



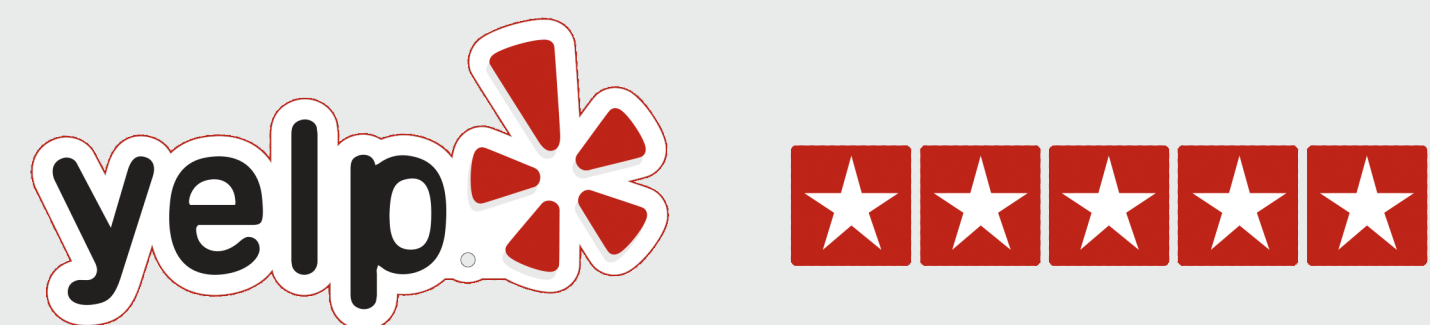
A Visual Exploration Tool for Temporal Analysis of Customer Reviews

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Problem

- Understanding customers and their levels of satisfaction
- Scores and text reviews of products are evolving over time
- Reasons are not always clear to the owners, investors and analysts
- Analyst goal: find out why and when changes in the reviews occurred
- Data source: Platforms for user-generated opinions, such as Yelp, contain millions of reviews



'First, you go here for the view of the Bellagio fountains. Which is really good if you get a table outside and can stand the heat.'

extracting lemmas

'go', 'view', 'bellagio', 'fountain', 'really', 'good', 'get', 'table', 'outside', 'stand', 'heat'

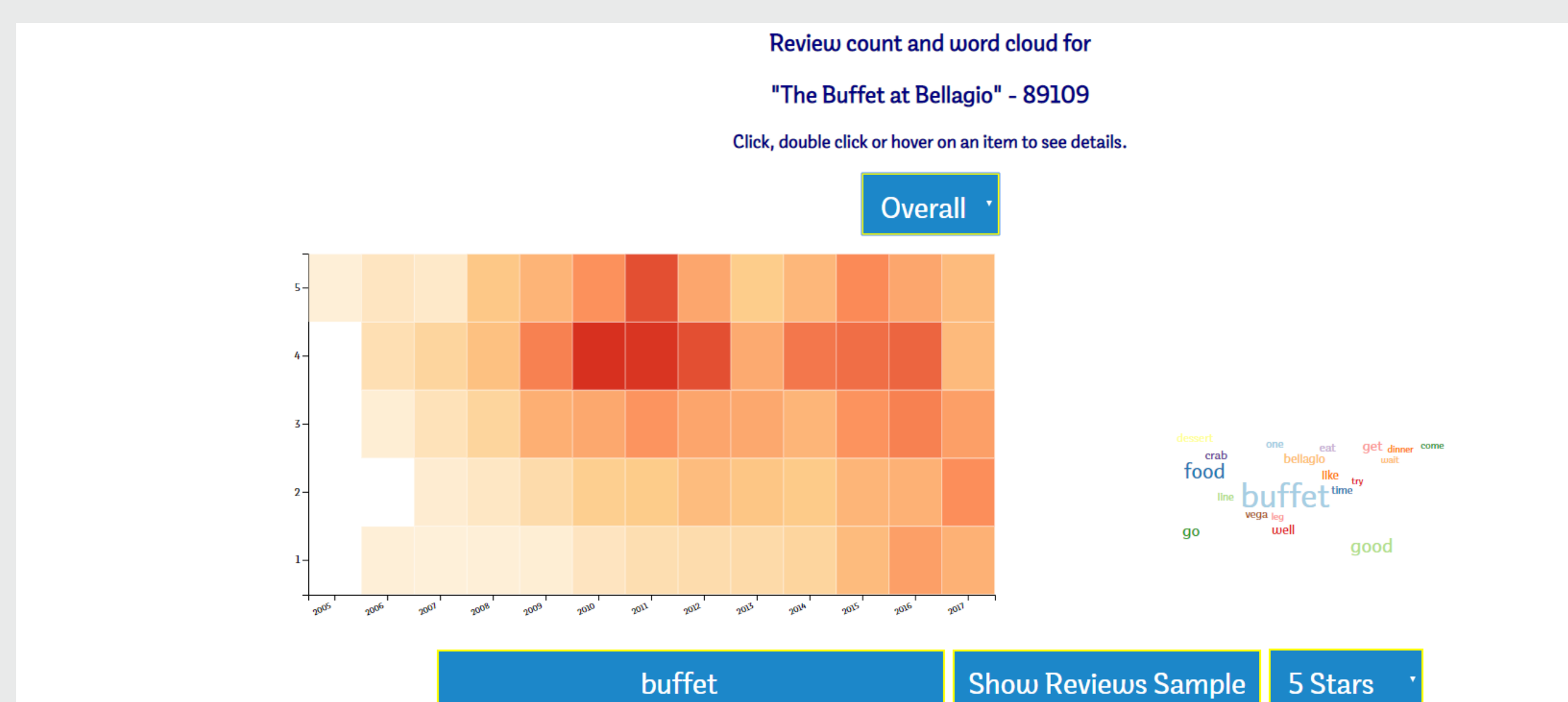
Analyst Questions

- Why did review scores change at a particular time for a particular item?
- Are there items with a contrary trend over time?
- What are topics that are affecting all items over all time?
- What distinguishes an excellently scored item from a poorly scored item?

Method

- Review Watcher: Lightweight tool, capable of loading millions of review data entries.
- Develop a visual interface to indicate changes in review scores over different periods of time.
- Utilise automated natural language processing algorithms to highlight important words in text reviews
- Combine visualisation of temporal score changes with textual changes
- Qualitative evaluation and user study with experts

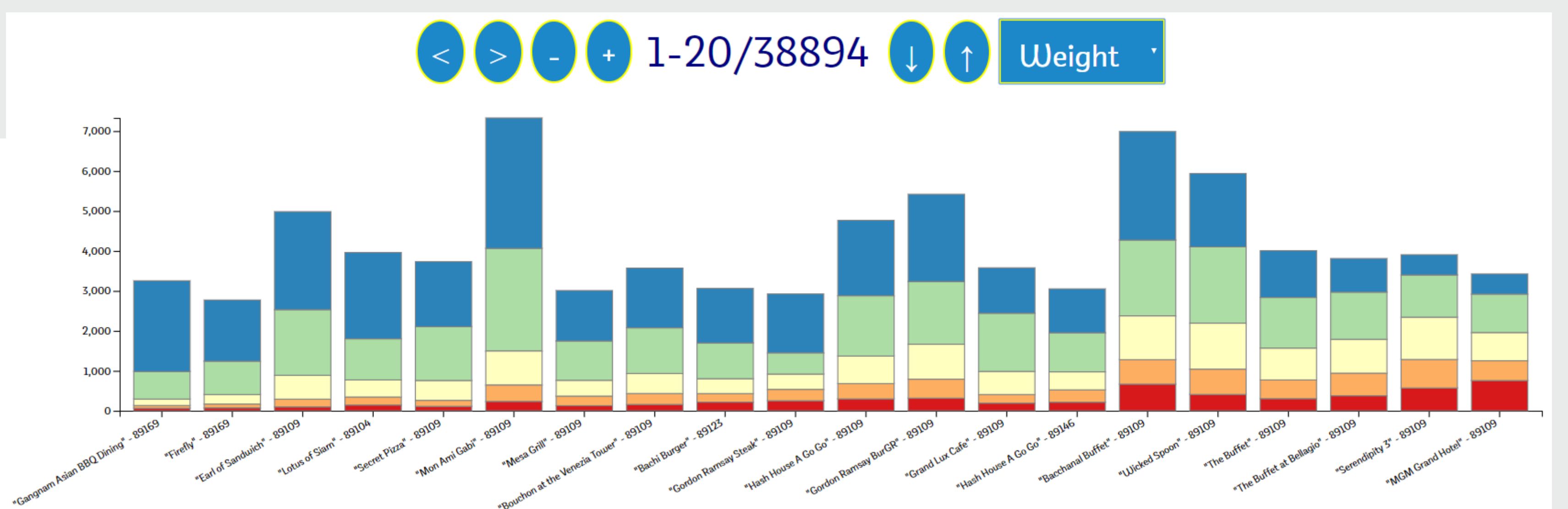
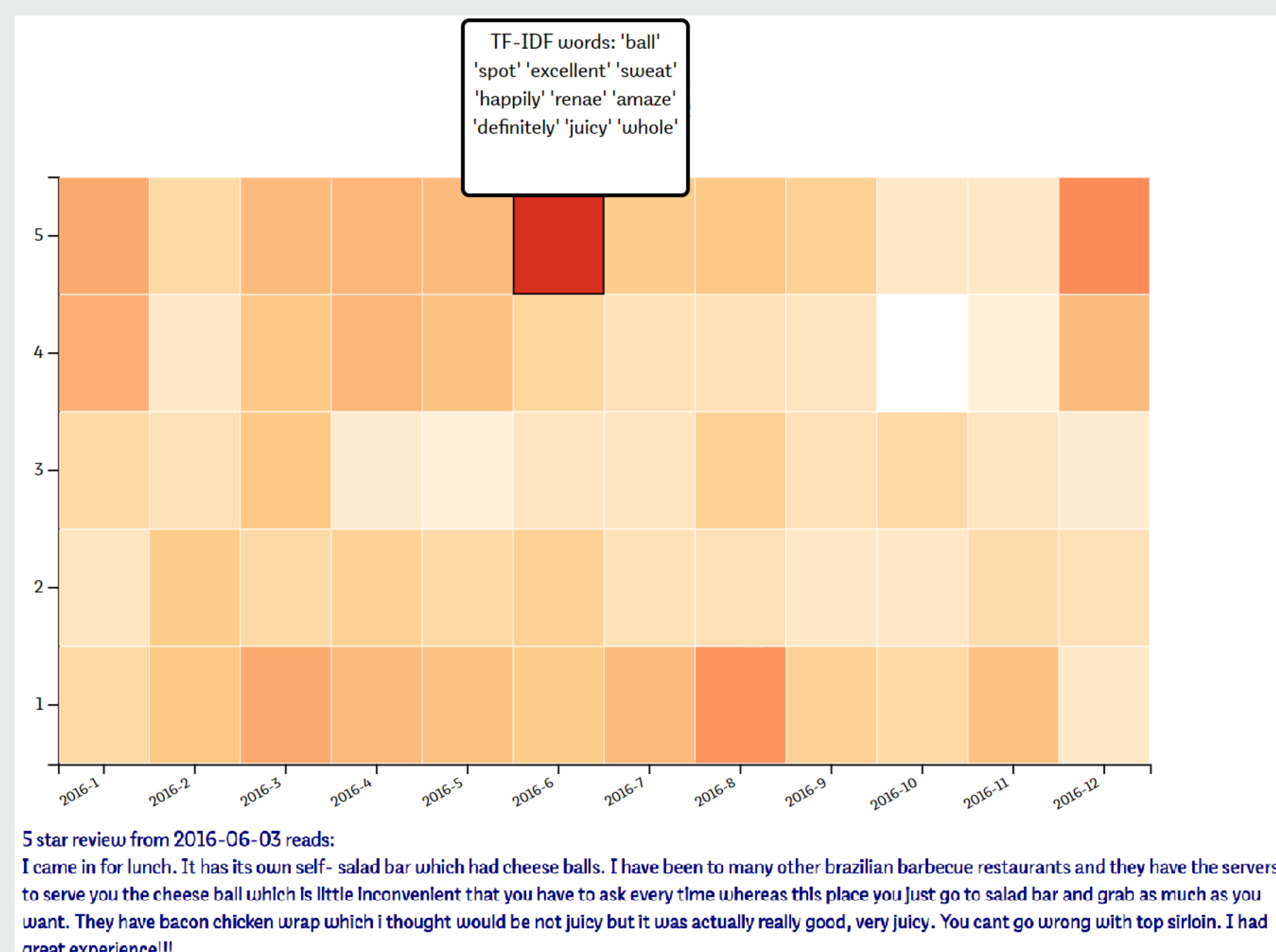
Results



5 star review from 2017-05-25 reads: This is one of the best buffets on the strip. It is definitely worth the money, and the variety offered makes it worthwhile for everyone to enjoy. From the crab legs to the lamb to the sashimi to the pastas, we enjoyed every bite. If you like your meat a little more well done, the chef will do it for you on the spot. And make sure to save room for the desserts. From sampled size shots glasses or desserts to the ice cream machine, we left extremely satisfied.

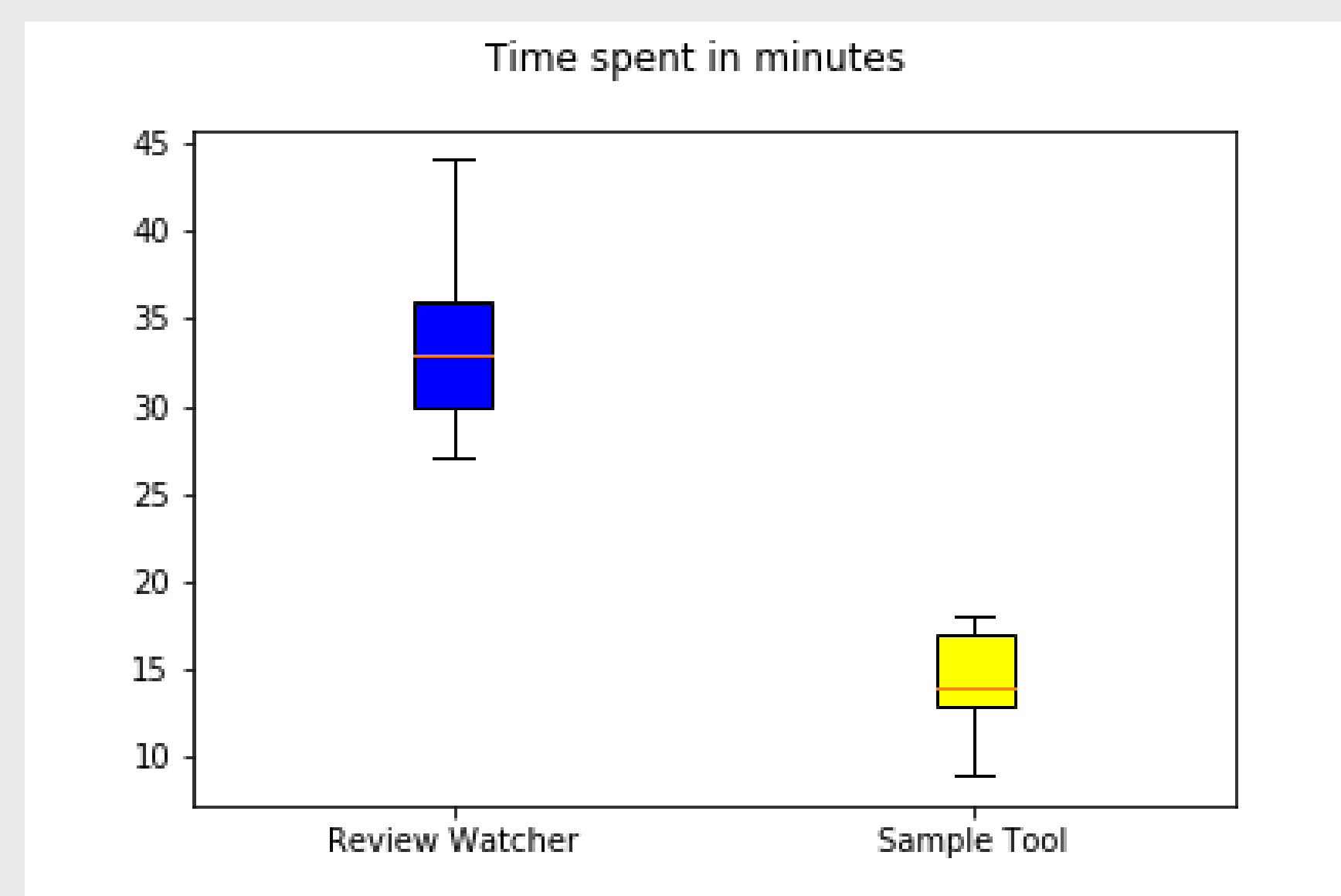
Review Watcher detail view showing word cloud with the most common lemmas from reviews, showing a matrix of review scores changing over time and the ability to search reviews based on their content, all for one restaurant.

Review Watcher detail view lets users explore restaurant changing reviews on a yearly basis. Getting words that are only common for a specific time period and score is shown.



Review Watcher main page showing the top 20 most popular restaurants, arranged by average review scores.

- Loading 3 346 024 reviews for 38 894 restaurants
- Better insight into what are major topics in a collection of textual reviews
- Highlighting review changes occurring over time
- Insights to why changes occurred in reviews



The overall time users wanted to spend using Review Watcher compared to the time spent with a baseline tool.

The temporal related insights users gathered per minute using Review Watcher compared to the number of insights gathered while using a baseline tool.

