

# The VAPIng Epidemic in the United States

*Profits, Politics, Policy, and Public Health*

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[taragonmd.github.io](https://taragonmd.github.io) (blog)

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PDF slides produced in Rmarkdown  $\text{\LaTeX}$  Beamer—Metropolis theme

Profits and policy

Public health harms

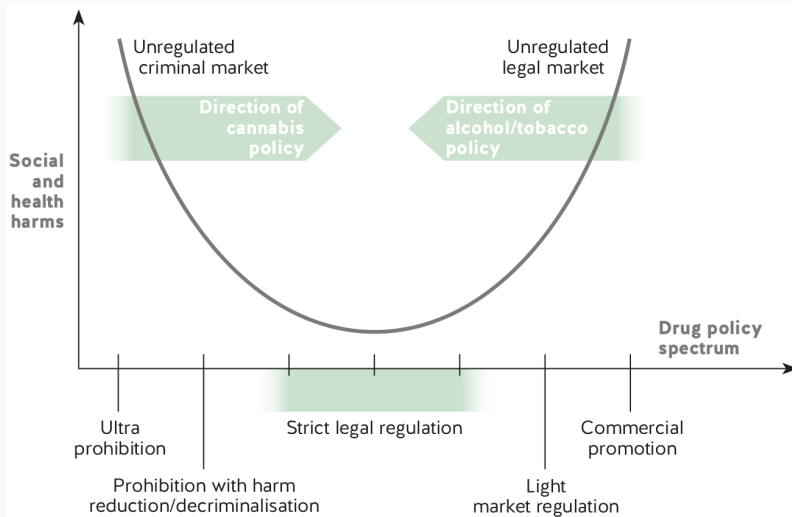
Harm reduction

Action steps

## Profits and policy

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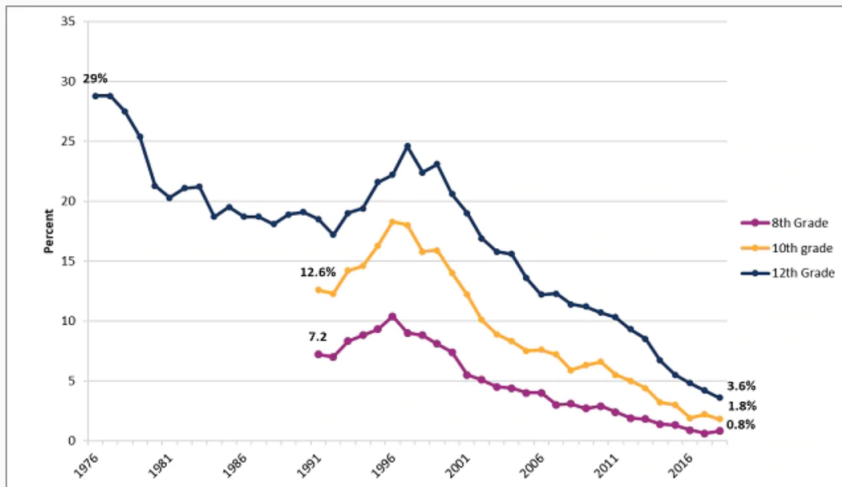
# Social and health harms in relation to drug policy spectrum



## Public health harms

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## 30 day prevalence of daily use of cigarettes, by grade, 1976-2018



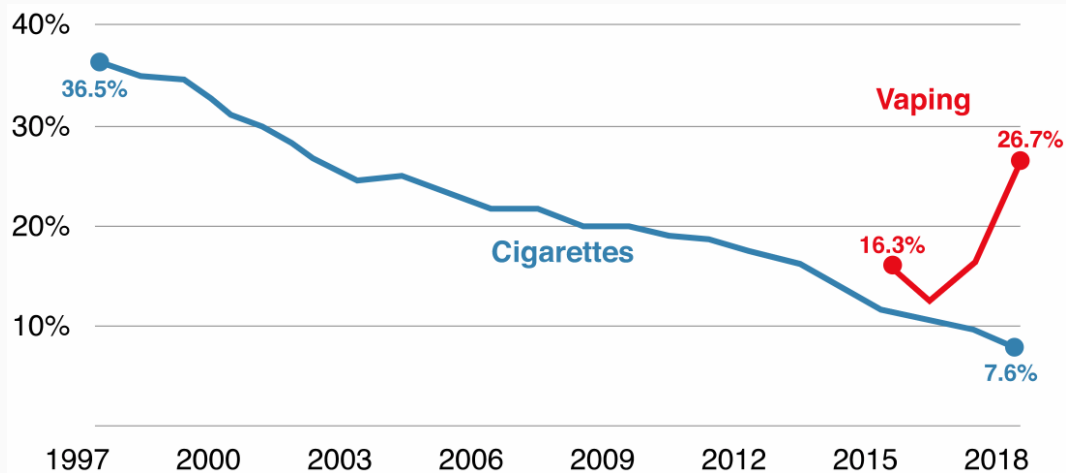
Source: US Department of Health and Human Services (<http://bit.ly/2oL0Zdq>)

## Who is the target audience?



For more examples see <https://med.stanford.edu/tobaccopreventiontoolkit.html>

## Current use (past 30 days) of cigarettes and vaping, US 12th graders



Source: <https://tobacco21.org/the-juul-epidemic/>



## Current use (past 30 days) of cigarettes and vaping, CA 10th & 12th graders

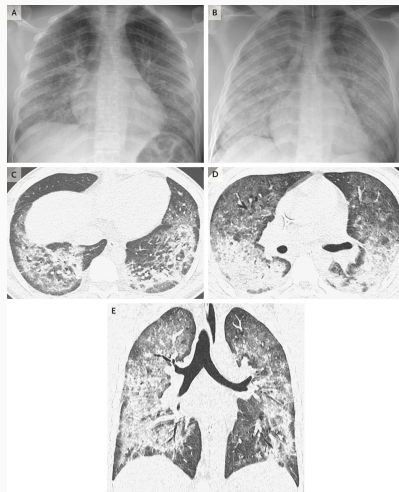
| Tobacco    | San Francisco/San Mateo | California |
|------------|-------------------------|------------|
| Vaping     | <b>20.8</b>             | 10.9       |
| Cigarettes | 3.1                     | 2.0        |

Zhu S-H, et al. (2019). Results of the Statewide 2017–18 California Student Tobacco Survey. San Diego, California: Center for Research and Intervention in Tobacco Control (CRITC), University of California, San Diego. Available from

<https://www.cdph.ca.gov/Programs/CCDPHP/DCDIC/CTCB/Pages/Reports.aspx>

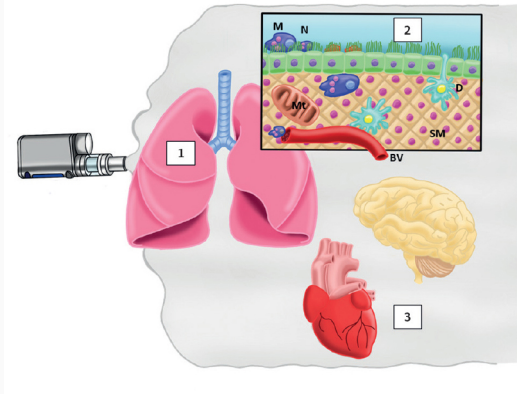
## Epidemic of vaping-associated pulmonary injury (VAPI)

| Characteristic          | U.S. (9/27) | CA (10/1) |
|-------------------------|-------------|-----------|
| Cases (number)          | 805         | 102       |
| Male (%)                | 69          | 62        |
| Age (median)            | 23          | 27        |
| THC (%)                 | 77          |           |
| THC only (%)            | 36          |           |
| Nicotine (%)            | 57          |           |
| Nicotine only (%)       | 16          |           |
| Respiratory failure (%) | ~30         | ~30       |
| Deaths                  | 16          | 2         |



Source: [nejm.org/doi/full/10.1056/NEJMoa1911614](https://doi.org/10.1056/NEJMoa1911614)

# Health harms and pulmonary injury



Source: <https://doi.org/10.24875/RIC.18002616>

- Psychoactive (nicotine, THC, CBD)
- Solvent (propylene glycol)
- Humectant (vegetable glycerin)
- Flavorants (7000+)
- Oily extracts (THC, CBD, terpenes)
- Diluents (e.g., vitamin E acetate)
- Other chemicals (incl. reactions)
- Ultrafine particles
- Devices (metals)
- Explosion

## Cloud competition at a vaping convention, April 2016, Maryland.



National Academies of Sciences, Engineering, and Medicine 2018. Public Health Consequences of E-Cigarettes. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24952>.

## Cannabis extracts: dehydration and alcohol processing into fine oil



Heylo takes cannabis and conducts CO<sub>2</sub> extraction, with dehydration and alcohol treatment, to make fine oil. Video available from H. Meadows. The Best Discreet Vape Pens and Portable Vaporizers. Leafly.  
<https://www.leafly.com/news/strains-products/best-discreet-vape-pens-and-portable-vaporizers>.

**“Dank Vapes, TKO and other THC vaping brands are linked to illnesses. . .”**

*New York Times, September 27, 2019*

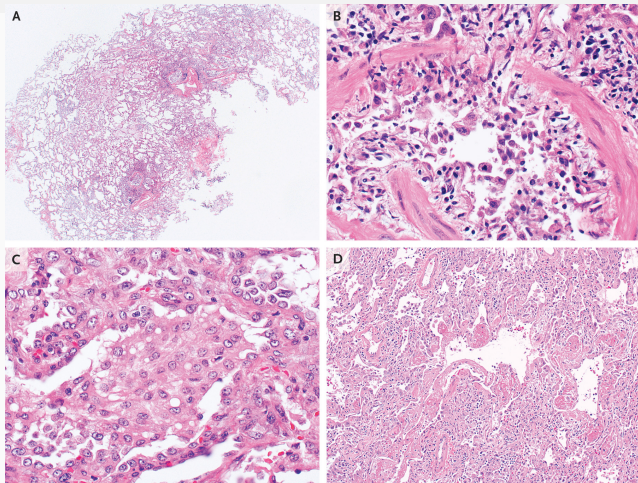


Source: <https://www.nytimes.com/2019/09/27/health/vaping-illness-thc.html>

## Histopathology of acute lung injury associated with vaping (17 patients)

*"airway-centered chemical pneumonitis from one or more inhaled toxic substances"*

Airway-centered acute lung injury (Panel A), with bronchiolitis and marked mucosal edema, sloughing of bronchiolar epithelium, and peribronchiolar organization (Panel B). All cases showed accumulation of foamy or vacuolated macrophages in peribronchiolar airspaces with pneumocyte vacuolization (Panel C). Four cases showed severe injury, with diffuse alveolar damage and hyaline membranes (Panel D); two of these patients died.



Source: Oct. 2, 2019, [https://www.nejm.org/doi/full/10.1056/NEJMc1913069?query=featured\\_home](https://www.nejm.org/doi/full/10.1056/NEJMc1913069?query=featured_home)

## Harm reduction

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# Harm reduction and continuum of drug use

## *Population vs. individual perspective*

- Safer substances
- Safer techniques
- Managed use
- Abstinence



Source: Adapted from Charles Hawthorne, San Francisco Department of Public Health

## Action steps

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## Action steps

1. Advocate for
  - public health framework
  - stronger regulations
  - no social marketing
  - unbiased research
2. Population harm reduction
3. Vote!

[www.TobaccoFreeKids.org](http://www.TobaccoFreeKids.org)



[www.GettingItRightFromTheStart.org](http://www.GettingItRightFromTheStart.org)