

# Google trends to identify public's Interest in bowel cancer, A Web Based Analysis.

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## Abstract

**Aims:** Bowel Cancer is one of the commonest cancers in UK. Google Trends were used to evaluate public's search interest regarding bowel cancer. We hypothesize that the search data in Google Trends may be influenced by "Bowel cancer awareness month" campaign and that in future this might be a useful surrogate to monitor the effectiveness of public health campaigns.

**Methods:** Google Trends were used to extract data presented as "Relative search volume index" (SVI) ranging between 0 to 100. "Bowel Cancer" was used as a search term to collect the relevant data for the last 5 years (January 2015 to December 2019), All the peaks were assessed and their correlation with bowel cancer awareness month was noted.

**Results:** We noticed an upward trend for the searched term during the months of April for most of the years where peak of search touched 90%. It corresponds with bowel cancer awareness month campaign. A downward trend was also noticed during the months of December during all years where it went down to 53%. This may represent avoidance of health related searches during the happy holiday period.

**Conclusion:** Our study shows an encouraging association between bowel cancer awareness month campaign and public's search interest. Results can be used in future to start effective awareness strategies and leverage future interventions.

**Keywords:** google trends; bowel cancer; web based analysi

## Introduction:

Bowel cancer is the fourth most common cancer and the second leading cause of cancer death in UK [1]. Over 42,000 people are diagnosed with bowel cancer every year<sup>1</sup>. 1 in 15 men and 1 in 18 women will be diagnosed with bowel cancer during their life time [2].

In general, use of internet to search for information about cancer and health related problems has recently increased. With Internet usage on the rise, search engines like Google, Yahoo, Bing, Baidu, and Ask.com play a vital role in obtaining that information. Amongst the above mentioned search engines, Google is the most commonly utilized. In the month of December 2012, Google was used for 114.7 billion searches, which is 65.2% of total searches on the Internet [3]. Google controls 70% of the market share and captures 85% of the mobile traffic [4], thus searches on that could indicate internet user's interest about any particular condition like bowel cancer.

Google trends is a freely available web tool which shows how often a particular search term is entered relative to the total search volume geographically and over time [5]. These provides access to a largely unfiltered sample of actual search requests made to Google [6]. The activity and search volume on this tool can be used to determine the interest of public in a particular subject during that given time period.

Bowel cancer Awareness month is an annual event in the month of April. It is driven by charitable organizations including "Beating Bowel Cancer"

and "Bowel cancer UK" who have merged with the main aim of ensuring that there would be no victim of bowel cancer by the year 2050 [7].

We hypothesize that the search data for bowel cancer may be influenced by activities like "bowel cancer awareness month". We aimed to investigate UK's google searches data to look at general public' seeking information on bowel cancer by using google trends.

## Methods:

The Google Trends application system was used for this research activity. All the data and information from Google Trends are available as the "Relative search volume index" (SVI), which shows the number of searches for a specific term per time point in relation to the total number of searches on the Google search engine during that time period [6]. SVI is ranged from 0 to 100. 100 being the peak of a particular search term in a particular time period.

"Bowel cancer" was keyword to collect SVI data origination from United Kingdom of Great Britian and Northern Ireland from January 2019 to December 2019. Other similar terms like Colorectal cancer, Rectal Cancer, Colorectal screening and Bowel cancer screening were not used and excluded.

Data of SVI for all the months was collected along with identification of specific peaks like campaigns of bowel cancer awareness month. Data was also collected about all 4 regions of UK(England, Scotland, Wales &

Northern Ireland) to determine the public interest in this web based search.

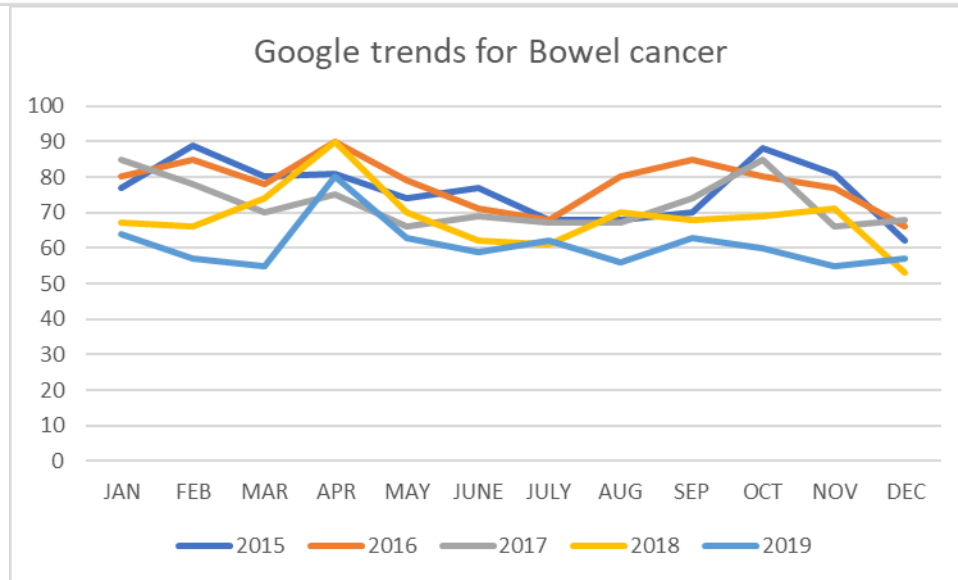
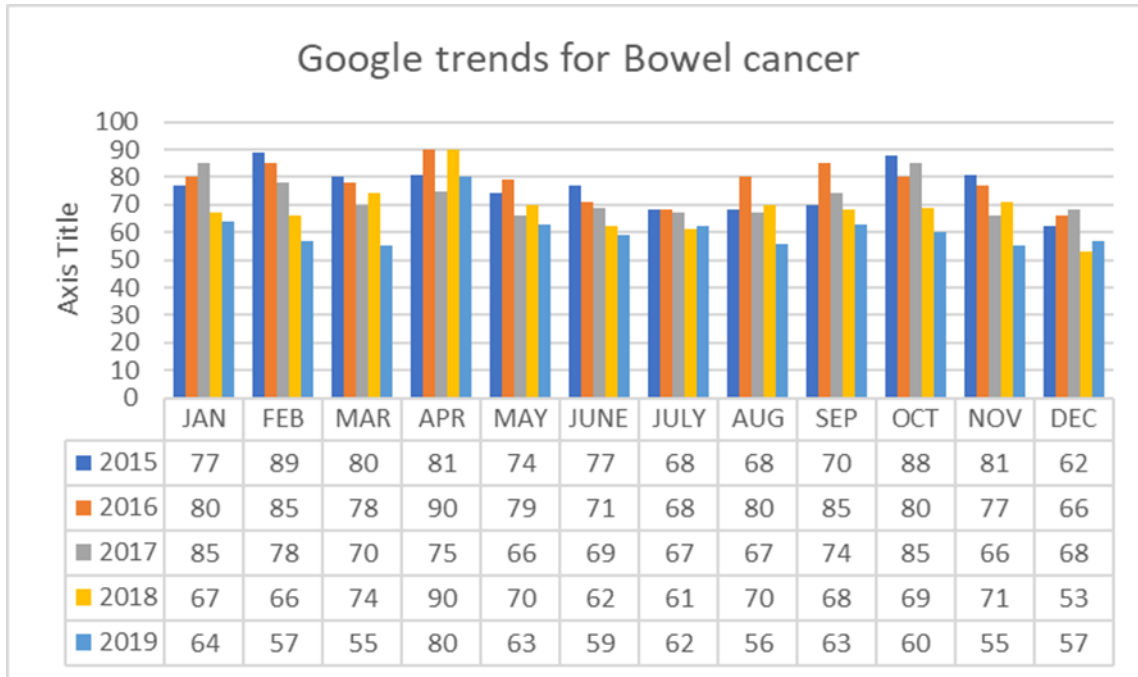
**Results:**

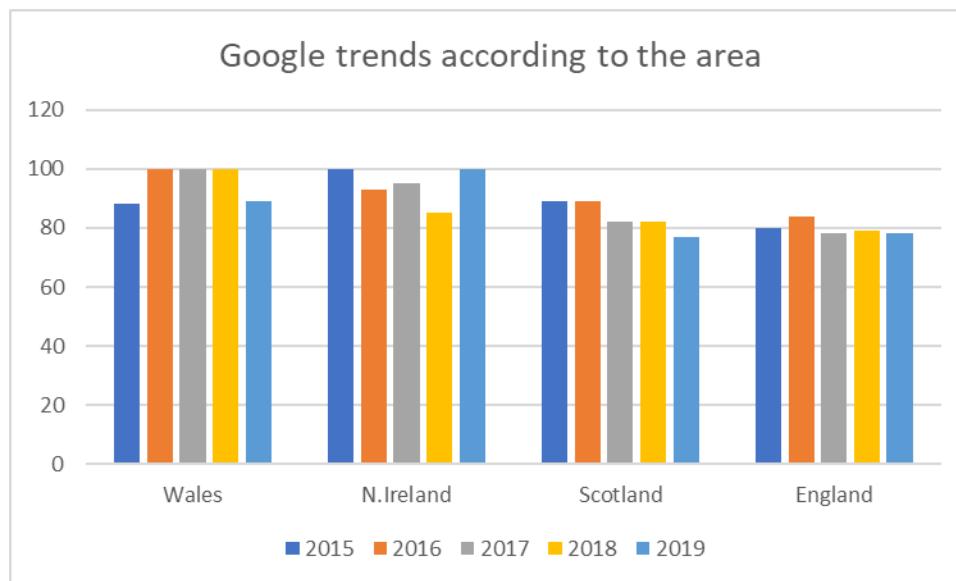
Results showed common terms searched were “symptoms of bowel cancer” followed by “bowel cancer symptoms” and “Bowel cancer signs”.

There is noticeable surge of SVI’s for the month of April which

corresponds with Bowel cancer awareness month campaign. There is significant dip in SVIs identified during December for all years. The most popular month was again April of 2016 and 2018 where SVI peaked to 90% (TABLE 1&2).

When SVI results were plotted against every region, most of the SVI activity was in the region of Wales (97.25%) followed by Northern Ireland(93.25%), Scotland( 82.5%) and England (79.5%) for all the five years combined (TABLE-3).





### Discussion:

Based on the data extracted from Google trends during last five years, our study showed increased curiosity amongst general public for bowel cancer which corresponds with bowel cancer awareness month. It is demonstrated by high SVI during the months of April while less public interest is shown in the months of December.

Public behaviour towards internet usage and searches correlates with real life events, and could foresee collective movements in future [8,9]. Health related issues are not an exclusion for such activities influenced primarily by media campaigns and celebrities surviving or succumbing to cancers. In the study by Vasconcellos Silva P.R et al the number of visits and activity of population was observed for a cancer website. It was found that audience grew gradually over the course of 2 years with the peaks around the campaigns<sup>9</sup>. Kaleem et al is one of the largest studies on google trends, with world wide sourced data, linked the peaks of public search activities coinciding with celebrity cancer or advances in field of medicine [10]. Authors demonstrated greater interest of worldwide public in lung, pancreas, Endometrial, cervical and brain cancers coincided with celebrity related media event. They also found an association of breast cancer with breast cancer awareness month of October. However, colorectal cancer didn't show any particular trend in the world. This was attributed to paucity of public figures with bowel cancers. However, this is contrary to findings from our data origination exclusively from United kingdom of Great Britain & Northern Ireland.

Seasonality in the online searches for some cancers is known better than other. In the study by Ronan W Glynn et al, the effect of Breast cancer awareness month on internet search activity was evaluated using Google Insights and a comparison was made with awareness campaigns for lung and prostate cancer. An Increased level of activity was generated every October which corresponds with the breast cancer awareness campaign [11].

In 2000, President Bill Clinton declared March as bowel cancer awareness month in U.S [12]. In U.S and U.K, during "Bowel cancer awareness month" campaign, public awareness is raised with the help of information leaflets, public meetings, informative social gatherings and talks. Funds are also raised by donating through charity organizations, which would help to facilitate research into cause of cancer and its prevention, early diagnosis, treatment, and cure [9]. It also serves to enlighten and educate public on the importance of screening and early intervention. We believe that the rise in internet searches regarding bowel cancer, during the cancer awareness month, is a credit to the campaign.

Another important observation in Google trends during the last 5 years has been lack of public interest regarding the search for bowel cancer during the month of December. SVI for December was at its lowest, perhaps due to lack of media campaigns. December is a festive season in UK. Print and television advertisements are more business focused to target general public, whom themselves are more interested in celebrations, partying, holidays and finding online deals to buy presents for friends and families for Christmas and new year.

Any major breakthrough in the treatment of a particular cancer could be a significant stimulus for increasing public interest. This trend was noticed following introduction of Human Papilloma Virus vaccination in prevention of cervical cancer in 2008. Interestingly the coverage of cervical cancer went to highest peak in UK during the same year due to Jade Goody's death [13]. She was a famous English TV personality due to her participation in third series of reality show 'Big Brother' in 2002. Following her diagnosis and death, there were record numbers of young women undergoing cervical screening. Increased google trend activity was noticed during those years that demonstrated increased public awareness [13].

The strength of our study is being the first ever UK based study exclusively carried out to determine general public's interest in the bowel cancer. Search trends extracted from google demonstrates public behaviour, as its most common used search engine [14]

We had limitations in our study too. Google Trends does not eliminate repeated queries from the same user. One particular user can do the search many times thus affecting the results and is not a true representation of overall public's interest. Google trend results are restricted to google only, it does take into account data from other search engines. Finally, search terms entered in other languages were not included this study but could be used to examine interest among non-English speaking populations. Google Trends data is anonymous, with inability for the disparities to be picked up by an investigator so there is a risk of selection sampling bias. The results of our study are very informative and information can be extrapolated so that policy makers and campaign analysts can study population search interests during particular time frames and especially after launching a motivational activity. We believe that this information can be used by policy makers to start further effective awareness strategies and leverage future interventions. Our study shows that there is an upward peak in bowel cancer search using Google trends in the month of April which corresponds with Bowel cancer awareness month.

**Conflicts of Interest:** There are no conflicts of interest to declare

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