



# Association between E-Cigarettes Use and Propensity for Risk Behavior

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## BACKGROUND

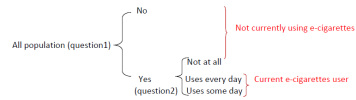
The prevalence of E-cigarettes is increasing rapidly in the United States. This study is to report the prevalence of E-cigarettes and the associated propensity for risk behavior among the United States adults from 2016 to 2018.

## OBJECTIVES

Data from 2016 to 2018 Behavioral Risk Factor Surveillance System (BRFSS) were pooled and the weights were adjusted proportionally.

Subjects from all states in the United States participated in the 2016-2018 survey. The current e-cigarettes user was defined by the two questions:

1) "Ever used an e-cigarette," then 2) "Do you now use e-cigarettes, every day, some days, or not at all?"



Subjects "having risk behaviors" had at least one of the following:

- 1) heavy drink,
- 2) been tested for HIV,
- 3) do not have flu shot in the past year,
- 4) do not always use a seat belt,
- 5) any high-risk situations apply, including injected any drug other than those prescribed, been treated for a sexually transmitted disease or STD, or been given or received money or drugs in exchange for sex in the past year.

## METHODS

Chi-square tests were applied to determine whether the prevalence of the e-cigarettes user in these variable groups was significantly different at the 0.05 level.

Multiple logistic regression was used to estimate the association between the e-cigarettes use and behavioral risk factors adjusting for demographic factors and smoking status.

## RESULTS

- Table 1 reports the prevalence of current E-cigarette users among various demographic groups. Among people who had risk behaviors, 5.39% report to use e-cigarette currently, which was about 3 times than people who did not have risk behaviors (1.88%).

Risk Behavior	E-Cigarette Use	
	Current (N%)	Former or Never (N%)
Yes	38,370 (5.39)	793,171 (94.61)
	3,766 (1.88)	271,196 (98.12)
Cigarette Use	Current Smoker	148,472 (83.70)
	Former Smoker	335,042 (94.38)
	Never Smoked	646,736 (98.37)
Age	18-44	290,703 (92.48)
	45-64	281,452 (96.33)
	65+	528,598 (98.51)
Gender	Male	487,283 (94.23)
	Female	628,166 (96.39)
Race	White	849,854 (94.79)
	Black	89,004 (96.43)
	Hispanic	85,055 (96.73)
	Other	73,857 (95.01)
Marital Status	Married	621,037 (96.59)
	Single	171,466 (92.16)
	Separate	315,067 (95.66)
Education	< 12 years	304,945 (94.00)
	< 12 years	81,283 (95.08)
	> 12 years	727,555 (96.63)
Income	Below 25K	244,400 (94.51)
	25K to 75K	385,834 (95.02)
	75K to 125K	312,025 (96.27)
	Above 125K	312,025 (96.27)

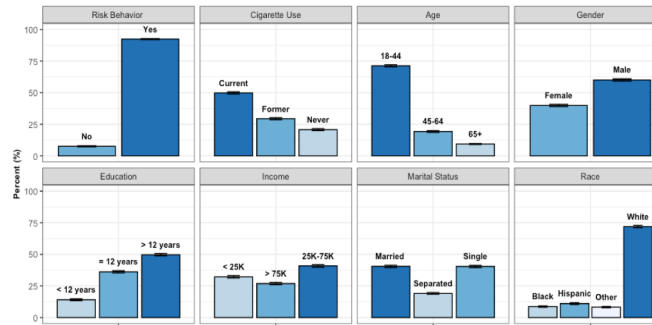


Fig 1. Demographic Characteristics of Participants by Current E-Cigarette User

- Fig 1 summarized all of the raw data and reported the demographic characteristics of participants by current E-cigarette using. Current cigarette users (49.8%) and people who had risk behaviors (92.42%) were more into using E-cigarette.

## RESULTS

- In Table 2, current e-cigarette use was associated with 1.38 times the probability of people who had risk behaviors compared to those who do not have risk behaviors ( $p < .0001$ ).
- Fig 2 indicated the increasing trend in the percentage of e-cigarette users from 2016 to 2018.

Parameter	Point Estimate	95% CI
<b>Risk Behavior</b>		
How Risk Behavior vs. No	1.38*	1.28-1.48
<b>Age</b>		
18-44 vs. 65+ years old	4.84*	4.53-5.18
45-64 vs. 65+ years old	2.30*	2.10-2.43
<b>Gender</b>		
Female vs. Male	0.80*	0.76-0.83
<b>Race</b>		
Black vs. White	0.58*	0.53-0.64
Hispanic vs. White	0.63*	0.57-0.69
Other vs. White	0.97	0.89-1.06
<b>Marital Status</b>		
Single vs. Married	1.70*	1.58-1.80
Separated vs. Married	1.35*	1.27-1.44
<b>Education</b>		
< 12 years vs. > 12 years	0.93	0.85-1.02
< 12 years vs. > 12 years	1.18*	1.12-1.24
<b>Income</b>		
25K to 75K vs. Below 25K	1.02	0.96-1.08
Above 75K vs. Below 25K	0.96	0.89-1.04
<b>E-cigarette Use</b>		
Current Smoker vs. Never Smoked	9.52*	8.94-10.14
Former Smoker vs. Never Smoked	5.13*	4.83-5.47

\*P<.0001

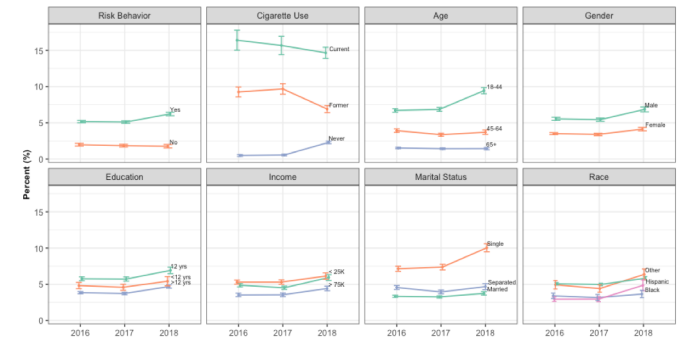


Figure 2. The Trend of Using E-Cigarette from 2016-2018

## CONCLUSIONS

There are significantly higher odds of E-cigarette use in people with risk behaviors as compared with those without risk behaviors. Besides, former or current tobacco users are more likely to use E-cigarettes.