

Understanding Health-related Information Searching Behavior Through Eye Tracking

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Introduction

- The Internet has become a favored source to find health information. Worldwide. About 4.5% of all Internet searches are for health-related information (Morahan-Martin, 2004).
- Most users of online health information are looking for information about specific health conditions because they or someone they know was diagnosed with a medical condition (Morahan-Martin, 2004).
- Therefore we decided to explore the elements on SERPs that users view and the elements/factors that affect people’s decision on clicking the link to access to the health-related content and browsing the page.

Research Questions and Hypotheses

- What is the relationship between the elements viewed and the links clicked on the healthcare information search result page?
- Does the rank of search results affect the above behaviors?
- How users explore the search result page of different query intents: symptom and treatment?

- H1. The rank of the search result affects the fixation duration on the health-related information search results.
- H2. Fixation duration of each search result affects whether the results are clicked.
- H3. Search results with a date can capture more attention than those without a date.
- H4. Users attend to different AOIs of the search results for queries about symptoms and treatments.

Research Design

- Within-subject design
- 15 participants, age 20-30

Experiment Task

During the experiment, each participant viewed 10 Google search result pages. They could spend up to 2 minutes on each page and click one search result which would direct them to another page. We will randomize the order of 5 diseases and the order of symptom and treatment of the same disease after

each participant complete all the tasks to reduce the bias of order.

Retrospective Verbal Protocol

- During the experiment, participants’ eye movements will be tracked using Tobii TX300 screen-based eye-tracker and iMotions software. A post interview will be conducted where participants can view their recorded eye movements.
- Participants are expected to 1) explain their choice of certain search result 2) explain and rank the elements that affect their decision

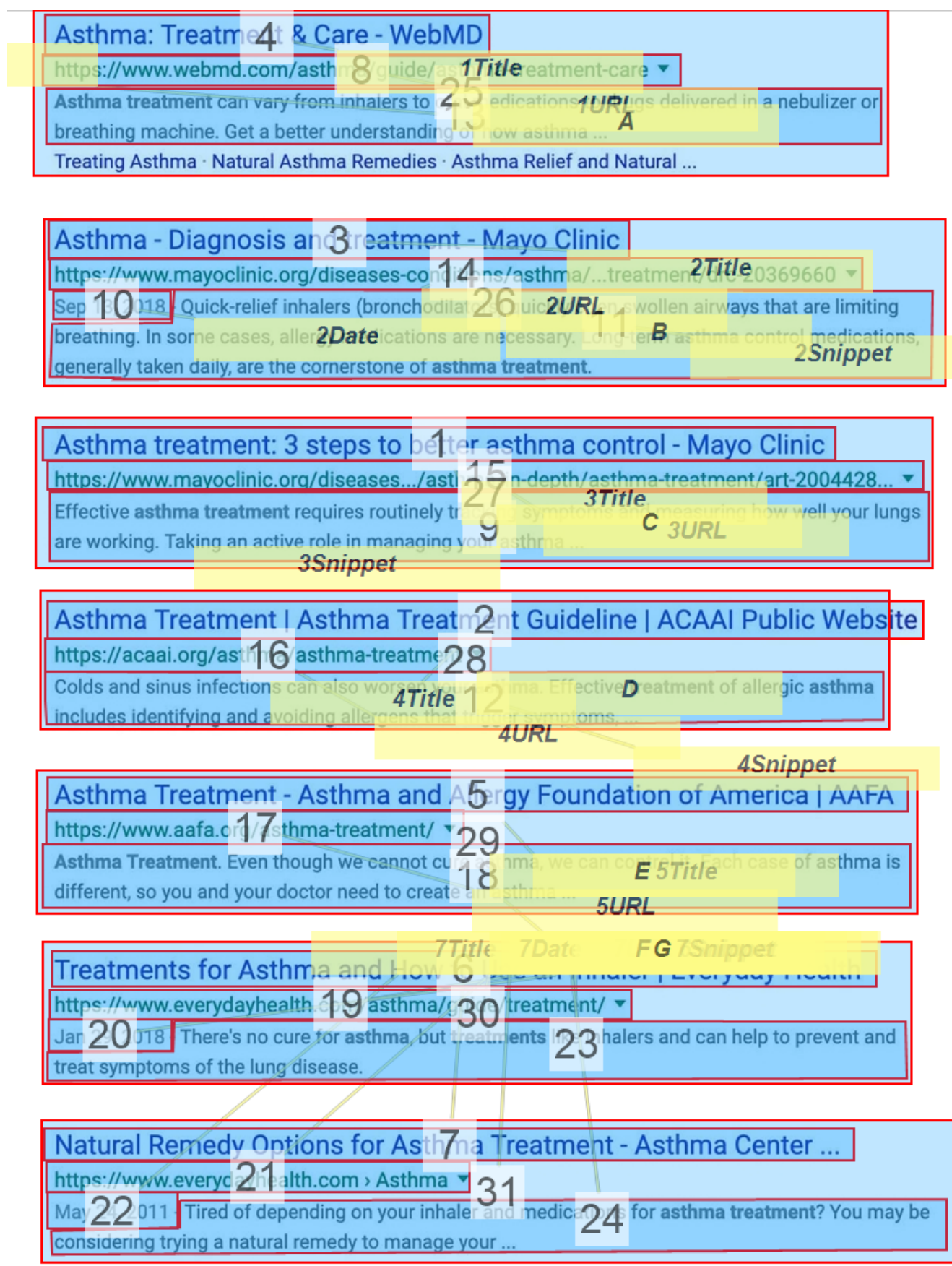


Fig 1. Example of AOI definition

Results and Discussion

We applied Kruskal-Wallis test to test H1 because valied fixation follows non normal distribution (see Fig.2). H3 and H4 were tested by Mann-Whitney U Test since it works fine with unequal sample sizes and applies to non normal distribution sample.

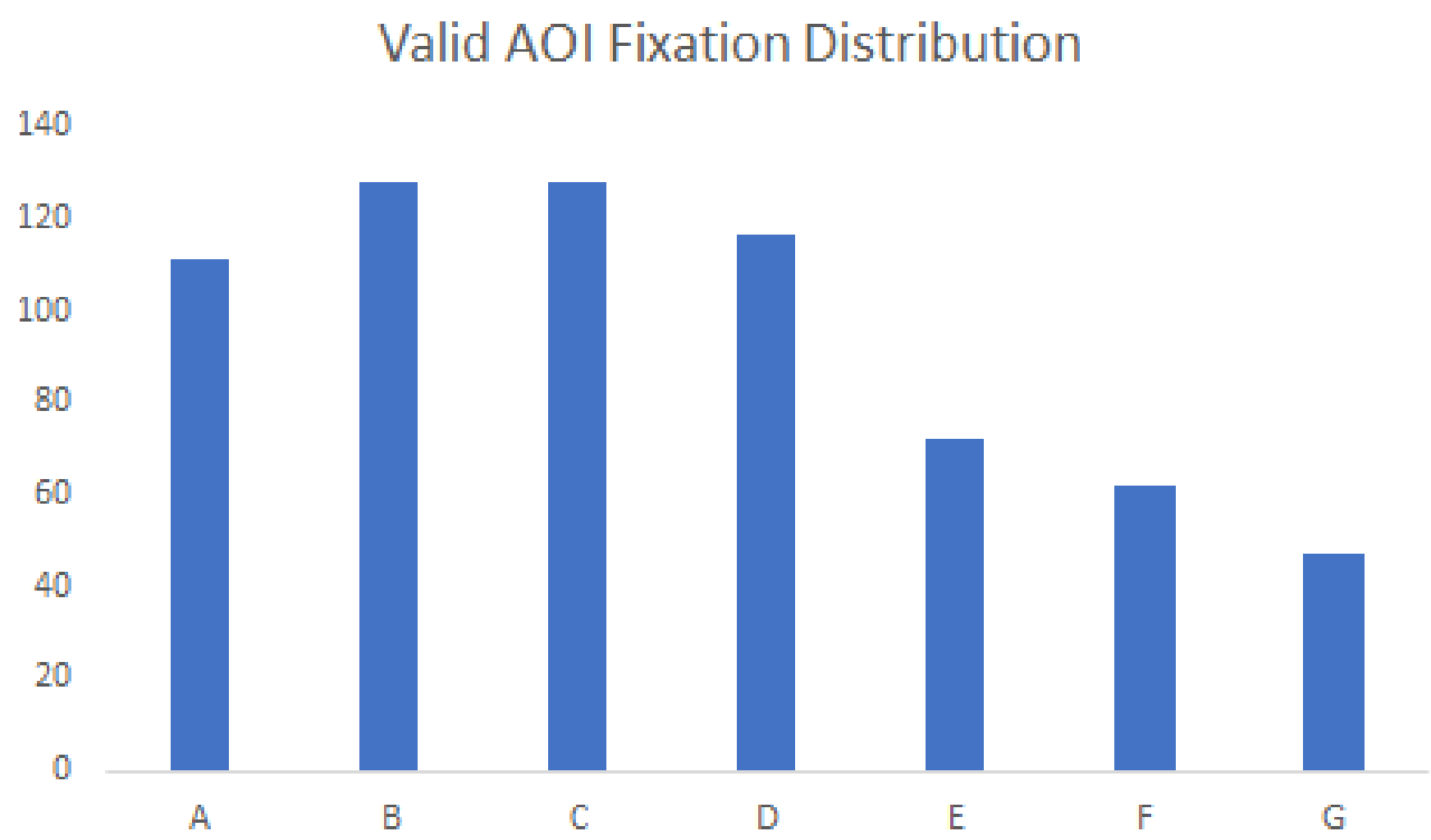


Fig. 2. Valid fixation distribution over different ranks of search results

H1(Kruskal–Wallis test): $p < 0.001$

H2(one-way anova): $p < 0.001$
Pearson correlation coefficient= 0.301

H3 (Mann-Whitney U Test)

- Time spent: $p < 0.001$
- Time to First Fix (TTFF): $p = 0.44$
- Fixation count: $p < 0.001$

H4(Mann-Whitney U Test):

	TTFF (ms)	Fixation count	Time spent-F (ms)
p(Title)	0.43	0.22	0.16
p(URL)	0.46	0.29	0.36
p(Date)	0.22	0.01	0.03
p(Snippet)	0.19	0.14	0.29

Table1. The pvalue of 4 AOIs

Only the pvalue of Fixation Count and Time Spent-F of Date are under 0.05. But this may be because the amount of AOI with Date is fewer than AOI without a date.

Conclusion

- The rank of search results affects the fixation duration. Fixation points on the second and third search results are more than those on other search results.



Fig 3. Heatmaps on Migraine Symptom and Migraine Treatment SERPs

- Participants are more likely to click the search result which they pay more attention to.

- Although there is no significant difference between AOIs with and without Date at TTFF, which makes sense because Date AOI is small, the total fixation counts and time spent analysis indicates that overall, Date has an influence on participants’ viewing behavior.

- There is no significant difference in participants’ viewing behavior between the two different query intents (symptom and treatment).

Next Step

- Include diverse age/ level of education subjects and collect more data.
- Explore whether viewing behavior is different on scrolling page and static page.
- Consider more factors when study the influence of date on viewing behavior.