As a whiskey connoisseur with a strong preference for American whiskies, I've long been curious about the conventional attitudes towards whiskey. Longer aged whiskey is prized above younger whiskies, but is it really better? Many of the oldest whiskies are off the Scotch variety, and Scotch seems to be preferred to other varieties; could it be that age doesn't matter as much as people think, or that it only matters for Scotch? And what is really the relationship between quality and price? Many people may mistake price for quality, so perhaps high prices are a self-fulfilling prophesy. Another good question which was raised by my brother (a fellow whiskey connoisseur): what are the key aspects of the flavor profile which the raters are rewarding? Do they enjoy a diverse variety of flavors? Or are some of them only looking for sweet and smooth flavors which are easy on the palate? In order to answer these questions, I scraped 3774 expert whiskey reviews from the Whiskey Advocate website. The data set is compromised of whiskey reviews from 13 different experts on all categorized whiskies listed on the site, which are broken down into 11 categories.

Basic Assumptions: I expect to find that on average, whiskey quality and rating improves vaguely logarithmically with age, with a six-year whiskey showing a marked improvement over a four year whiskey, and a twelve year whiskey being only somewhat better than a ten year whiskey. Furthermore, I expect the slope to rise faster and level off faster with American whiskies because American oak is more porous than the French oak used elsewhere. I expect the change to be evident in the rating, as well as increased frequency of review words such as “complex,” and decreased frequency of words identifying negative flavors. I also expect to see that reviewers are biased in favor of blended and single malt Scotch over American whiskies such as rye and bourbon.

Initial results: my first check on the data was to query for average rating by category. The results look more or less as expected, and seem to confirm that Scotch is more highly-regarded, although not by a huge amount. The p-value for the Blended Scotch Whiskey and Bourbon/Tennessee Whiskey data sets (the highest rated Scotch and American whiskey categories) was 0.2, which indicates that there may indeed be a statistically significant bias, but it’s by no means certain. This comparison assumes that the overall in-category quality is the same between categories however, and that is by no means guaranteed; the blended malt scotch whiskey has a p-value of 0.036 when compared with blended scotch, and that seems more likely to be a quality issue than a bias issue.

The data had to be cleaned, afte which the initial results written above no longer hold

I extracted the top 200 review words pertaining to general whiskey charater and checked their correlation against each other and against the whiskey metrics. Unsurprisingly, the highest correlations after the self-correlations were those of words which usually come together: chocolate and milk, for example. More interestingly, terms like ‘nose’ and ‘color’ were correlated with the date of review by 34% and 0.37% respectively. Gold and chocolate were also correlated with Date by 28 and 23 percent respectively. Subtlety at 21 orange at 20 pepper and soothe at 19 seaweed 19 bake palate 18. Tobbacco was 0.124 with score leather 0.122 blance 0.121 light .12 beauty .114 fruit .114 rich .111 young,oak .108 .109 price-vintage age-old .108

Questions

1. Is longer aging correlated with higher score and increased positive words? Are scores adjusted for price? If so, we’d expect more positive words without an accompanying score increase.

Age has a 15% positive correlation with score, and only 6% with price. The word leather is 5% more likely to show up.

1. Do the correlations change when we consider only bourbon or scotch?

Leather shows up 22% and 13% of the time for bourbons and rye, and otherwise always less than 10%. Fudge is predominantly present with various kinds of Scotch, especially blended and blended malt at 13% and 9%

1. Do higher prices come with higher ratings? If so, are they warranted? Is this category dependent?

Price does have a 9% corr with score, and 7% with age.

Price has a 11% corr with Score in scotch, but is actually -3% with age, age and score 23% scotch

Price ans score 21% bourbon, age and score 15%

1. What are the good and bad words of whiskey? How common are they? Do the raters each have a different word-set, or are there commonalities?
2. Are the raters biased for different whiskies? How so?

3774 whiskies reviewed by 13 expert reviewers between 2000 and 2018, with whiskies up to 70 years aged, and prices up to $157,000. The words ‘finish’, fruit, note ,sweet, oak, and spice were most important overall, with finish being mentioned in two thirds of all reviews, and in most reviews of all categories except Japanese and New Zealand whiskies. For later analysis, New Zealand and Unspecified Scotch Whisky were eliminated as categories due to their small sample sizes(7 and 11 whiskies, respectively), and the four variations of scotch were considered as one category.