Combining Vintage Charts Ratings into a Consensual Quality Ranking

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ABSTRACT

The evaluation of a viticulture region production quality (vintage quality) is not a consensual mater. Several institutions publish yearly vintage charts that assign scores representing the perception of the vintage quality according the publisher tasting panel. Often, scores assigned by different publishers are not consensual. In this work, we propose a method to combine a set of vintage charts for a region into a consensual ranking of the vintages. As a result, we are able to induce a ranking of the vintages that represents a consensus of an arbitrary number of published vintage charts. Such ranking can be a useful tool for studies on the impact of climate change on wine production quality.

INTRODUCTION

Every year a wine enthusiast can collect several vintage charts that summarise the quality and character of the wines produced in a given region for a particular year. Examples of very influential vintage charts are the Wine Spectator vintage chart (WS), [WS11], the Decanter vintage guide (DC), [Dec11], Michael Broadbent's vintage wine companion (MB), [MB07], and the Wine Advocate vintage guide (WA), [RP11]. Analysing a set of vintage charts for a given region is not a trivial task. In fact, each publisher has its own tasting panel with their own criteria and has tasted a different set of wines. In addition, there is no consensus on the wine rating scales used, while some make use of a 5-star rating scale others make use of a 100-point rating scale, [CC09]. Moreover, when the same scale is used there are often different criteria associated with it. For example, both WS and WA utilize the same 100-point rating scale, however, while for the former 95 points correspond to the top tier of the scale, for the latter the same score corresponds to the second tier of the scale. Since different panels make use of different scales, or of the same scale with different assumptions, standardizing scales to a common interval and computing an average rating is a difficult task because it has to be based on several arbitrary assumptions, see [CC09].

Herein, we propose a novel method to combine a set of wine vintage charts ratings into a consensual ranking of the production quality for a given wine region. The resulting combined ranking is such that it minimizes its average distance to the input rankings and, thus, represents the consensus of the vintage charts.

The proposed method has the advantage of combining the information provided by a set of vintage charts in a non-biased and nonparametric way, in the sense that it does not make assumptions about the input data. Also, the method is general for an arbitrary set of distinct input vintage charts, each using its own rating scale. Although the result is not given in form of an absolute value in a rating scale, we believe that a combined ranking is able to provide valuable information for studies in which it is necessary a measure of the production quality for a particular wine region.

MATERIAL AND METHODS

We illustrate our method by means of an example. In Table 1 we give the ratings for the White Burgundy region for the four referred publishers between 1990 and 2005. In order to illustrate the difficulties in consolidating such information we have highlighted the years with the highest scores and the years with the lowest scores (top years are highlighted with a plain box and bottom years with a dashed box). The two 100-point scales do not agree in the best year or in the worst year, and the two 5-point scales give full marks to more than one year but agree only on one of such years.

Table 1. Wine vintage charts ratings for the white Burgundy region according to four different sources

	90	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**
DC	4	**3**	4	**3**	**3**	**5**	**5**	4	4	4	4	4	**5**	**3**	**3**	4
WS	92	85	89	**82**	87	93	**95**	88	88	88	90	89	95	87	90	93
MB	4	**3**	**3**	**3**	**3**	4	**5**	4	4	4	**3**	3.5	4	3.5	4	**5**
WA	87	**70**	90	72	77	**93**	92	89	84	89	88	86	92	84	91	90

The method works as follows. First, each vintage chart ratings are converted into a ranking, the best year is given the top rank and the worst the bottom rank. Years with the same classification are assigned the same rank. Then, we make use of a rank aggregation algorithm that is able to find a combined ranking that is closer, on average, to the set of input rankings. The combined ranking represents the consensual ranking among the set input rankings.

The rank aggregation problem is NP-hard, therefore, it can only be solved by approximation. A common application is in the context of web search, in which is used for combining the rankings obtained by several search engines into a single ranking [SZ09]. We have implemented a heuristic based on the quicksort sorting algorithm followed by a local search. The heuristic searches for the ranking that minimizes the number of permutations that are necessary in order to convert each of the input rankings into the combined ranking. In Table 2 we give the results obtained by the application of the method to the ratings given in Table 1.

Table 2. The rankings as given by each wine vintage chart and the resulting combined consensual ranking

	90	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**00**	**01**	**02**	**03**	**04**	**05**
DC	4	12	4	12	12	1	1	4	4	4	4	4	1	12	12	4
WS	5	15	8	16	13	3	1	10	10	10	6	8	1	13	6	3
WA	10	16	5	15	14	1	2	7	12	7	9	11	2	12	4	5
MB	3	12	12	12	12	3	1	3	3	3	12	10	3	10	3	1
Combined rank	5	15	7	15	14	1	1	8	12	8	10	11	1	13	6	4

The combined consensual ranking reveals that the years 1995, 1996 and 2002 are of indistinguishable top quality while the years 1991 and 1993 are not very good years.

When additional production years are taken into account the consolidated ranking has to be rebuilt. We observe that when using the proposed method, the inclusion of one

additional year may change the rank of a previously considered year; however, the relative positioning of the years is maintained.

CONCLUSIONS

In conclusion, we propose a method that, for a given region, combines into a quality ranking the appreciation of the wine production year according to an arbitrary number of sources. Although the result is not given as an absolute value within a rating scale, the method as the advantage of not making use of any assumption on the way each source uses its own scale. We believe this method has the potential to be a useful tool for studies that require an unbiased assessment of vintage quality as, for example, studies on the impact of climate changes on wine production quality.

ACKNOWLEDGEMENTS

This work was partially supported by the Associação para o Desenvolvimento da Viticultura Duriense (ADVID).

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