Smoking Cessation
Leadership Center

UCSF

University of California
San Francisco

How to Think – Not Feel – About Tobacco Harm Reduction

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10/18/17

Moderator

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Disclosures

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Presenter

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SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF MICHIGAN

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University of Michigan School of Public Health

UCSF Smoking Cessation Leadership Center Webinar

October 18, 2017

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Conflicts

- I have no professional conflicts of interest.

Funding sources

- I have no visible means of support for this presentation or anything else I do.

Tobacco harm reduction

Tobacco harm reduction

Substituting lower-risk products, like snus and e-cigarettes, for the highest risk tobacco products – combusted products – *for smokers who otherwise cannot or will not quit using nicotine*.

Definition of harm reduction from Harm Reduction International

"Harm reduction refers to policies, programmes and practices that aim to reduce the harms associated with the use of psychoactive drugs in people unable or unwilling to stop. The defining feature [is] the focus on the prevention of harm, rather than on the prevention of drug use itself…

Harm reduction complements approaches that seek to prevent or reduce the overall level of drug consumption."

https://www.hri.global/what-is-harm-reduction

Examples of harm reduction in public health

- Clean needle distribution to minimize the spread of HIV/AIDS
- Sex education for kids and condom distribution in schools, instead of abstinence only, to reduce teen pregnancies and sexually transmitted infections
- Methadone as a substitute for heroin
- Motorcycle helmet laws
- Designated driver programs

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Kent's "Miracle Micronite Filter" (made of asbestos)

True low-tar, low-nicotine cigarettes

Precautionary principle

"[t]he principle that the introduction of a new product or process whose ultimate effects are disputed or unknown should be resisted." (Dictionary definition)

Examples of common areas of application:

- *Environmental exposures*
- *Occupational exposures*
- *Importation of genetically modified organisms and food*

Daily tobacco use by Swedish males, ages 16-84, 2016

Tobacco type	Prevalence (%)
Smoking only	7
Snus only	17
Smoking + snus (dual use)	1
Any tobacco use	25

Source: Public Health Agency of Sweden

Tobacco-related death rates in Sweden and the European Union, ages 60-69

Table 1 Death rates (per 100,000) attributable to tobacco

	Sweden	European Union Member States other than Sweden		
		Min	Median	Max
MEN				
Lung cancer	87	91	220	399
Other cancer	36	41	105	217
All cardiovascular	72	107	170	618
All causes	222	378	550	1388
WOMEN				
Lung cancer	61	5	39	127
Other cancer	17	1	10	39
All cardiovascular	63	5	50	222
All causes	173	14	115	690

Men and women age 60-69.

Ramström and Wikmans, Tobacco Induced Diseases, 2014

E-cigarettes and HnB (Heat-not-Burn) products

FDA's new plan for tobacco and nicotine regulation

Areas of difference between e-cigarette enthusiasts & skeptics

Issue	Enthusiasts	Skeptics
1. Degree of risk reduction	≥95%	Unknown; likely much <95%
2. Primary articulated concern	Maximizing adults quitting smoking	Minimizing risks to kids
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4. Impact on adult quitting	Potential to help millions	May reduce quitting
5. Precautionary principle	Smoking toll requires support of novel products	Need to first prove (relative) safety & effectiveness
6. Long-term nicotine addiction	Acceptable if eliminates smoking	Not acceptable
7. Cigarette and e-cig companies	Open to working with them	Not to be trusted
8. Free market	Strongly support	Worry about "Wild West"
9. Scientific studies	Support/discredit	Support/discredit
10. Product regulation	Favor limited regulation that won't disrupt innovation	Support strong regulation to ensure safety/effectiveness
11. Information dissemination	Emphasize harm reduction potential for adult smokers	Emphasize risks for kids and risks of dual use for adults
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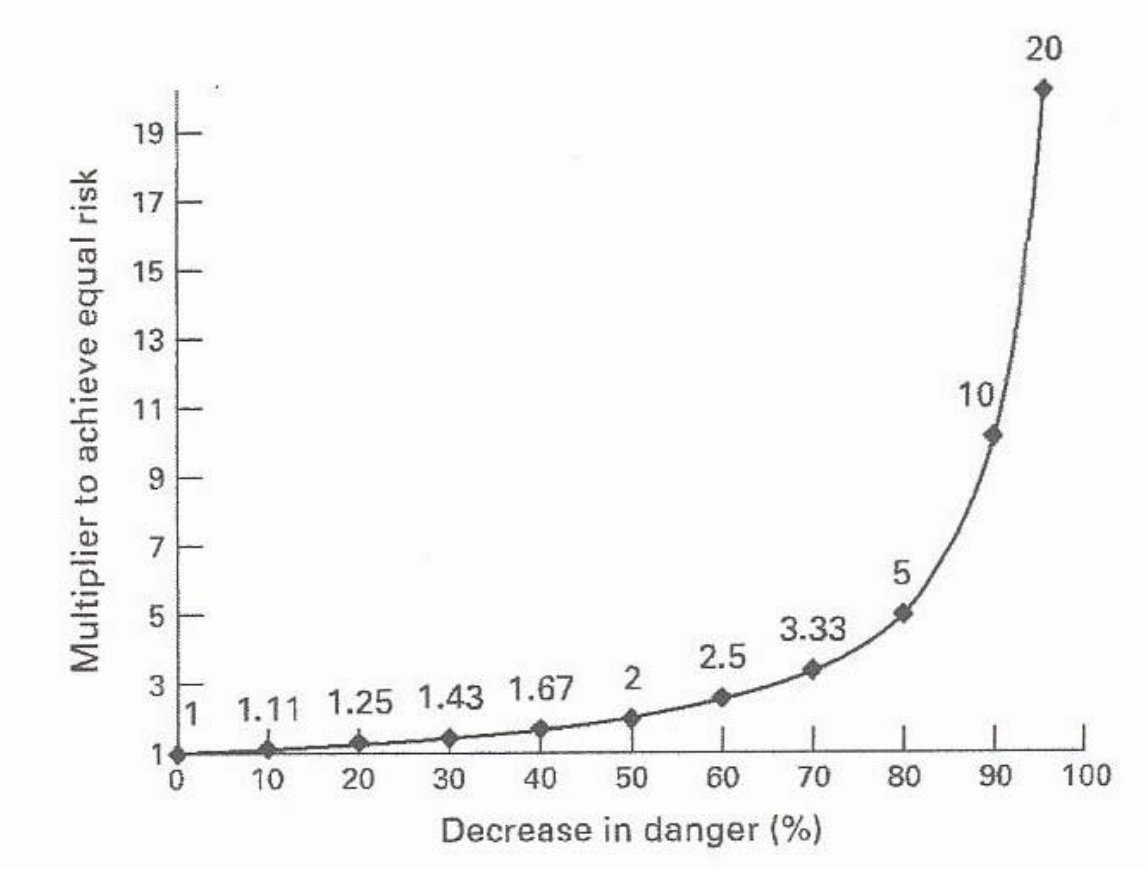
Factors suggesting substantial risk reduction for e-cigarettes compared to cigarettes

- E-cigarettes emit a fraction of 7,000 chemicals in cigarette smoke.
- Among toxins in both cigarettes and e-cigarettes, levels emitted by e-cigarettes range from about a 10^{th} to a 400^{th} levels in cigarette smoke. (Excludes nicotine.)
- Switching from cigarettes to e-cigarettes improves health of people with cardiovascular and pulmonary disease.

Risk/use equilibrium



Kozlowski et al., Tobacco Control, 2001

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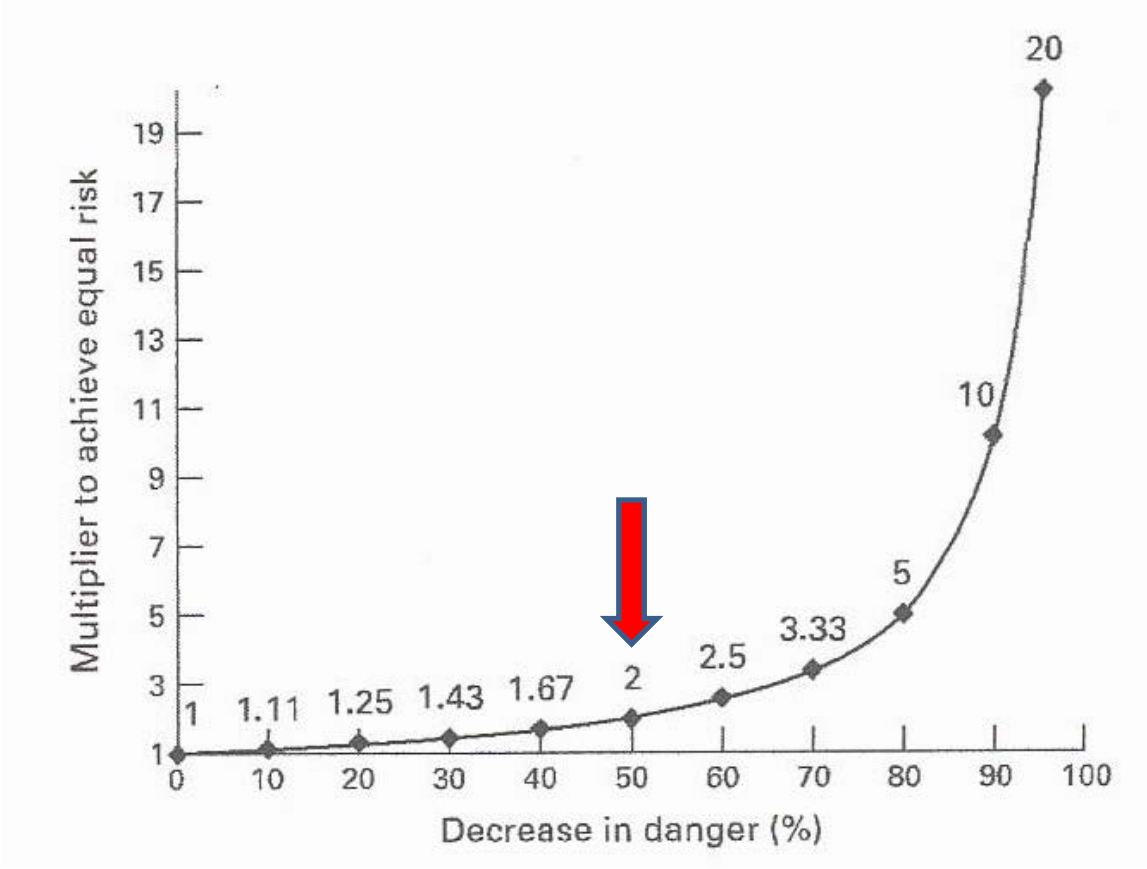

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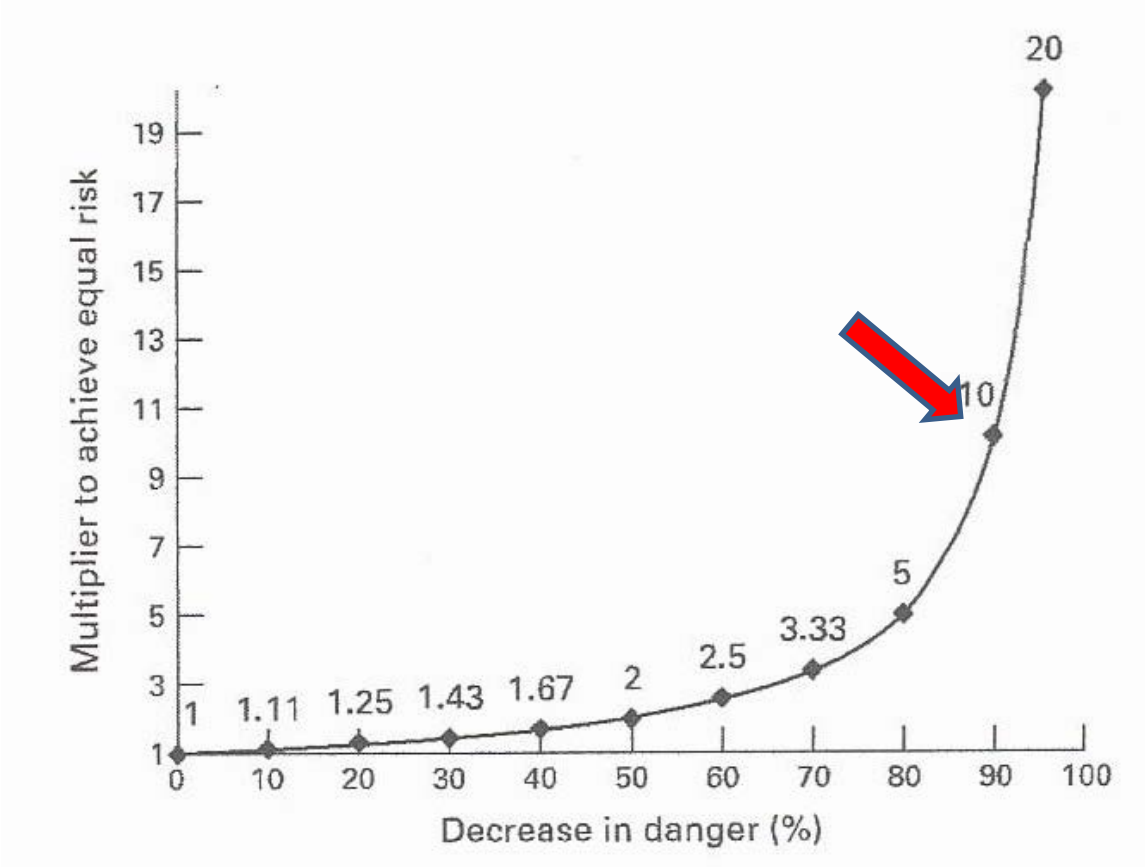

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Meta-analysis of prospective studies of students' use of e-cigarettes and subsequent smoking

Pooled odds ratio for subsequent smoking = 3.62 (95% CI, 2.42-5.41)

Soneji et al., JAMA Pediatr., 2017

Limitations of prospective studies

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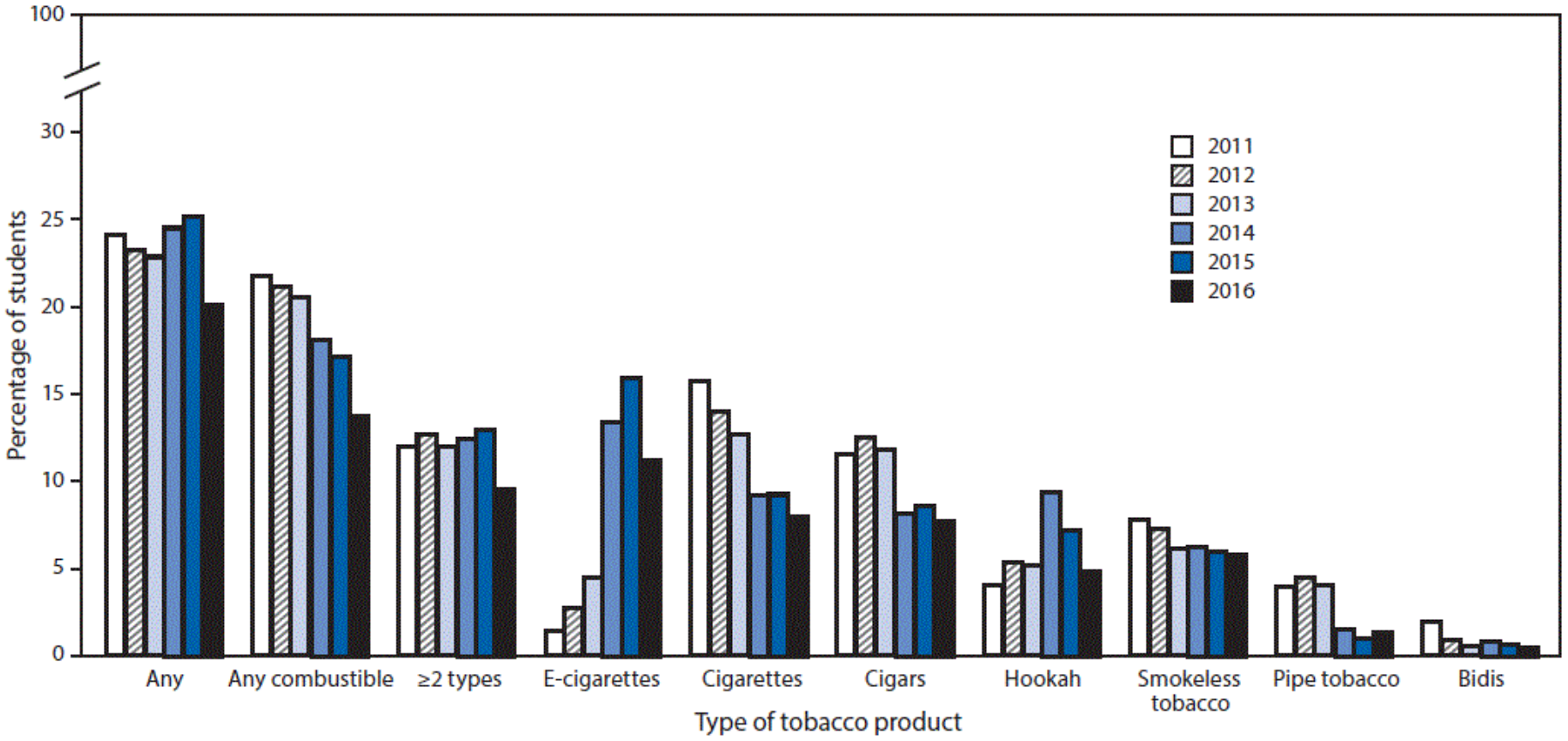
4. Extent of cigarette use at follow-up
5. Small size of some studies

30-day product use by US high school students, NYTS, 2011-2016



Jamal et al., MMWR, 2017

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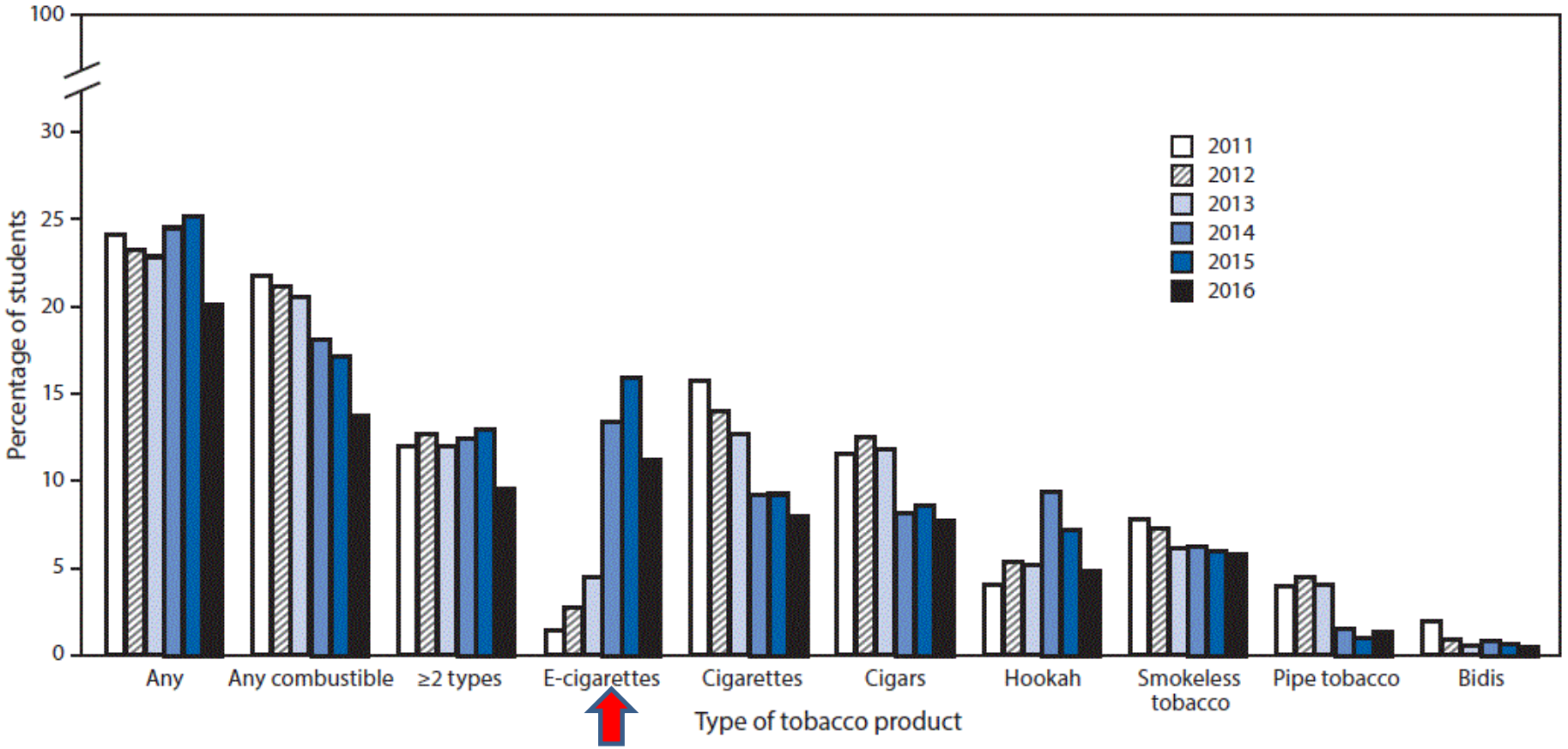

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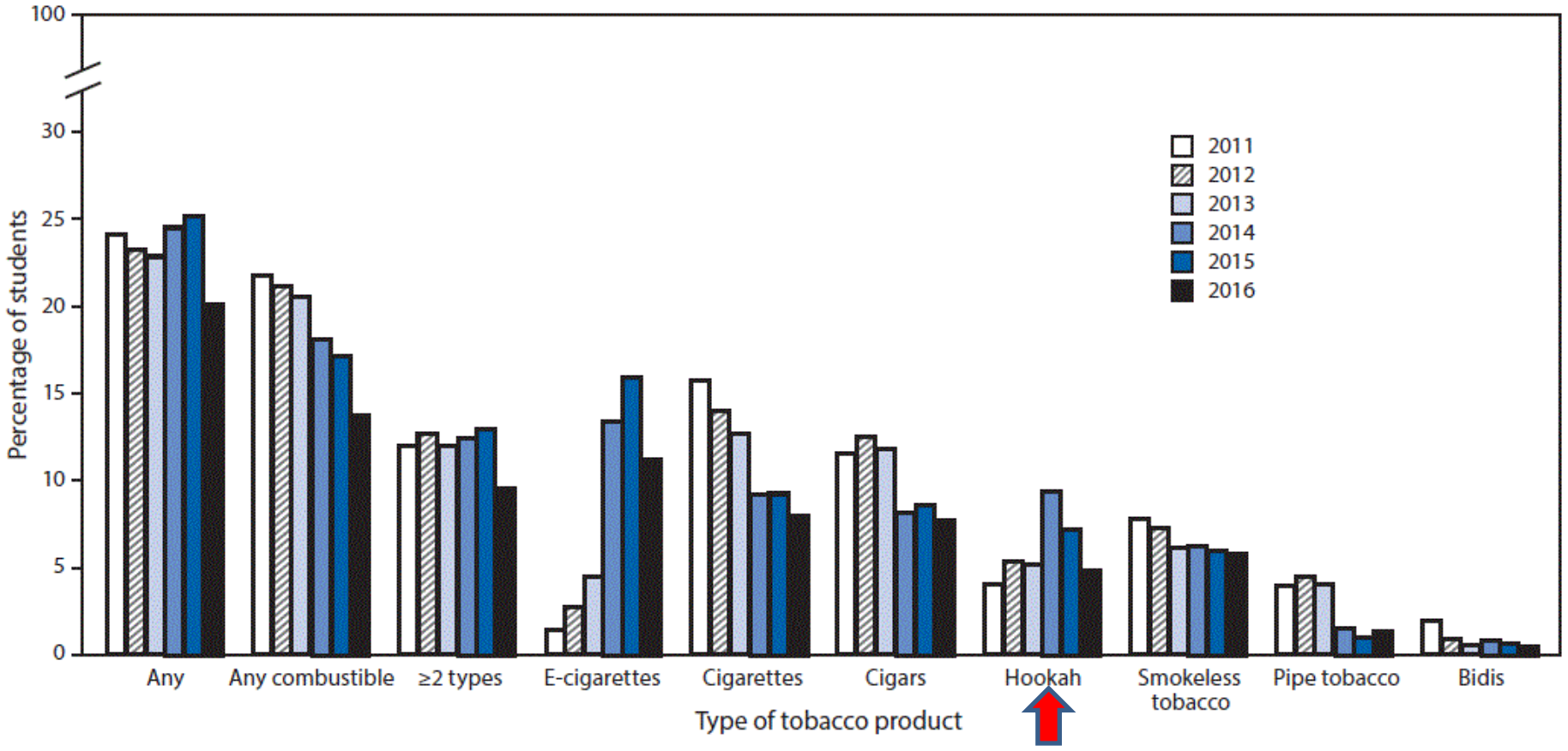

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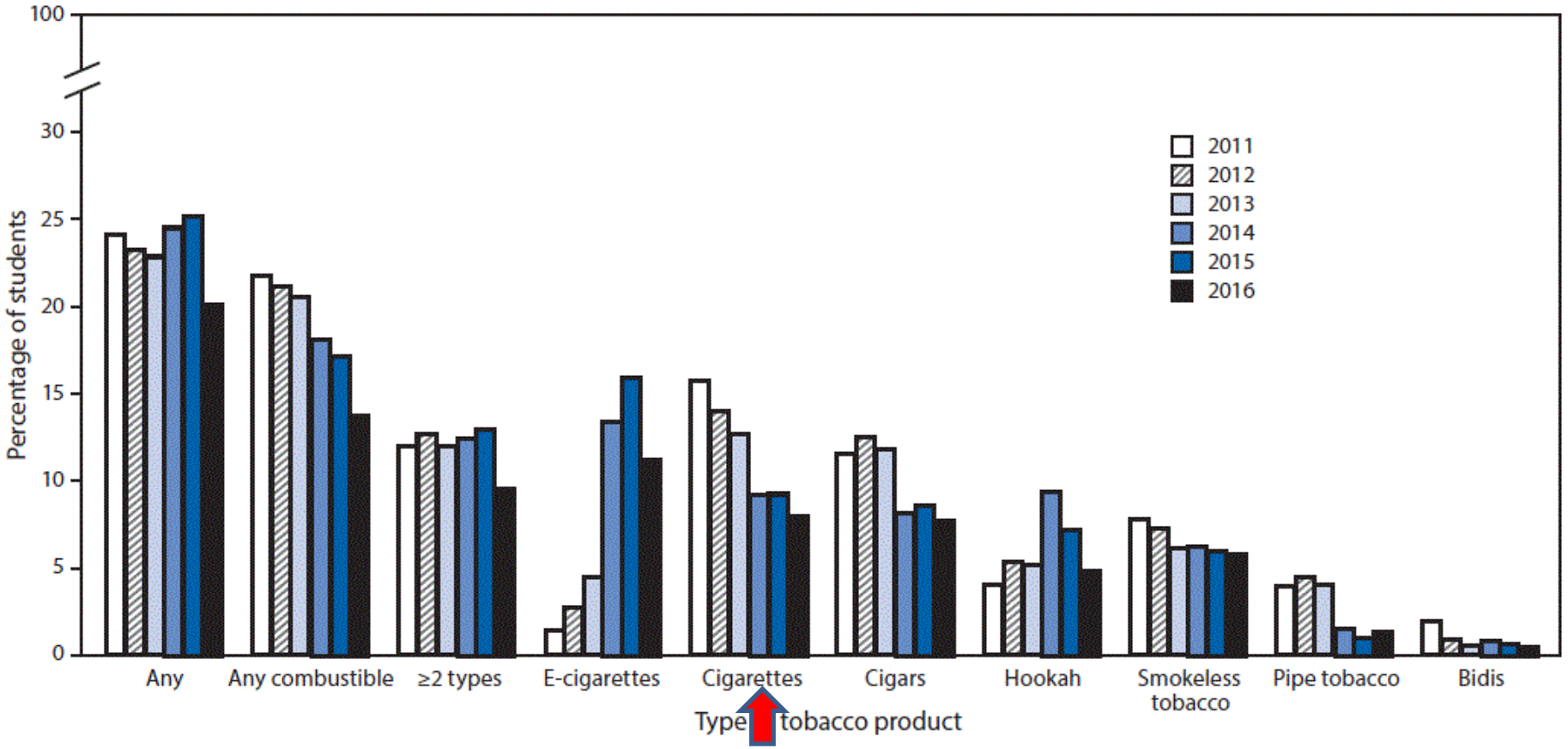
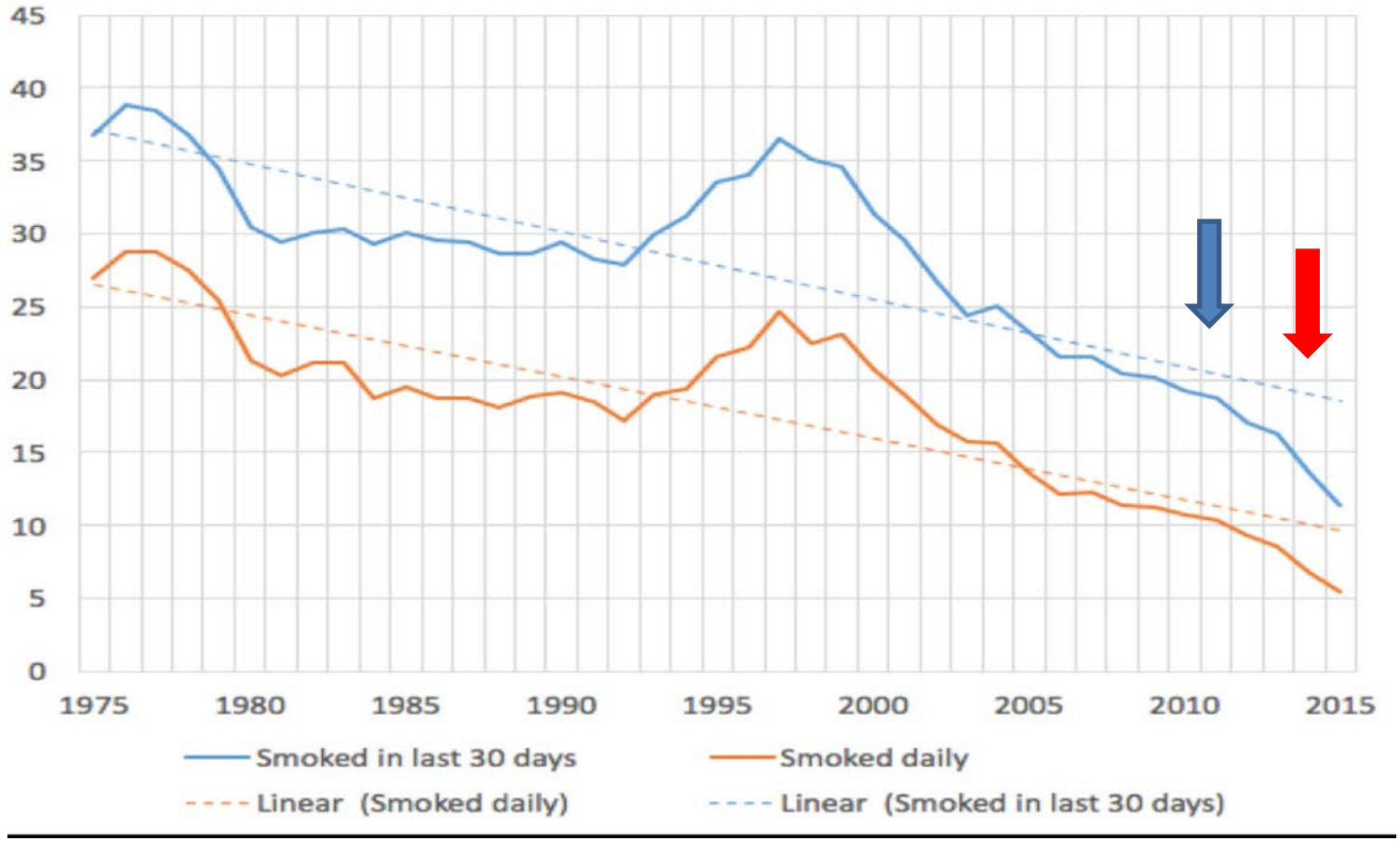


Jamal et al., MMWR, 2017

30-day and daily cigarette smoking, 12th grade, MTF



Source: Presentation by David Abrams, Univ. of Vermont, Oct. 6, 2017

"The LAST TIME you used an electronic vaporizer such as an e-cigarette, what was in the mist you inhaled?" (12th graders)

Have you ever smoked cigarettes? (Weighted %)	Nicotine	Just flavoring	Ratio of flavoring to nicotine
Never	**11.3**	**78.4**	**6.94**
Regularly now	**63.7**	**25.5**	**0.40**

Warner and Tam; data from MTF 2015

12th graders' e-cigarette use in past 30 days by ever-smoking status, 2014

Ever-smoking status	Used e-cigarettes (%)
Never	6.5
Once or twice	25.8
Occasionally, not regularly	47.8
Regularly in past	46.8
Regularly now	57.3

Warner, AJPM, 2016 (MTF data)

Never-smoking kids' exposure to nicotine, more than twice in past 30 days

(% who vaped) x (% of those vaping > 2 days) x (% who vaped nicotine)

.071 x .51 x .113 = .0041 (= 0.41%)

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If half of students claiming flavors only actually vaped nicotine too,

.071 x .51 x .505 = .0183 (= 1.83%)

Policy studies pertinent to youth use of e-cigarettes

- "[S]tate bans on e-cigarette sales to minors… yield a statistically significant 0.9 percentage point increase in recent smoking in this age group, relative to states without such bans."

  Friedman, JHEcon, 2015

- "We found causal evidence that ENDS age purchasing restrictions increased adolescent regular cigarette use by 0.8 percentage points."

  Pesko et al., Prev Med, 2016

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Recent studies finding e-cigarettes increase smoking cessation

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- West et al., *Addiction*, 2016
- Beard et al., *BMJ*, 2016

National approaches to e-cigarettes: US and UK

Knowledge of risks of smokeless tobacco

Do you believe that some smokeless tobacco products, such as chewing tobacco and snuff, are less harmful than cigarettes?

HINTS Dataset	Display	Mode
HINTS FDA (2015)	Tabulated	Mail

		ESTIMATED US ADULT POPULATION		SURVEY RESPONDENTS	
	Response	Number	Percentage	Responses	Percentage
1	Yes	26,613,125	10.9%	445	11.9%
2	No	162,356,089	66.2%	2,444	65.5%
3	Don't know	54,040,392	22.0%	796	21.3%
-9	Missing data (Not Ascertained)	2,156,260	0.9%	48	1.3%
	Total	-	100%	3,733	100%

Source: Health Information National Trends Survey , NCI, HINTS FDA, 2015

Portion of transcript from a Great American Spit-Out chat, February 23, 2017

12:58 PM	**Guest:**	I use Grizzly chewing tobacco. can it cause lung cancer?
12:59 PM	**Cindy:**	All tobacco products can.
12:59 PM	**Guest:**	Uh-oh... even chewing tobacco, which I don't inhale?
12:59 PM	**Cindy:**	But you can also get mouth cancer throat, and many others
1:00 PM	**Cindy:**	yes you are still putting the toxins into your body
1:00 PM	**Guest:**	As bad as smoking?
1:01 PM	**Cindy:**	Yes as bad and possibly worse

Perceived risk of e-cigarettes compared to cigarette smoking

Perceived risk	2012	2015
Less harmful	39.4	30.7
About the same	11.5	35.7
More harmful	1.3	4.1
Don’t know	47.8	29.5

Majeed et al., AJPM, 2017

Simulation: Basic assumptions

1. E-cigarettes increase smoking initiation among otherwise never-smoking youth.

2. E-cigarettes increase cessation among adult smokers.

Assumptions for base case simulation

1. Rate of initiation without e-cigarettes falls from 20% in 2010 to 10% in 2028 and remains at 10% thereafter.

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3. Cessation rate without e-cigarettes rises from 4.18% in 2010 to 6% in 2028 and remains at 6% thereafter.

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7. Track life-years lost for (youthful) vaping-induced smokers and gained for (adult) vaping-induced quitters through 2070

Cumulative life-years saved or *lost* by 2070

Model	Change in life-years		
I = initiation rate increase C = cessation rate increase	*Scenario #1:* Initiation rate ↑ only	*Scenario #2:* Quit rate ↑ only	*Scenario #3:* Both initiation & quit rates ↑
Base case I = 2%, C = 10%	*258,359*	3,526,607	3,273,771
Sensitivity analyses:			
a. Base case with 25% mortality risk from continued e-cig use	*258,359*	2,889,012	2,632,006
b. Pessimistic case I = 6%, C = 5%	*775,078*	1,820,108	1,053,680
c. Pessimistic case with 25% mortality risk	*775,078*	1,495,986	723,101

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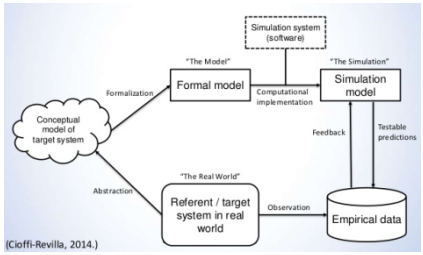
Bottom line

Potential benefits much > potential costs

Models examining impacts of e-cigarettes or generic reduced-risk products

- Bachand and Sulsky, *Regulatory Toxicology and Pharmacology*, 2013
- Kalkhoran and Glantz, *JAMA Int Med,* 2015
- Weitkunat et al., *Regul Toxicol Pharmacol*, 2015
- Vugrin et al., *PLOS ONE*, 2015
- Levy et al., *NTR,* 2016
- Cherng et al., *Epid,* 2016
- Hill and Camacho, *Reg. Tox. Pharm.,* 2017
- Poland and Teischinger, *NTR*, 2017
- Bachand et al., *Risk Analysis*, 2017
- Levy et al., *Tob. Control*, 2017



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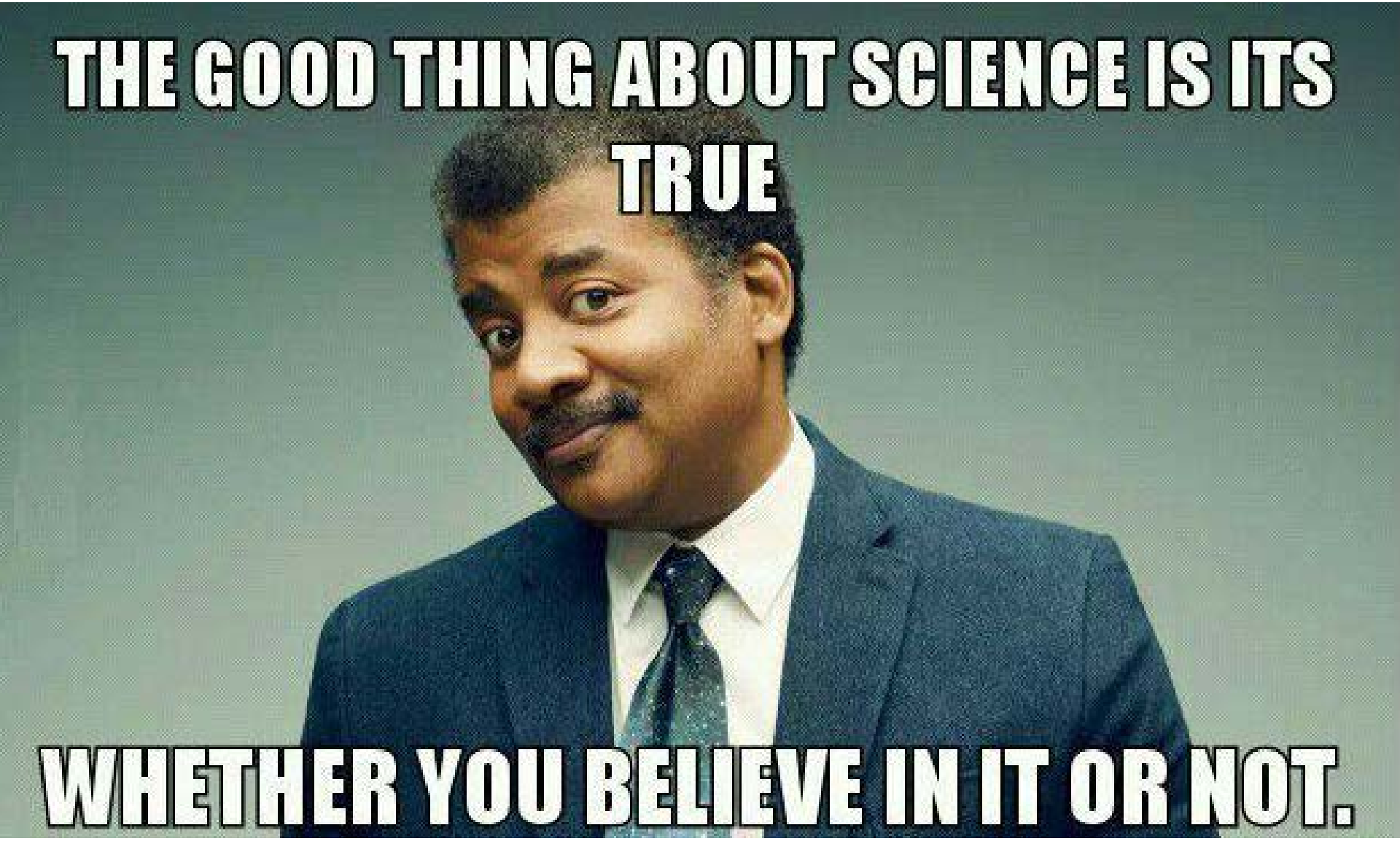
THE GOOD THING ABOUT SCIENCE IS ITS TRUE
WHETHER YOU BELIEVE IN IT OR NOT.

Best available evidence

- Kids are giving up tobacco – especially smoking – at an unprecedented rate.
- Vaping by kids dropped by > 20% in 2016.
- Best studies find that e-cigarettes increase smoking cessation.
- Even if vaping causes some never-smoking kids to try smoking, even a moderate rate of increased smoking cessation by adults makes e-cigarettes a public health good.

Thanks

Recommended resources covering in detail many of the issues discussed:

Drope et al., “Key Issues Surrounding the Health Impacts of Electronic Nicotine Delivery Systems (ENDS) and Other Sources of Nicotine,” *CA: Cancer J Clin*, 2017

Glasser et al., “Overview of Electronic Nicotine Delivery Systems: A Systematic Review,” *Am J Prev Med*, 2017 (811 references)

Q&A

- Submit questions via the **chat box**

Post Webinar Information

- You will receive the webinar recording, presentation slides, information on certificates of attendance, and other resources, in our follow-up email. All of this information will be posted to our website.
- CME/CEUs of up to 1.5 credits is available to all attendees of this live session. Instructions will be emailed after the webinar.

CME/CEU Statement

Accreditation:

The University of California, San Francisco (UCSF) School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

UCSF designates this live activity for a maximum of *1.5 AMA PRA Category 1 Credit™*. Physicians should claim only the credit commensurate with the extent of their participation in the webinar activity.

Advance Practice Registered Nurses and Registered Nurses: For the purpose of recertification, the American Nurses Credentialing Center accepts *AMA PRA Category 1 Credit™* issued by organizations accredited by the ACCME.

Physician Assistants: The National Commission on Certification of Physician Assistants (NCCPA) states that the *AMA PRA Category 1 Credits™* are acceptable for continuing medical education requirements for recertification.

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Respiratory Therapists: This program has been approved for a maximum of 1.5 contact hours Continuing Respiratory Care Education (CRCE) credit by the American Association for Respiratory Care, 9425 N. MacArthur Blvd. Suite 100 Irving TX 75063, Course # 149618000.

American Association for Respiratory Care (AARC)

- Free Continuing Respiratory Care Education credit (CRCEs) are available to Respiratory Therapists who attend this live webinar
- Instructions on how to claim credit will be included in our post-webinar email

NIH Opportunity

R21 grant: Electronic Nicotine Delivery Systems (ENDS): Population, Clinical and Applied Prevention Research

Visit this link for more information:

https://grants.nih.gov/grants/guide/pa-files/PAR-17-472.html#_Part_1._Overview

Submit application by November 27, 2017

Save the Date

SCLC's next, *One-Hour Power Break*, Live webinar :

"***Bambi meets Godzilla: Addressing young adult tobacco use "***

with Dr. Pamela M. Ling, Professor in the School of Medicine, at the University of California at San Francisco

Wednesday, November 29, 2017 at 1pm EDT

Registration will open soon!

Contact us for technical assistance

- Visit us online at **smokingcessationleadership.ucsf.edu**
- Call us toll-free at **877-509-3786**
- Please complete the post-webinar survey

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