

BRIEF REPORT

Using Web searches to track interest in synthetic cannabinoids (aka ‘herbal incense’)

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Abstract

Introduction and Aims. This article reports a content analysis of Internet websites related to an emerging designer drug, synthetic cannabinoids. The number of synthetic cannabinoids searchers in the USA has steadily increased from November 2008 to November 2011. **Design and Methods.** To determine the information available on the Internet in relation to synthetic cannabinoids, sites were identified using the Google search engine and the search term ‘herbal incense’. The first 100 consecutive sites were visited and classified by two coders. The websites were evaluated for type of content (retail, information, news, other). US unique monthly visitor data were examined for the top 10 retail sites, and these sites were coded for the quality of information available regarding the legality of synthetic cannabinoids sale and use. **Results.** The Google search yielded 2 730 000 sites for ‘herbal incense’ (for comparison of search terms: ‘synthetic marijuana’, 1 170 000; ‘K2 Spice’, 247 000; and ‘synthetic weed’, 122 000). Moreover, in the Google search, 87% of the sites were retail sites, 5% news, 4% informational and 4% non-synthetic cannabinoid sites. **Discussion and Conclusions.** Many tools found within Google free services hold promise in providing a technique to identify emerging drug markets. We recommend continued surveillance of the Internet using the online tools presented in this brief report by both drug researchers and policy-makers to identify the emerging trends in synthetic drugs’ availability and interest. [Curtis C, Alanis-Hirsch K, Kaynak Ö, Cacciola J, Meyers K, McLellan AT. Using Web searches to track interest in synthetic cannabinoids (aka ‘herbal incense’). *Drug Alcohol Rev* 2015;34:105–8]

Key words: internet surveillance, synthetic cannabinoid, herbal incense, designer drug, legal high.

Introduction

The Internet has been used as a tool to either follow population health-relevant events or predict them [1]. Using a Web scanning system, the Psychonaut Web Mapping Research Project first detected the online presence of synthetic cannabinoids as early as 2004 in Europe. Forensic scientists in Germany and Austria first detected JWH-018, a synthetic cannabinoid compound in 2008 [2]. By 2009, the European Monitoring Centre for Drugs and Drug Addiction identified synthetic cannabinoids being sold in 21 of the 30 countries it monitors. These synthetic cannabinoid products continued to grow throughout Europe and currently rep-

resented the largest chemical group monitored by the European Early Warning System. The American Association of Poison Control Centers began to detect synthetic cannabinoids in 2010. By 2011, there was a 150% increase in calls regarding adverse reactions to synthetic cannabinoids from 2010 to 2011 [3]. The National Institute on Drug Abuse and the Office of National Drug Control Policy have both expressed concern for this emerging threat and have warned of the serious consequences of using synthetic cannabinoids [4].

The Internet has been used as a surveillance tool to track online drug availability and interest for some years now [5–10]. Hillebrand, Olszewski and Sedefov [11]

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conducted a descriptive analysis of 27 online drug retailers selling legal alternatives to illegal drugs to conclude that over 500 unique products were being sold as 'legal highs'. Bruno, Poesiat and Matthews [12] used Internet surveillance to track the emergence of new psychoactive substances in Australia reporting that in the course of 12 months, an average of 10 chemically unspecified products and four chemically specified products were introduced monthly. Using a technique with some similarities to the current study, Deluca and colleagues [13] used Google insights to track trends and Internet interest in emergent psychoactive substances noting that an interest in a substance would drop when it was legally banned and would be replaced by other novel psychoactive substances.

To date, little is known about how individuals in the USA search for synthetic cannabinoids online and the types of websites retrieved. With the popularity of synthetic cannabinoids increasing in the USA, it is important to examine their online presence. Taking a snapshot in November 2011, this study examines the following: (i) the search terms individuals use; (ii) the volume of searches for synthetic cannabinoids; (iii) the types of websites retrieved; and (iv) the traffic on synthetic cannabinoids websites.

Methods

Using methods employed by Forman, Woody, McLellan and Lynch [14] to examine retail websites offering to sell opioid medications without prescriptions, a review was conducted to determine the availability of websites offering to sell synthetic cannabinoids in the USA. Using Google Adwords, which relies on query log mining from millions of weekly searches for keyword generation, four seed terms were generated and used to determine the top keyword used to find information about synthetic cannabinoids. The seed terms generated were as follows: 'synthetic marijuana', 'synthetic weed', 'K2 Spice' and 'herbal incense'. Google Trends was used to examine the total query volume for the search term in question—herbal incense—within the USA from November 2008 to November 2011. Google Trends query index is based on 'query share' which is the total query volume of a term divided by the total number of queries in that region during the time period being examined plotted on a scale from 0 to 100. Using the top US search engine, Google (www.Google.com), the top keyword (herbal incense) was queried in November 2011 to generate the first 100 unique links. Two coders independently examined the first 100 unique links generated, and each site was categorised as a 'retail' site if it directly sold synthetic cannabinoids or indirectly sold synthetic cannabinoids by linking to a retail site (i.e.

portal). All other links were categorised as either 'information' if it provided information about synthetic cannabinoids, drug use or drug treatment, or 'other' if it was (i) a news article; (ii) a broken link; or (iii) any other type of link (e.g. a link to the website of a company named K2 Skis). To gauge how often these sites were visited in November 2011, the top 10 retail sites were examined using several online analytic tools (Google Keywords and Compete Site Analytics) to determine the number of unique monthly US visitors.

Results

In November 2011, 'herbal incense' yielded 2.73 million search results in Google. 'Synthetic marijuana' was the second most common search term with 1.17 million search results in Google. 'K2 Spice' and 'synthetic weed' resulted in far fewer search results (247 000 and 122 000, respectively). Figure 1 provides a time series index of the volume of queries for herbal incense users entered into Google in the USA from November 2008 to November 2011. In November 2011, the majority of the 'herbal incense' sites (87%) were retail in nature, and a small percentage of sites were coded as news (5%), information (4%) or did not refer to synthetic cannabinoids (4%). Google Keywords reported 135 000 US monthly searches for 'herbal incense' in November 2011. Table 1 presents the top 10 retail sites and the number of unique US visitors in November 2011. The top 10 herbal incense retail sites combined yielded 148 273 unique monthly US visits in November 2011—very similar to the Google Keywords results. A website called legalbuds.com accounted for 42% of all the searches in November 2011.

Discussion

This retrospective examination of searches provided population-level data representing US Internet user interest in synthetic cannabinoids between November 2008 and November 2011. Our explorations here provide insight into US internet interest in synthetic cannabinoids during this time. By identifying the most widely used search term, we were able to explore the trends in synthetic cannabinoid online searches over time and the types of sites these searches yield. We can infer that the goal of those who searched for synthetic cannabinoids using 'herbal incense' was to visit retail sites because the majority of websites were retail in nature, and the relative rank order of links produced during an Internet search is determined by a site's amount of Internet traffic.

From its emergence in the USA in 2009, the use of synthetic cannabinoids has burgeoned. Prior to 2010, there were few Google searches for 'herbal incense' in

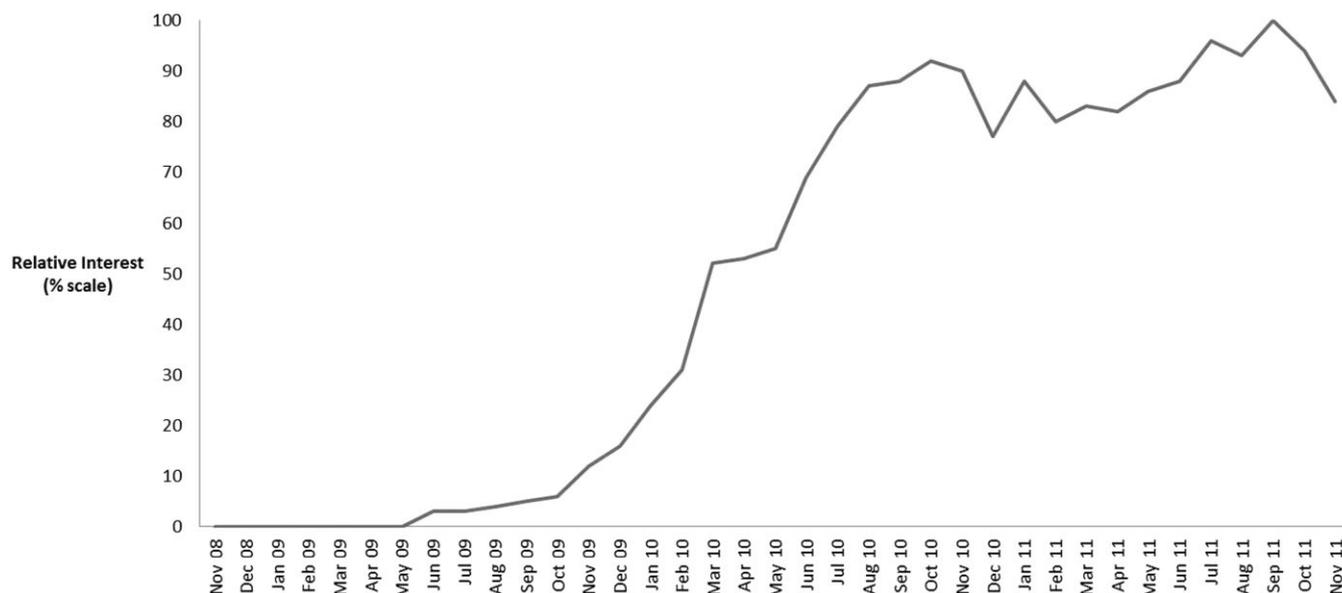


Figure 1. US Internet search interest in synthetic cannabinoids. This figure depicts the Internet interest for the search term 'herbal incense' between November 2008 and November 2011. Numbers represent search interest relative to the highest point on the chart. Data are normalised and presented on a scale from 0 to 100.

Table 1. Monthly visitors to Google's top 10 synthetic cannabinoid retail sites

Retail site address	Estimated unique visitors (November 2011)
spike99.com	4887
www.legalbuds.com	61 650
www.organicspiceblend.com	3353
www.herbalincensereviews.org	4442
www.buzz-wholesale.com	22 019
herbalmagics.com	17 875
www.herbalaxation.com	4267
www.legalherbsdirect.com	4008
www.codeblackincense.com	7723
herbalcity.com	18 049

the USA. Between 2010 and 2011, there was a substantial increase, and this trend corresponds to the rise in synthetic cannabinoid-related adverse events that were reported to the American Association of Poison Control Centers.

We recommend continued surveillance of the Internet using the online tools presented in this brief report by both drug researchers and policy-makers to identify emerging trends in synthetic drugs' availability and interest. Once trends are identified, educational information can be developed for the public and clinicians. The internet holds promise in providing a technique to identify emerging drug markets. Unlike most research study methods, this method provides real-time data

from large numbers of Internet users, requires little analytical training, and is free and accessible to anyone. Further, this demonstration shows that there is feasibility in utilising the Internet to follow public health trends and potentially to predict them.

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