

# The END(S) of Vaping: A Search Query Review of E-Cigarettes



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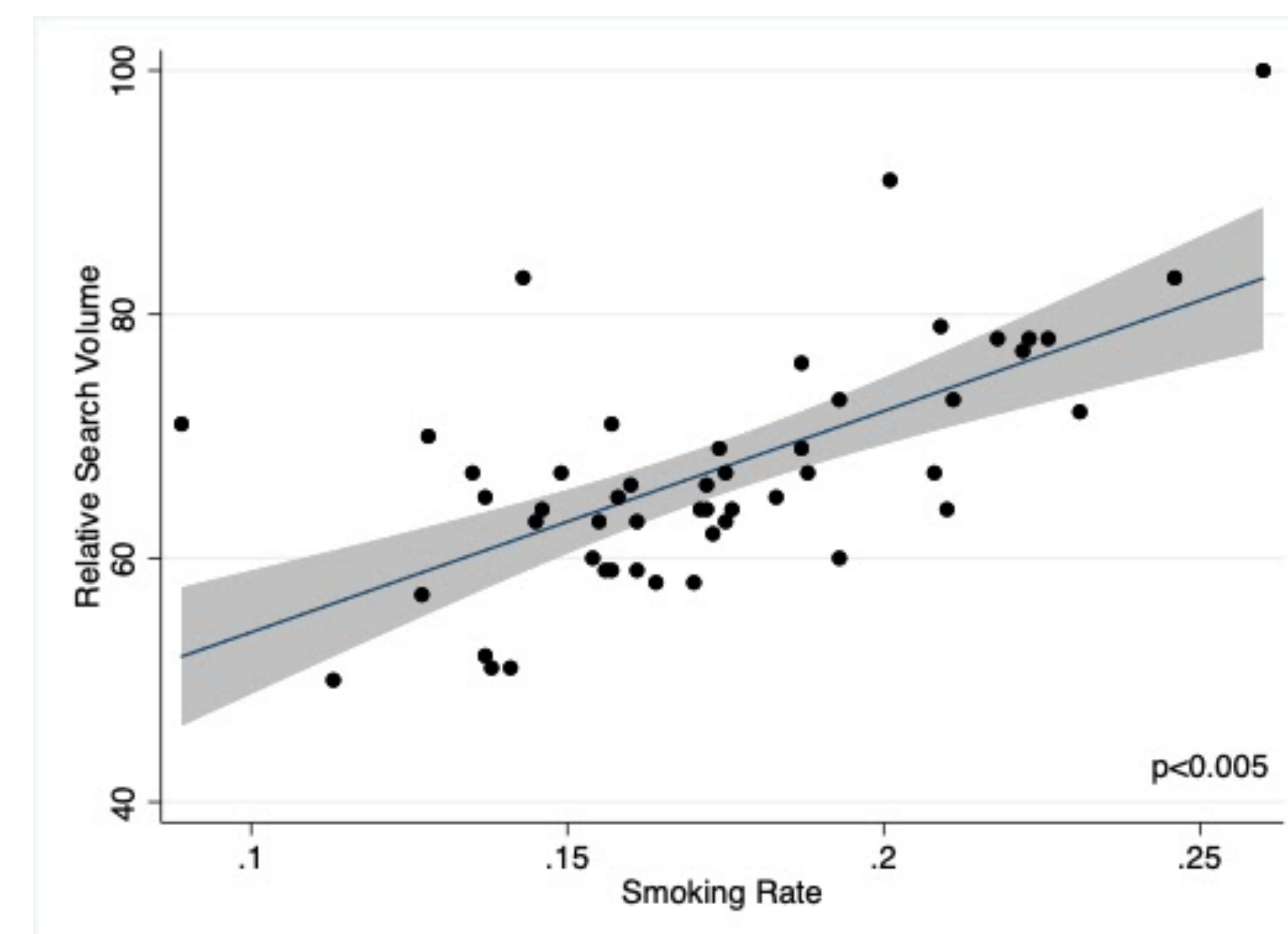
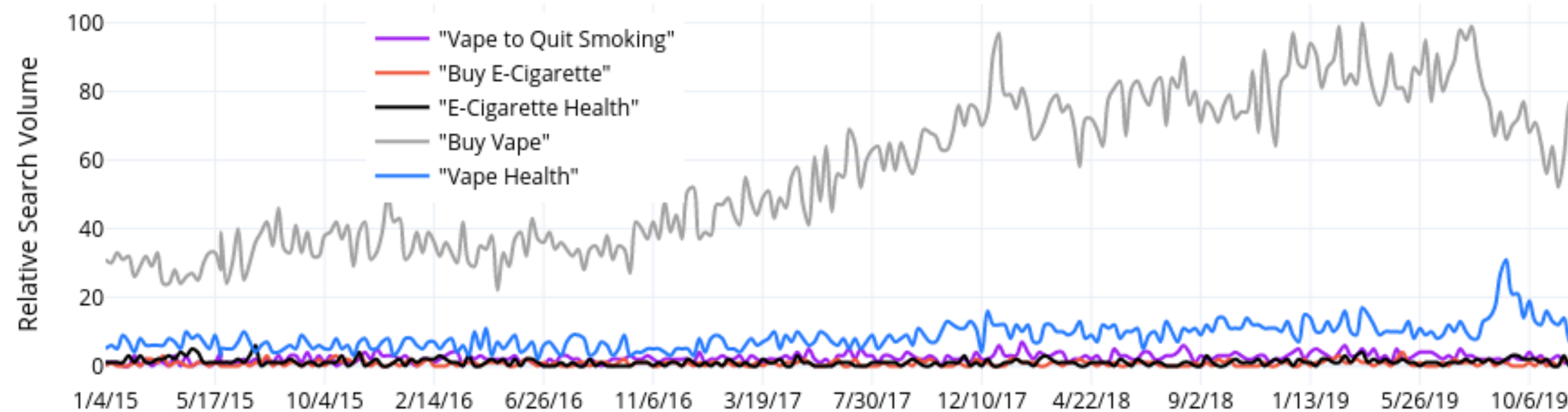
## BACKGROUND

As of December 2019, 52 Electronic Nicotine Delivery System (ENDS)—more commonly known as electronic cigarettes or vape—related deaths and over 2,400 related cases of lung damage have been confirmed in the US; the CDC refers to this pathology as EVALI—e-cigarette, or vaping, product use associated lung injury. The primary endpoint of this investigation is to provide insight into the public consciousness and to shape future studies and policies on this rapidly evolving topic by updating a 2015 study done by John W. Ayers, Ph.D. et al.

## METHODS

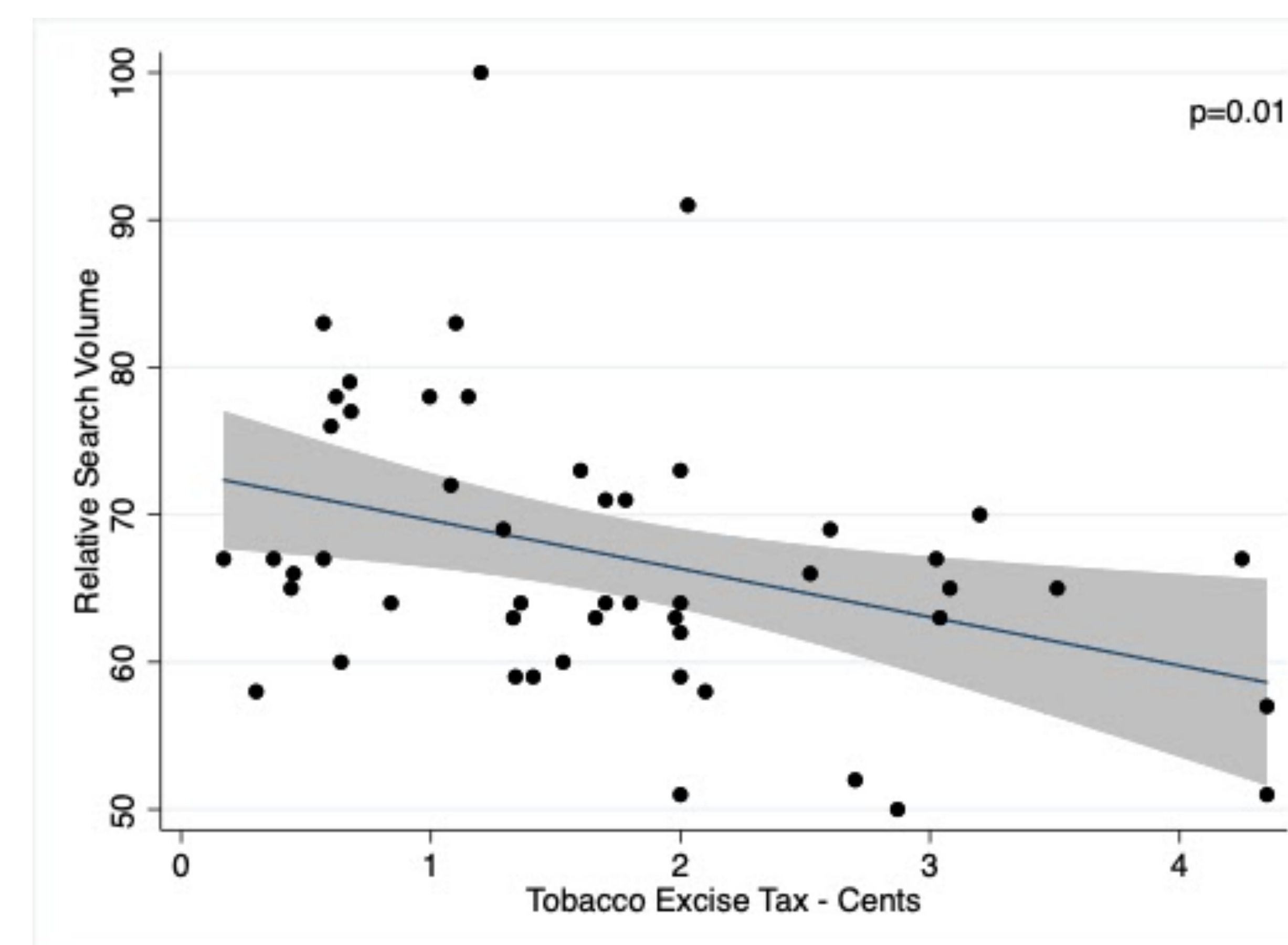
Internet search query data were located using Google Trends (<https://trends.google.com/trends>). We compared the terms “vape” “vaping” “e cig” and “e cigarette” as well as searches for alternative tobacco options such as “snus” “Chantix” and “nicotine-replacement therapies”. Variations in state search rates were explored by comparing ENDS searches according to 10 state specific traits: the longitude of each state, tobacco excise tax rates, cigarette smoking rate, population density, lung cancer incidence rate, national tobacco control program funding and the percentage of available funding used by the state, smoke-free air grades from the American Lung Association, crude ENDS prevalence, and the anti-smoking norms as reported by Ayers et al. All analyses were conducted using Stata 15.1 (STATA Corp., College Station, TX).

## RESULTS



Significant geographic findings for 2019 include a lower annual relative search rate for all ENDS in states with lower smoking rates and higher tobacco taxes. Total ENDS searches increased 88% over the past 5 years. We found that ENDS was searched with significantly greater frequency than other popular tobacco alternatives.

Trends from 2015 - 2019 for different ENDS search phrases meant to represent different intentions (buying, health, and cessation) behind ENDS searches were compared and the phrase “buy vape” was searched the most out of this set. Interestingly, “vape health” spiked the week of September 8, 2019 around the same time “buy vape” began to decline.



## CONCLUSION

Total ENDS searches in the United States increased dramatically over the last 5 years compared to the decade prior, peaking the week of September 8, 2019. Earlier that week, a warning was sent by the CDC of the potential link between ENDS and severe lung illnesses after more than 25 states had reported possible cases of lung illnesses associated with use of ENDS products. ENDS searches by state have become more concentrated in the last 5 years, reversing the trend of the early 2010’s observed by Ayers et al. This trend could be, in part, due to states passing laws to curb the use of ENDS. The public definitively prefers using “vaping” terms over “e-cigarette” terms in a phenomenon similar to that of “high fructose corn syrup” versus “sugar”. It would be wise to frame policy discussions and public education campaigns using “vaping” terms as well as “e-cigarette” terms and encourage states to enact policies associated with lower ENDS usage.

## REFERENCES

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## ACKNOWLEDGEMENTS

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