Author’s response to reviews

Title: The effect of Breast Cancer Awareness Month on Internet search activity - a comparison with awareness campaigns for lung and prostate cancer

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Author’s response to reviews: see over
Re: Breast Cancer Awareness - The effect of the October campaign on Internet search activity
(Now entitled “The effect of Breast Cancer Awareness Month on Internet search activity – a comparison with awareness campaigns for lung and prostate cancer”).

Dear Sir/Madam,

Thank you for your comments and invitation to submit a revised manuscript. We have endeavoured to respond to the reviewers’ questions and concerns comprehensively, and hope that they have been sufficiently addressed. We will of course be more than happy to make any further changes suggested.

Of note, we have included data provided by reviewer number 1 (G. Sulik) in our manuscript (Discussion, Paragraph 3, Sentence 1); the reference for this still needs to be included as we could not find the associated data elsewhere. We did not feel it appropriate to contact the reviewer directly in relation to this, but we will obviously reference the statement concerned once this has been provided.

Our responses to the Reviewers’ comments are detailed below.

Reviewer 1

Comment: The title should spell out that the “October campaign” is referring to National Breast Cancer Awareness Month compared to awareness campaigns for lung and prostate cancer.

Response: The title has now been amended to the following: “The effect of Breast Cancer Awareness Month on internet search activity – a comparison with awareness campaigns for lung and prostate cancer”

Comment: The Figures should include titles. The Figures are not very clear. There are 5 figures included but only 4 figures are discussed. It appears that Figure 5 should actually be Figure 4, with the current Figure 4 to be deleted.

Response: As quoted on BMC Cancer’s instructions for authors, “the (figure) legends should be included in the main manuscript text file rather than being a part of the figure file. We have taken
the word ‘legends’ to include the figure title, and hence they are not included them within our figures; we will be very happy to do this should the journal request prefer.

The first two figures included here are actually parts (a) and (b) of figure 1. We had omitted the reference to figure 1 (b) in our original submission. This has now been included within paragraph 1 of the results section. If BMC Cancer would prefer them submitted together as a single file we will be more than happy to do this.

**Comment:** The methods are appropriate, but should be described in greater detail. In addition, the time frame for the data collection is limited.

a. Be more specific and detailed about the studies after which the methods were modeled.

b. The time frame for the data is only 5 years, and were chosen for convenience. However, the awareness campaigns for each of the malignancies have had very different histories and longevities. The authors could discuss when each of the awareness campaigns began (NBCAM is the only one mentioned, beginning in 1985), compared to prostate and lung. For example, could it be that NBCAM has been around longer and therefore has a greater following?

c. The search terms are basic: “breast cancer,” “lung cancer,” and “prostate cancer.” The authors acknowledge that there is no information “about the exact nature of the search activity” (p. 7). This is a major limitation and should be elaborated. Is it possible to know the ‘top hits’ for these searches? Without knowing what people were searching for, we can see only an overall quantity of Internet activity, which doesn’t tell us much.

**Response:** We have provided references in our introduction to the studies which have employed the Google Insights for Search Application. However, no previous work that we are aware of has employed the level or approach to statistical analysis which has been employed in this work, and hence no other works are references within our methods section. The statistical approach adopted within this work was chosen by our statistician as the most appropriate method of analysis for the data under study.

The time frame of 5 years was chosen because the Google Insights for Search Application only analyses data from this date, as discussed in sentence 1 of the Methods Section.

Prostate cancer awareness week was first initiated in 1989 and extended to a month-long campaign in 1999. Similarly Lung cancer awareness month has been observed in the United States since 1999. Given that the internet only began to reach mass appeal in 1999, we feel that it is unlikely that the longevity of BCAM has placed it at a significant advantage in terms of achieving greater online search interest.

The search terms “breast cancer”, “lung cancer” and “prostate cancer” were chosen because these returned the greatest volume of search activity for each of the cancers under study, following an investigation of a number of related terms for each cancer. This clarification has now been included.
We agree with the reviewer that the absence of information regarding the exact nature of the search activity being undertaken was a major limitation to this work. In response, we have now included the top ten search terms for each of the cancers under study, in their respective awareness month in 2009 (Table 1), and the findings are now considered in our Discussion.

Comment: Partially due to the limitations above, the data are not very robust.

a. Please account for the decline in search activity for breast cancer from October to November and November to December given that there is heightened media attention into November.

b. There was a rise in search activity in September and spike in October for prostate cancer though this is not discussed.

c. There is no discussion of Figure 5. Figures 4 and 5 appear to be confused.

Response:

We hope the clarifications and additions discussed above improve the robustness of our data.

We are not sure what source the reviewer has used to surmise that media levels remain heightened in November? Regardless, we suggest that media levels, although remaining heightened, would not be as high as in October, and would gradually decline back to normal levels. In keeping with this, the results reported in Figure 4 show a drop-off in online activity for breast cancer in November compared with October, with levels reducing back towards normal in December.

We had acknowledged this previously by stating that “the September and November campaigns to promote awareness of both prostate and lung cancer, respectively, have not increased Internet user activity relative to the rest of the year”. We agree that there is a spike in October for prostate cancer, but there are also spikes in, for example, March and June.

The issues regarding the Figures are clarified above.

Comment: The context and limitations of the findings need to be elaborated significantly. Some additional literature about key breast cancer issues are needed:

i. Women in the U.S. overestimate their risk for breast cancer.

ii. Evidence-based information about breast cancer is lacking despite heightened visibility of the cause. E.g., the mammography controversy continues despite the body of evidence questioning its efficacy; similarly, many women don’t know that DCIS is not an invasive cancer and that it is not life-threatening.

iii. Breast Self Exam is still promoted in the broader culture even though the National Cancer Institute and the Women’s Health Organization have found that the practice does not find tumours early or reduce mortality.

iv. The statement on p. 3 that “It is accepted that these campaigns have improved care for patients by enabling better prevention, screening, knowledge and understanding of treatment options, research funding and political will (p. 3) does not take the above information into account. A recent study at the University of Oregon examined more than 30 years of cancer registry data to determine if October events
related to NBCAM lead to increases in breast cancer diagnoses in the following month of November. It found that the benefit of the awareness campaign has levelled off in terms of leading to diagnoses of invasive breast cancer.

b. Since the pink ribbon extends beyond NBCAM to include major non-profit organizations (e.g. 1451 for breast cancer, compared to 231 organizations for prostate cancer and only 151 organizations for lung cancer), this must also be taken into account and discussed.

c. In addition, the number of nonprofits using corporate partnerships and cause-marketing campaigns to spread the message of “awareness” through considerable advertising of products and services (beginning in the 1990s) is also responsible for the heightened visibility and attention to breast cancer compared to the others. Every year in the U.S., about $6 billion is raised in the name of breast cancer. With these dollars comes public attention and commitment to the cause.

d. Breast cancer has also been popularized not only through the nonprofits but also through the products. Many, many products. Pink ribbons are plastered on goods in grocery stores, malls, et cetera, and there is no real equivalent for the other cancers. With the products comes the slogans. Though there are no “I heart lungs bracelets” or “save the testicles t-shirts,” there is a large array of popularized slogans such as “save the tatas.” Breast cancer is the new American past-time. Of course, there would be a HUGE amount of Internet activity. If the authors explain this activity in terms of the context, the findings would be more useful.

Response: We agree with the reviewer on the majority of these points. However, while this study highlights the success of BCAM, we believe that the principal point to be taken from the work is that other awareness initiatives are failing, for whatever reason, to be anywhere near as successful. Hence, we believe that whilst obviously of interest, a discussion of the efficacy (or otherwise) of screening mammography, self examination etc. is out with the scope of this work. In contrast, we note both the point regarding overestimation of one’s risk for a particular cancer, and the interesting study from the University of Oregon; both issues are now discussed within the paper. It is clear that the success of BCAM and indeed the breast cancer movement in general has generated a level of disquiet and this is now acknowledged and highlighted in the discussion.

Comments: The discussion and conclusions should elaborate on the findings in the context of these cancers. Importantly if lessons are to be learned from NBCAM, what are they? Key literature should be added to better understand the awareness campaigns.

Response: The discussion has now been lengthened to include consideration of issues surrounding BCAM, and indeed the breast cancer awareness movement in general. This principal finding of this paper is that BCAM, and breast cancer in general, attracts significantly more attention than either prostate or lung cancer. Obviously this has significant implications for those cancers receiving less attention; however, we believe that an in-depth discussion of these implications is out with the scope of this paper. Similarly, whilst we state that we believe that the success related to breast cancer is largely related to the ability of its activists to influence media coverage, we are not
qualified to speculate on what other lessons might be learned from those shaping these campaigns. We have added some references, including the reviewer’s thought-provoking book ‘Pink Ribbon Blues’ to our reference list, to aid those who would like further information regarding the topics raised in the paper.
Reviewer 2

Comment: Please provide a description of what is meant by google domains.
Response: For simplicity, the word domains has been amended to ‘categories’ in the methods section. As defined by Google, Category refers to a classification of industries or markets, which are commonly referred to as verticals. For example, the Entertainment/Music category may include music genres, recording artists, recordings, performances, instruments and music-related merchandise, and the Health category may include health resources, education, products and health-related services. This work has involved all Google categories.

Comment: More detail on the data and measurement would be very helpful.
Response: We believe that the information already provided exceeds that given in any other paper which has employed Google Insights for similar analysis and we are happy to note that the reviewer does not require the manuscript to be seen by another statistician. We have nevertheless, added a number clarifications to our methods section to hopefully improve clarity for the reader.

Comment: Is the average search activity the arithmetic mean?
Response: Yes

Comment: Any data on the magnitude of the differences observed?
Response: Unfortunately, the application does not provide actual figures to the magnitudes of difference are impossible to assess. We have now acknowledged this as a limitation in our manuscript.

Comment: The authors need to better orientate the readers to figure 4.
Response: This has been done.

Comment: Can the authors offer any speculations as to why a downward trend is observed for all 3 cancer sites across the years of the study?
Response: This will be due to an increase in the number of internet users over the study period; this is now explained in detail in the methods section of the manuscript.

Comment: …I believe the authors can expand their discussion of issues which we hope to raise with this manuscript, and which we hope will lead to comment and discussion on the subjects concerned. We have now endeavoured to expand our discussion to include the points raised; however we feel that more in-depth analysis is outwith the scope of a single article. We agree with the reviewer that it is not possible to identify exactly which content is being searched for (ie detection methods, preventive measures etc) – and we had previously included this in our paragraph outlining the study’s limitations.
Comment: Is it really accurate that lung cancer affects an older cohort of patients than prostate cancer?
Response: Yes, as reported by the SEER database, 67 versus 71 years of age. The difference may well be much larger now however, with the expansion of screening for prostate cancer.
Reviewer 3

Comment: The introduction lacks a clear statement about the rationale for examining the association between BCAM and internet search activity.

Response: As previously stated in the second paragraph, those who use the Internet to search for information regarding a personal health problem are 60% more likely to contact a health professional compared with those who have not searched online. It is clear, therefore, that the internet now plays a key role in how people access health information. Given the stated aim of BCAM to raise awareness, this study aimed to see if the campaign results in higher levels of online activity be people searching for information. We are not aware of previous work linking increased breast cancer-related search activity with breast cancer-associated behaviour but it seems reasonable to surmise that this would be the case.

Comment: Limited to the US?

Response: As previously stated in the methods section, “…the reference population, in this case the United States…”.

Comment: The conclusion section indicates that accessing information online influences opinion and motivates offline activity, yet no supporting references are provided. Should be elaborated upon.

Response: This has not been referenced as it forms part of the concluding paragraph. It refers to the same point made above (those who use the Internet to search for information regarding a personal health problem are 60% more likely to contact a health professional compared with those who have not searched online), and which is referenced in the introduction to the paper.

Comment: The manuscript does not describe how the BCAM campaign has dramatically greater financial support than all other cancer awareness campaigns.

Response: The issues surrounding the financial support given to breast cancer are now highlighted within the manuscript.

Comment: The finding that internet search activity has not increased in response to lung and prostate cancer awareness campaigns merits further discussion. This may be attributable to the fact that screening tests are not readily available or affordable (lung cancer), or that the utility of routine screening is questionable (prostate cancer).

Response: As with issues raised by the other reviewers, this is an excellent point and one which is now included within the discussion. Once again, however, whilst we hope that the findings reported
in our manuscript will lead to a more widespread debate and discussion regarding the underlying reasons for the differences noted, we believe that all of these could not be elaborated upon in detail within a single manuscript.

Please do not hesitate to get in touch at any point should you have queries or concerns in relation to the above responses.

Yours faithfully,

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