

# Using Syndromic Surveillance to Identify Synthetic Cannabinoids or Marijuana Adverse Health Events in Virginia

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## Objective

Use syndromic surveillance to identify and monitor adverse health events resulting from synthetic cannabinoid receptor agonists (SCRAs) or marijuana. Characterize the current trend of SCRAs and marijuana use among emergency department (ED) and urgent care center (UCC) visits in Virginia to determine whether findings align with utilization trends identified by other states from poison control center calls and ED visits.

## Introduction

SCRAs are accessible and affordable, sold online, in gas stations, and in “head” shops for \$5-30 per package.[1] While marijuana is a schedule 1 narcotic, unavailable for any use, SCRAs navigate the legal landscape with marketing as non-consumable and frequent modifications to the active ingredients that outpace lawmakers’ updates. When consumed, SCRAs bind the same receptor as the active ingredient in marijuana with 10-1000 times the affinity. Physical reactions to marijuana use include breathing problems, increased heart rate, hallucinations, paranoia, lower blood pressure, and dizziness. [2] Health departments have reported varying clinical presentations in response to SCRAs, including extreme agitation and tachycardia. Ongoing reports of SCRA reactions and rising marijuana legalization emphasize the imperative to leverage syndromic surveillance to monitor trends, detect emerging outbreaks, and observe changes in clinical presentations or user demographics.

## Methods

A retrospective study was conducted using ED and UCC chief complaint visit data received by the Virginia Department of Health (VDH). A SCRA and marijuana query was developed using ESSENCE to search for relevant text strings within chief complaints based on nationwide media reports, public health alerts such as Epi-X notices, and consultation with syndromic surveillance practitioners in other states. Descriptive analyses were conducted on ED and UCC visits identified by chief complaint from January 2010 through July 2015.

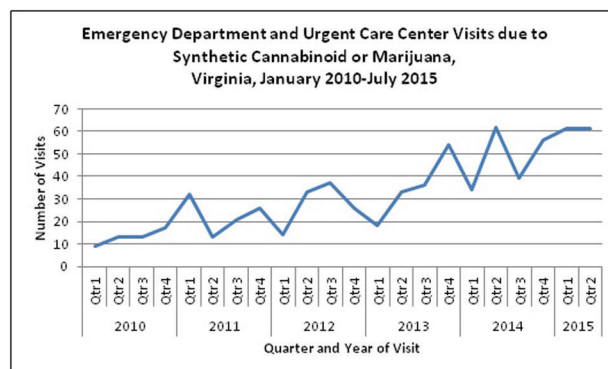
## Results

From January 2010-July 2015, 733 SCRA or marijuana related ED and UCC visits were identified in Virginia, of which 20% (147) occurred since January 2015. Visits peaked in September-October 2013 (43) and May-June 2014 (48), and continued to increase throughout 2015, with a peak in April 2015 (32). Of the 733 visits, 481 (66%) further identified adverse health events in the chief complaint. Most of the 481 visits indicated a nondescript drug reaction (195), while the remaining were grouped into the following 10 categories: cardiac (57), unresponsive (49), restlessness (43), gastrointestinal (31), fainting (24), weakness (24), mental health (22), dyspnea (18), seizure (11), or injury (7). Visits occurred predominantly in males 10-29 years of age (318, 43%), with a median age of 23 years. Males accounted for roughly twice as many visits as females, both overall and across adverse health event categories, except dyspnea

and gastrointestinal which were distributed equally among males and females.

## Conclusions

Syndromic surveillance identified SCRA or marijuana related ED and UCC visits in Virginia that corroborate findings from poison control center calls and ED visits in other states. Virginia temporal trends align with clusters in June 2014 in Washington, DC and April 2015 in Alabama, New York and New Jersey. Of the 10 Virginia identified adverse health event categories, 9 are represented in reports from New York and New Jersey, DC, New Hampshire, and CDC. Virginia additionally identified adverse health events relating to injury, specifically motor vehicle accidents. Study findings resulted in data sharing with Virginia poison control centers, presentations to the state fusion center and local public health, and distribution of a clinician letter for heightened awareness and notification of adverse health events from SCRA use. Continued surveillance will allow detection of fluctuations in trends and demographics resulting from the discontinuation of SCRA sales and regional marijuana legalization.



## Keywords

synthetic cannabinoid; syndromic surveillance; marijuana

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## References

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