

Letters

RESEARCH LETTER

Electronic Cigarette Sales in the United States, 2013-2017

Electronic cigarettes (e-cigarettes) deliver an inhaled aerosol to the user that typically contains nicotine, flavorings, and other additives.¹ e-Cigarettes come in many shapes and sizes but generally contain a battery, a heating element, and an e-liquid reservoir.¹

e-Cigarettes could help adult smokers if used as a complete substitute for conventional cigarettes.^{1,2} However, research on the effectiveness of e-cigarettes for smoking cessation is inconclusive,² and e-cigarettes are not currently approved by the US Food and Drug Administration as a cessation aid.^{1,2} Moreover, e-cigarette aerosol can contain harmful constituents,^{1,2} and use of these products among young people is a public health concern.¹ Most e-cigarettes deliver nicotine, which is addictive and can harm the developing adolescent brain.¹

National self-reported surveys traditionally provide annual estimates of tobacco product use. In 2016, 3.2% of US adults and 11.3% of US high school students were current users of e-cigarettes.³ However, e-cigarettes are an evolving product class, and retail sales data available at more frequent intervals (eg, weekly) can complement annual surveys and identify emerging trends.¹ This study assessed e-cigarette sales in the United States during 2013-2017.

Methods | e-Cigarette retail sales data were licensed from the Nielsen Company for convenience, club, and discount/dollar stores, mass merchandisers, supermarkets, pharmacies, and military commissaries. Sales data reflect all documented sales in the store types monitored; internet and “vape shop” sales are not captured. Data came in 4-week aggregates, from December 16, 2012, through January 8, 2018, for the 48 contiguous states and Washington, DC.

Unit sales of e-cigarette products (number of sales by Universal Product Code) were assessed for the 5 top-selling manufacturers based on 2017 sales volume and brand ownership. Other manufacturers were grouped into an “other” category. Market share was calculated by dividing each manufacturer’s unit sales by total sales. Trends were assessed using JoinPoint version 4.5.0.1 (National Cancer Institute), a segmented regression analysis application, to assess average monthly percentage change (AMPC) and 95% confidence intervals, accounting for structural breaks. Monte Carlo permutation determined if the AMPC differed from zero (2-sided $\alpha = .05$).

Results | During 2013 and early 2014, “other” manufacturers dominated the e-cigarette market. British American Tobacco sales increased 146% during 2014-2017 (AMPC, 6.1 [95% CI,

4.3-7.9]) and led sales from late 2014 into late 2017 (Figure, panel A). JUUL Laboratories sales increased 641% from 2016 (2.2 million) to 2017 (16.2 million) (AMPC, 15.5 [95% CI, 13.8-17.2]). By December 2017, JUUL Laboratories’ monthly sales (3.2 million) surpassed those of British American Tobacco (2.7 million).

During 2016-2017, JUUL Laboratories’ average annual market share of total e-cigarette sales increased 515%, from 2% to 13% (Figure, panel B) (AMPC, 15.9 [95% CI, 12.9-18.9]). By December 2017, JUUL Laboratories’ sales comprised 29% of total e-cigarette sales, giving it the greatest market share.

Discussion | e-Cigarette sales volume and market share in the United States varied considerably during 2013-2017. Although no single manufacturer dominated the market through 2013, British American Tobacco sales surged in 2014 and led into 2017. However, consistent with a recent study,⁴ JUUL Laboratories held the greatest market share by the end of 2017. This was attributable to the increased sales of an e-cigarette resembling a USB flash drive, called JUUL. Although rapid uptake of other e-cigarette brands has occurred after their introduction, JUUL’s high nicotine concentration, discreet shape, and flavors could be particularly appealing to, and problematic for, youths.⁵ Media reports suggest the JUUL device is being used among youths in schools, including classrooms.⁵

This study could not assess purchaser age. These sales could reflect products purchased by adults to attempt smoking cessation or products obtained directly or indirectly by youths; a recent analysis found retail stores were the primary location where youths reported obtaining the JUUL device and refill pods.⁶ Also, the study did not include purchases from all locations e-cigarettes are sold, so sales may be underestimated.

e-Cigarettes have the potential to benefit some people and harm others.^{1,2} Progress in maximizing the potential benefits of e-cigarettes and minimizing risks at the population level could be hindered by youth use of these products.¹ Continued monitoring of e-cigarette sales and use is critical to inform public health policy, planning, and practice.¹

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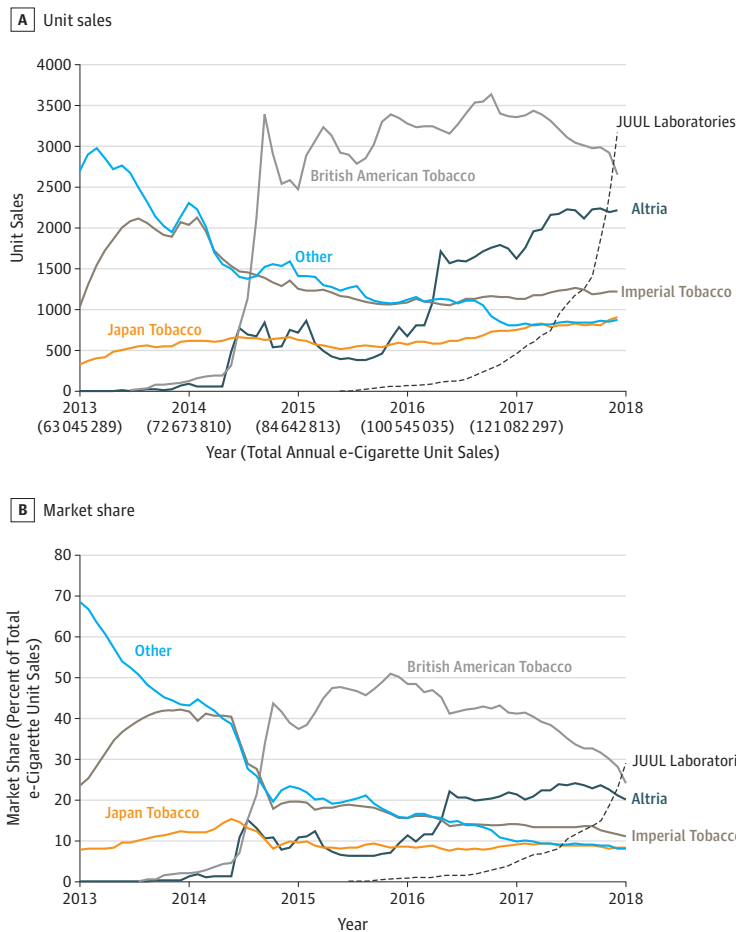
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Figure. e-Cigarette Unit Sales and Market Share of e-Cigarette Unit Sales, by Manufacturer—United States, 2013-2017



A, e-Cigarette unit sales (number of sales by Universal Product Code). B, Market share for e-cigarette sales (calculated by dividing each manufacturer's unit sales by total unit sales). Data were aggregated by manufacturer, and sales for the 5 top-selling manufacturers and all others combined (based on 2017 unit sales) are presented. The 5 top-selling manufacturers and the corresponding e-cigarette brands sold by those manufacturers (based on 2017 brand ownership) were Altria (MarkTen, Green Smoke); British American Tobacco (Vuse); Imperial Tobacco (blu); Japan Tobacco (Logic); JUUL Laboratories (JUUL); and other (all other brands combined). For consistency in the figure, unit sales and market share are reported according to the owner of the reported brands as of 2017. Before 2014, blu was owned by Lorillard Tobacco Company; before 2017, JUUL was owned by Pax Laboratories.

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Concept and design: King, Marynak, Rogers.

Acquisition, analysis, or interpretation of data: All authors.

Drafting of the manuscript: King, Gammon, Marynak.

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Presence of High-Intensity Sweeteners in Popular Cigarillos of Varying Flavor Profiles

In 2009, the Family Smoking Prevention and Tobacco Control Act banned characterizing flavors (primary recognizable