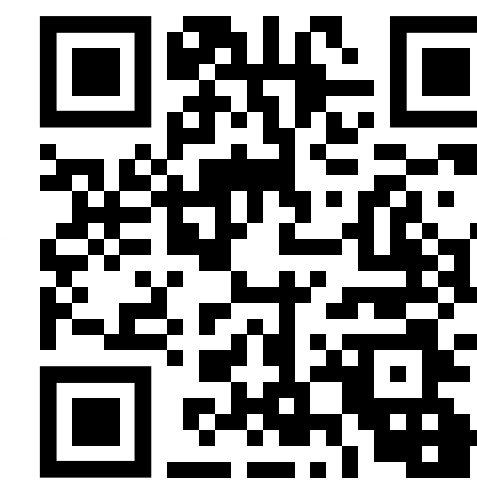


# Trends in relative risk perceptions of EVP among US adults: Analysis of the Population Assessment of Tobacco and Health (PATH) Study Data, 2013-2021

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## INTRODUCTION

Electronic Vapor Products (EVPs) have emerged as popular alternatives to cigarettes. Unlike traditional cigarettes, which burn tobacco to produce smoke, EVPs heat a liquid to create an aerosol, significantly reducing the number of harmful chemicals produced. However, even the most effective product in terms of Tobacco Harm Reduction (THR) must be well perceived by the population to encourage smokers to switch. This study aims to analyze how the U.S. population's perception of the relative risks of EVPs compared to combustible cigarettes has evolved over the past eight years. By tracking changes in risk perception across multiple waves, we explore the shifting public views on the harm associated with vaping versus smoking, offering key insights into how attitudes have transformed during this critical period.

## DATA and METHODS

Using the six first waves of the nationally representative, longitudinal Population Assessment for Tobacco and Health (PATH) Study [1], we assess the trend in perceived relative harm of EVP compared with cigarette among US adults.

To assess this trend, only participants who responded to the question 'Is using an e-cigarette less harmful, about the same, or more harmful than smoking cigarettes?' (Question coded AE1099) at all waves were selected. Out of a total of 30,516 participants who answered across the 6 waves, 13,752 (~45%) were included in the analysis. (Figure 1)

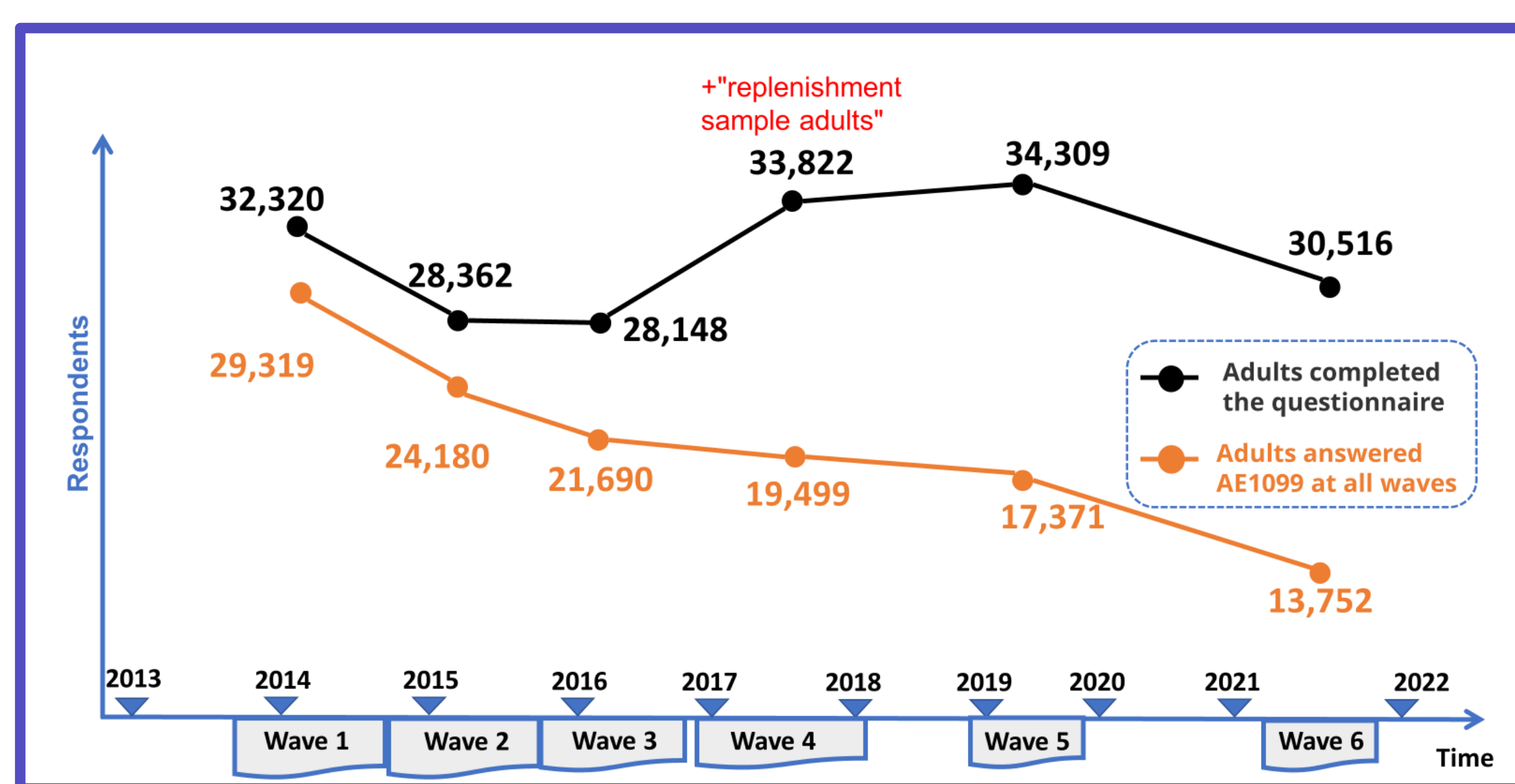


Figure 1: The present study focused on the PATH data contained in the adult interviews obtained in Wave 1 (Sep 2013-Dec 2014), Wave 2 (Oct 2014-Oct 2015), Wave 3 (Oct 2015-Oct 2016), Wave 4 (Dec 2016-Jan 2018), Wave 5 (Dec 2018-Nov 2019) and Wave 6 (Mar 2021 -Nov 2021).

The responses to PATH question AE1099 was assessed according to smoking/vaping status. All statistical analyses were conducted in R [2] using "tidyverse" [3] and "survey" [4] packages.

## RESULTS and DISCUSSIONS

- Figure 2 illustrates the flow of participants' risk perception over time. On average, 12.4% of participants shifted their perception from "Less harmful" to "About the same or more harmful" each year, while 6.6% transitioned from "About the same or more harmful" to "Less harmful". Between 2013 and 2021, this resulted in a 32% increase in the proportion of U.S. adults who believed that EVP were "About the same or more harmful" than smoking.

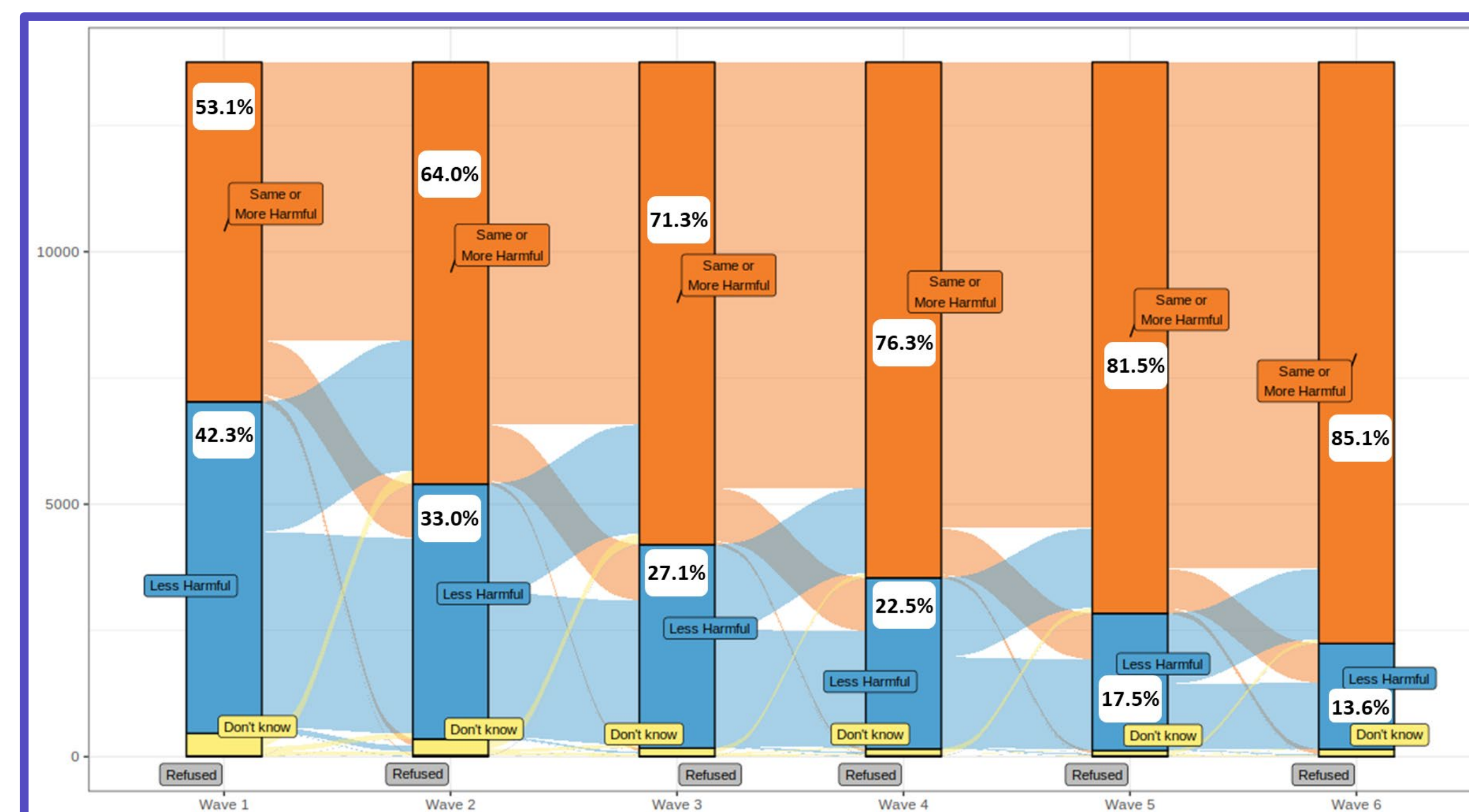


Figure 2: Adults' responses categorizing EVPs as "less harmful" or "about the same, or more harmful" compared to smoking cigarettes

- Figure 3 shows a significant increase, between Wave 1 and Wave 6, in the perception of EVP from "Less harmful" to "About the same or more harmful" compared to combustible products, whatever the vaping or smoking status. On average, among smokers, there is a 41% increase in those who, in wave 6, perceive EVP as "About the same or more harmful" than combustible products, compared to wave 1. This increase reaches a maximum of 44% among smokers who have never vaped. Similarly, among vapers, 38% more perceive EVP as "About the same or more harmful" in wave 6 compared to wave 1, with a maximum increase of 50% among vapers who have never smoked.

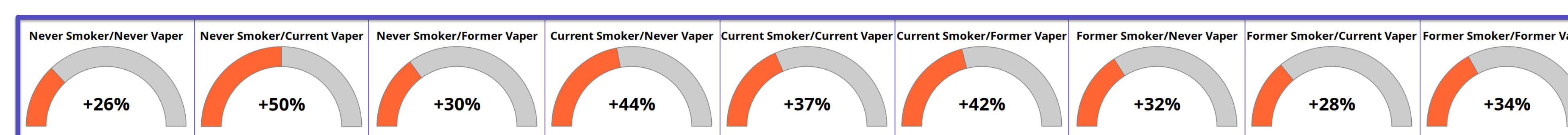


Figure 3: Increase between Wave 1 and Wave 6, in the perception of EVP from "Less harmful" to "About the same or more harmful" compared to cigarettes for Never, Current and Former Smokers and Vapers

## CONCLUSIONS

- This study highlights a clear and ongoing change in the perception of the relative harm of EVPs. Over the period of the six waves (from 2013 to 2021), an increasing number of participants have moved from perceiving EVPs as 'Less harmful' to 'About the same or more harmful' compared to cigarettes. This trend is consistent across different smoking and vaping status, with both smokers and vapers exhibiting this shift in perception.

- The PATH study reveals that perceptions of e-cigarettes' relative harm compared to cigarettes have worsened in the U.S., especially among current adult smokers. These misperceptions may prevent smokers from trying e-cigarettes. Correcting these misperceptions with one clear, consistent, public health message may help more U.S. adult smokers, who would otherwise continue to smoke, to transition away from cigarettes to potentially less harmful products, and to accelerate tobacco harm reduction strategies. Future research and policy-makers should aim to elucidate why the relative harm of EVPs compared to smoking is widely misunderstood and continues to deteriorate.

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