well, not so much

Steak Preferences





- As expected, very few people skydive and hence the numbers are reflected in skydiving chart as well
- Comparing the riskier lottery option (1), we see a different trend where risk averse people preferred a similar ratio of medium rare and medium
- On the contrary, people who preferred the safer option are more likely to go for medium rare than medium

Digging Deeper – Conclusion & Next Steps

- It is quite evident from the correlation matrix that there is a very weak correlation and hence no direct inferences can be drawn, and most of the trends observed in this data might be due to a biased sample
- Demographics of the sample is similar to the actual population based on the trends observed
- Further detailed analysis was done for the different risk factors being consider:
  - Chi square tests were done on the pairs which had a strong to moderate correlation (Pearson's coefficient)
  - Strong correlation between drinking and gambling ($p = 4.007e-07$)
  - Drinking and rash driving have a strong correlation ($p = 1.137e-05$)
  - Unexpectedly, drinking and smoking have a much weaker correlation ($p = 0.028$)
- A correlation matrix was created to understand the relation between steak preferences and risk factors, but unfortunately there were hardly any differences to establish a proper conclusion
- People who eat steak prefer a drink to gulp down the meat
- As next steps, for a better detailed analysis on the conclusions above:
  - Conduct a survey on a much larger sample size
  - Get internal data of other steakhouses to better judge the meat preferences
  - Time series data may help in better understanding of the shifting trends

Thank You!

Questions?
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