

Potential Consequences of E-Cigarette Use: Is Youth Health Going Up in Smoke?

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Research question and main findings

- **Question:** Are electronic cigarettes (e-cigarettes) a substitute for adolescent traditional tobacco product use, or are e-cigarettes a gateway for adolescent traditional tobacco product use?
- **Findings:** The study results provide compelling evidence that e-cigarettes could be a gateway to adolescent traditional tobacco use
 - Youth who vape are more likely to smoke than expected
 - Youth who vape smoke traditional cigarettes on more days than expected
 - Youth who vape smoke a greater number of cigarettes per day than expected

Data

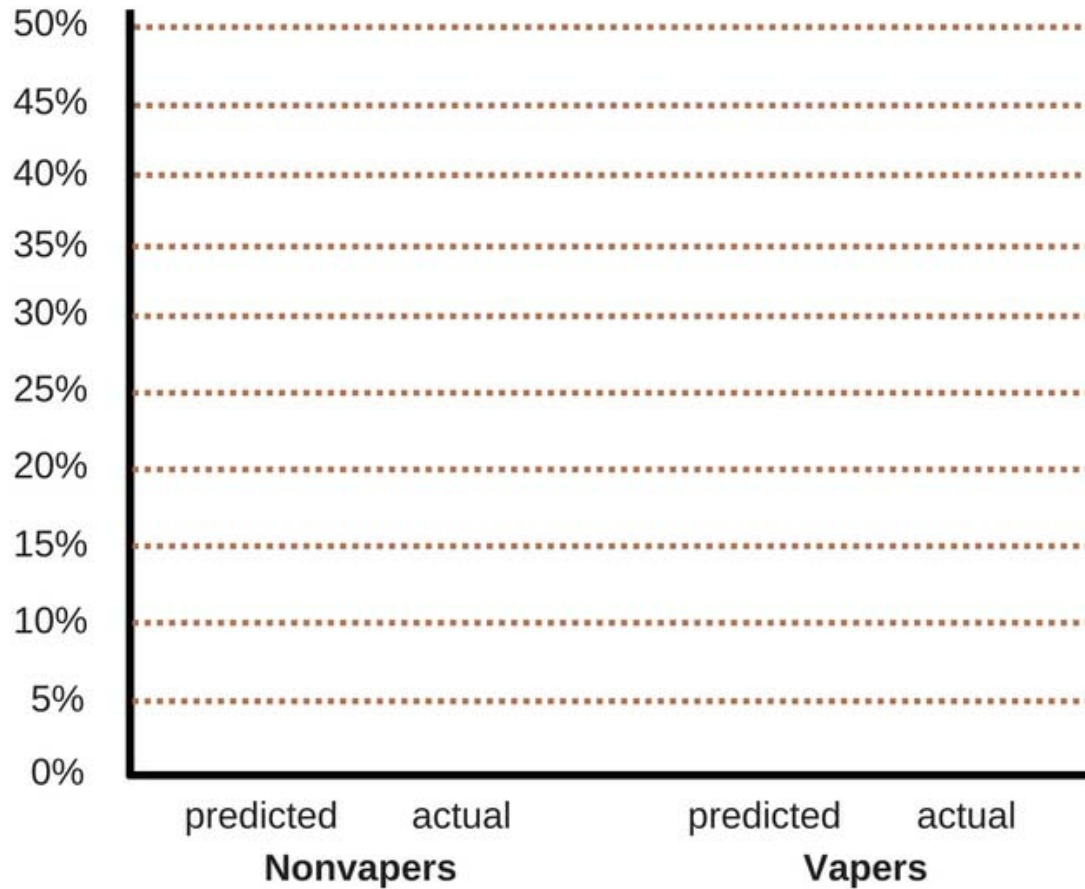
- Center for Disease Control’s (CDC’s) National Youth Tobacco Survey (NYTS)
 - Various waves from 2002-2014
 - About 20,000 students in each wave during this time period have answered the survey questions necessary for our study
- E-cigarettes introduced to U.S. in 2007
 - 2002-2006 survey respondents are considered the “before” e-cigarette sample
 - 2011-2014 survey respondents are considered the “after” e-cigarette sample

Demographics	Proportion of Vapers	Compared to the full sample
Grades 6-8	17.5%	↓
Grades 9-10	37.7%	↑
Grades 11-12	44.9%	↑
Female	51.5%	↑
Asian	5.5%	
Black	16.2%	↓
Pacific Islander	3.1%	
Native American	8.5%	↑
White	80.3%	↑
Hispanic	20.2%	↑
Lives with a smoker	51.1%	↑
N	2,641	67,431

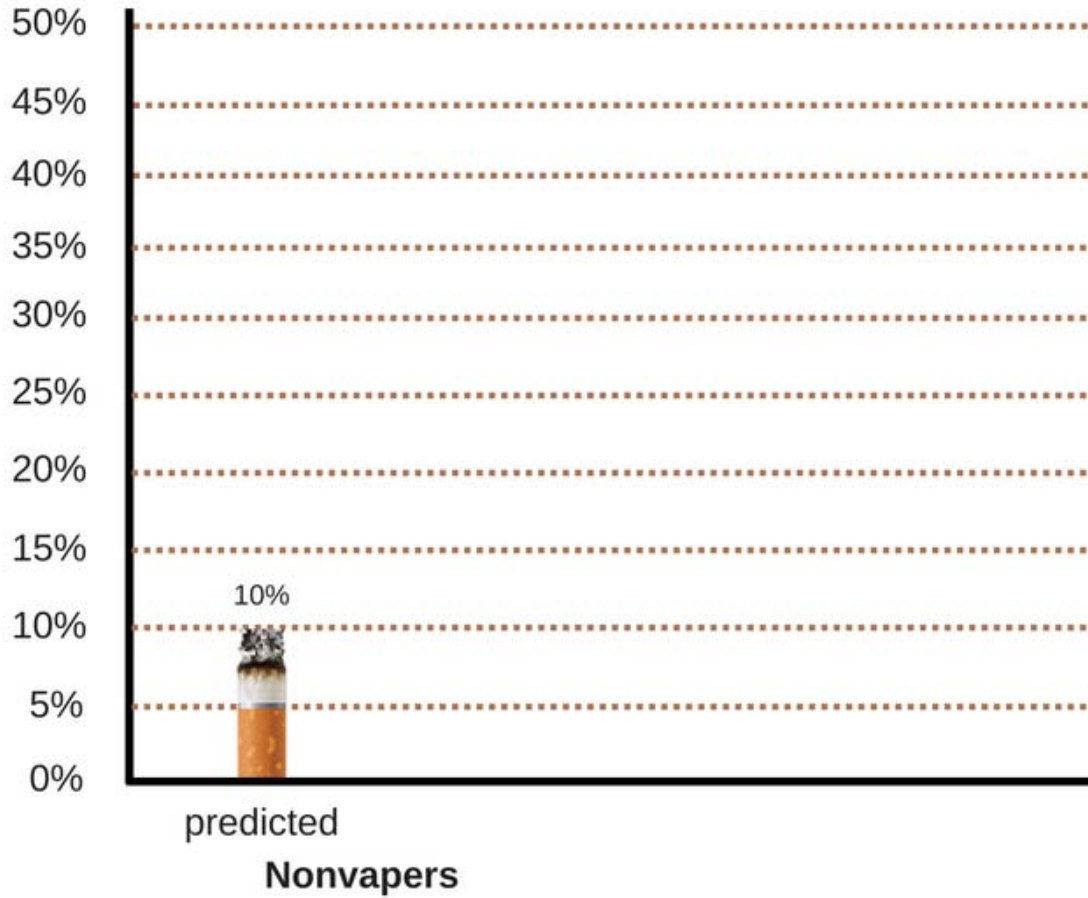
Methodology

- Step 1: Use 2002-2006 data ($\approx 61,000$ respondents) to estimate the probability of smoking
 - Example: We estimate that, in 2004, a white (non-Hispanic) female junior in high school who was 17 years old and did not live with a smoker had about a 17% chance of smoking
- Step 2: Use 2002-2006 estimates to predict the number of smokers in our 2011-2014 data
 - We predict that $\approx 13\%$ of 2011-2014 female respondents like the one described above will smoke
- Step 3: Divide 2011-2014 data into two groups: nonvapers and vapers
- Step 4: Compare predictions to actual outcomes for each group in the 2011-2014 data
 - Nonvapers: 6.9% of females matching the above description actually report smoking
 - Vapers: 43% of females matching the above description actually report smoking

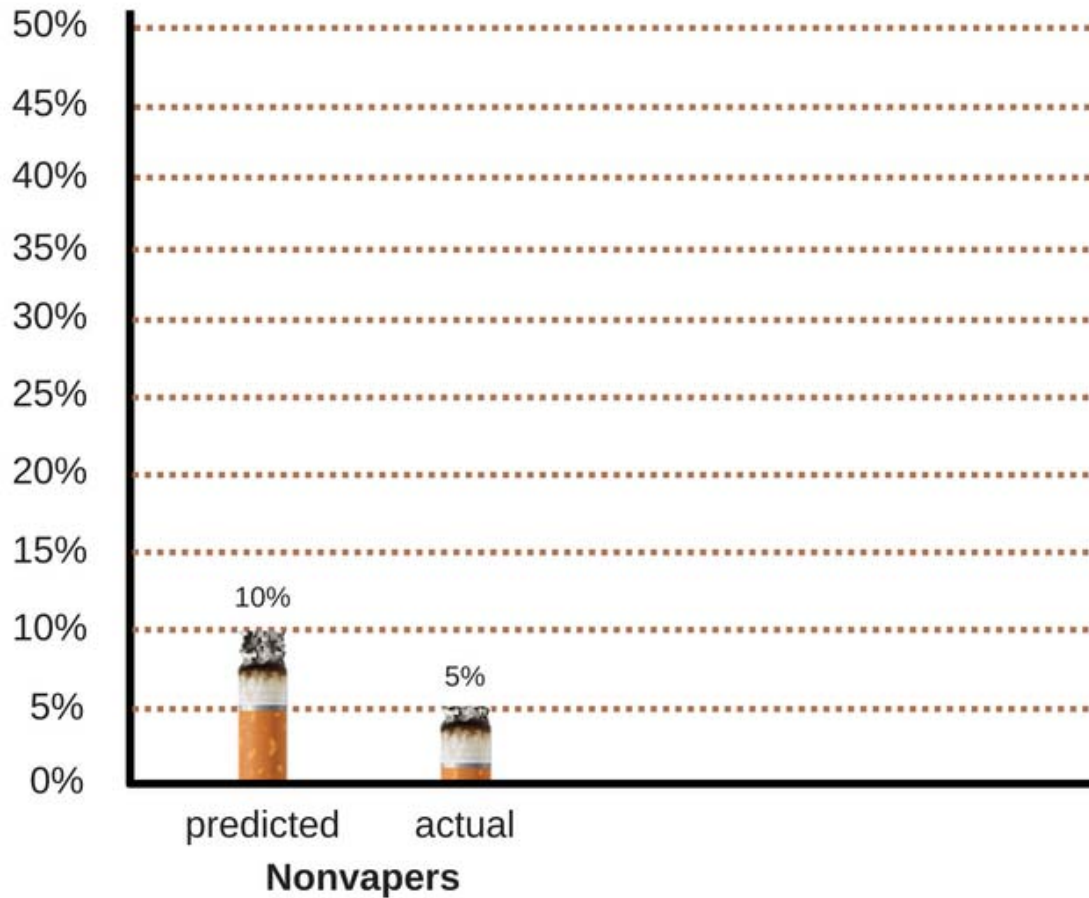
Aggregate results: Predicted vs. actual percentages of smokers



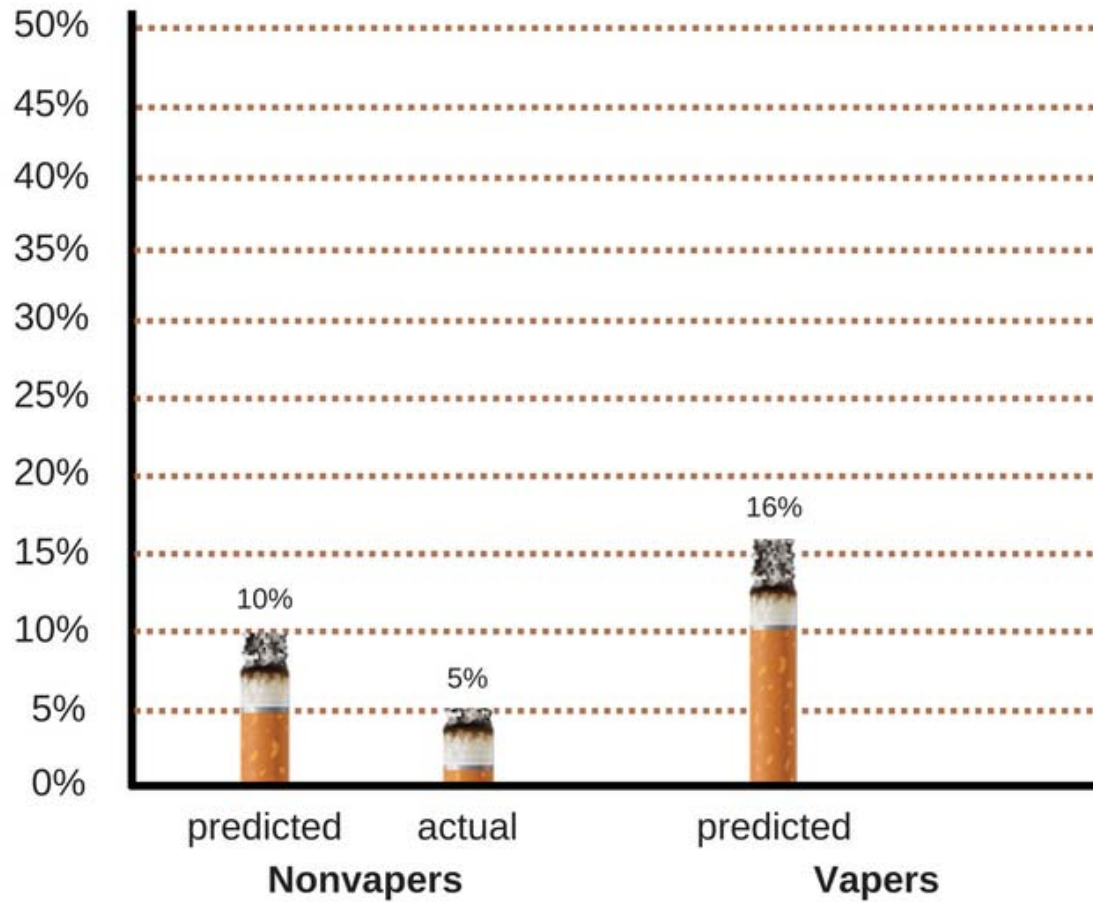
Aggregate results: Predicted vs. actual percentages of smokers



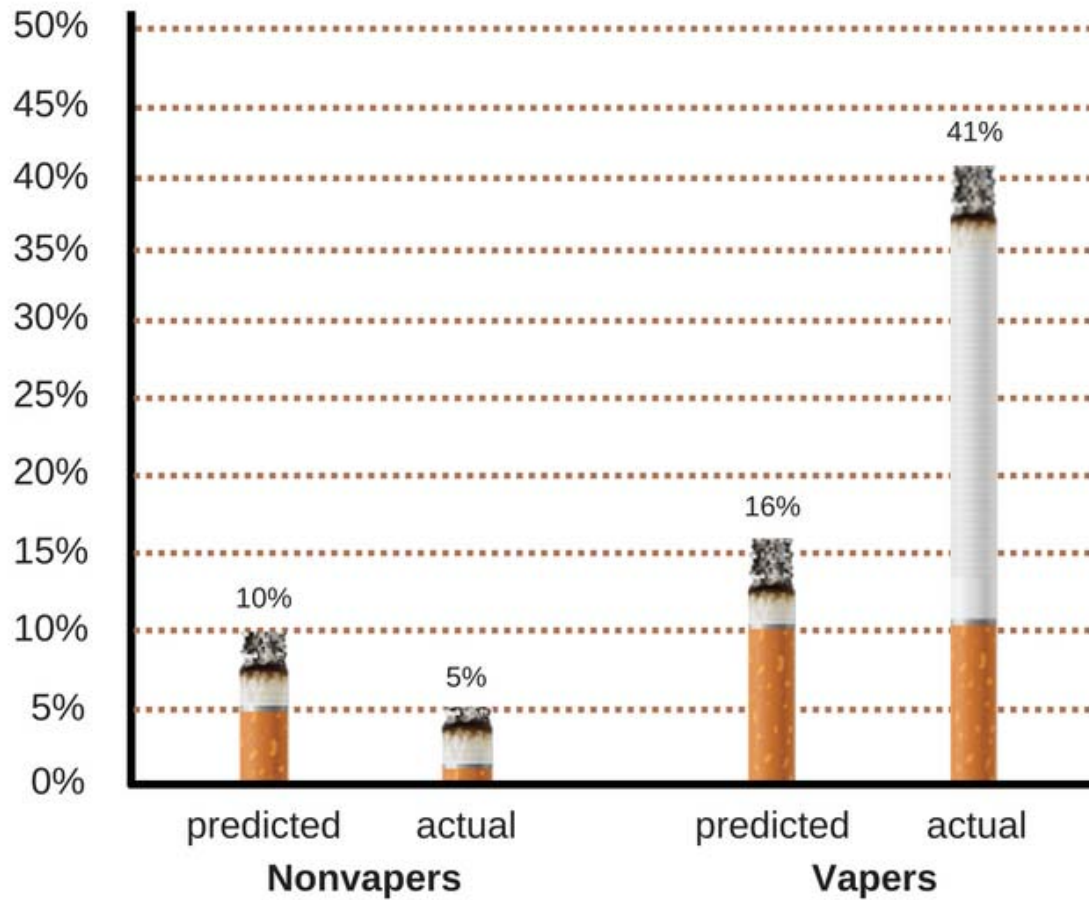
Aggregate results: Predicted vs. actual percentages of smokers



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Aggregate results: Predicted vs. actual percentages of smokers



Aggregate results: Predicted vs. actual smoking frequency and intensity

- Frequency – The number of days during which one has smoked over the past 30 days
- Intensity – The average number of cigarettes smoked per day on days that one has smoked
- Nonvapers smoke less frequently and less intensely than expected
 - Ex: 57% fewer nonvapers smoke cigarettes every day than we expect
 - Ex: Among nonvapers who smoke, 20% fewer smoke more than a pack per day than we expect
- Vapers smoke more frequently and more intensely than expected
 - Ex: 205% more vapers smoke cigarettes every day than expected
 - Ex: Among vapers who smoke, 18% more smoke more than a pack per day than we expect

Conclusions

- Not just a concern for the health of adolescents, but for the health of military personnel since these youth are our next generation of recruits
- Vaping might be a gateway to traditional tobacco use
 - Youth who vape are more likely to smoke than expected
 - Youth who vape smoke traditional cigarettes on more days than expected
 - Youth who vape smoke a greater number of cigarettes per day than expected
- First study to our knowledge to explore this question with a nationally representative sample of youth over such a long timespan
- Results highlights the importance for more data collection on youth e-cigarette use and more research on this topic

Questions?
