

# ***e-Cigarettes (ENDS): Benefits and Concerns to Reduce the Harms of (Combusted?) Tobacco Use Behavior***

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MDQuit conference  
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 **LEGACY** | **The Schroeder Institute**  
FOR TOBACCO RESEARCH AND POLICY STUDIES

## Tobacco Could Kill 1 Billion by 2100

By EDITH M. LEDERER. The Associated Press

Thursday, February 7, 2008; 11:52 PM

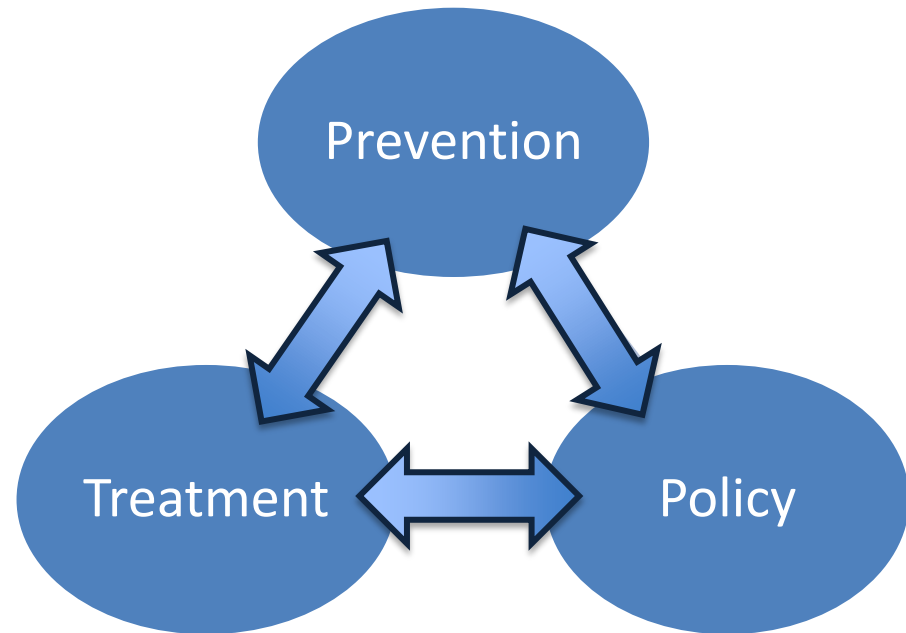
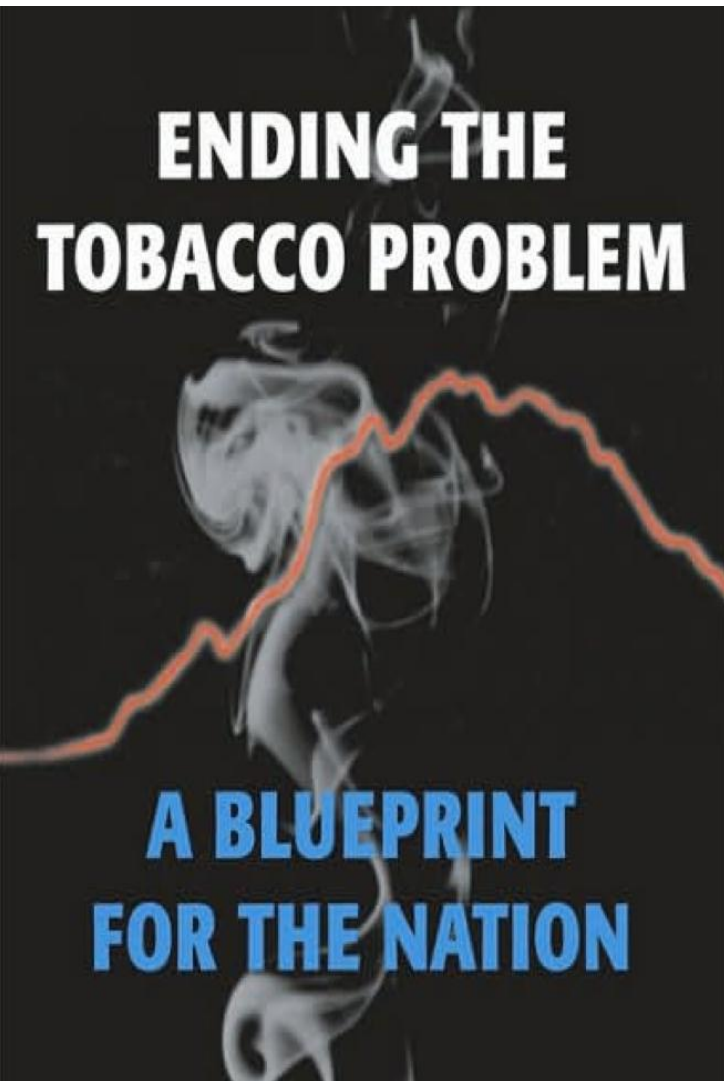
NEW YORK -- The World Health Organization warned in a new report Thursday that the "tobacco epidemic" is growing and could claim 1 billion lives by the end of the century unless governments dramatically step up efforts to curb smoking. World Health Organization Director-General Dr. Margaret Chan, right, speaks about the mpower box as New York Mayor Michael Bloomberg listens during a press conference announcing WHO's Report on the Global Tobacco Epidemic 2008 Thursday, Feb. 7, 2008 in New York. The **mpower** box is a symbol of the package being offered by the WHO in its effort.....

THE GAS-CHAMBER OF THE 21<sup>ST</sup> CENTURY



In the United States, Smoking Tobacco is the only legal method of being killed.

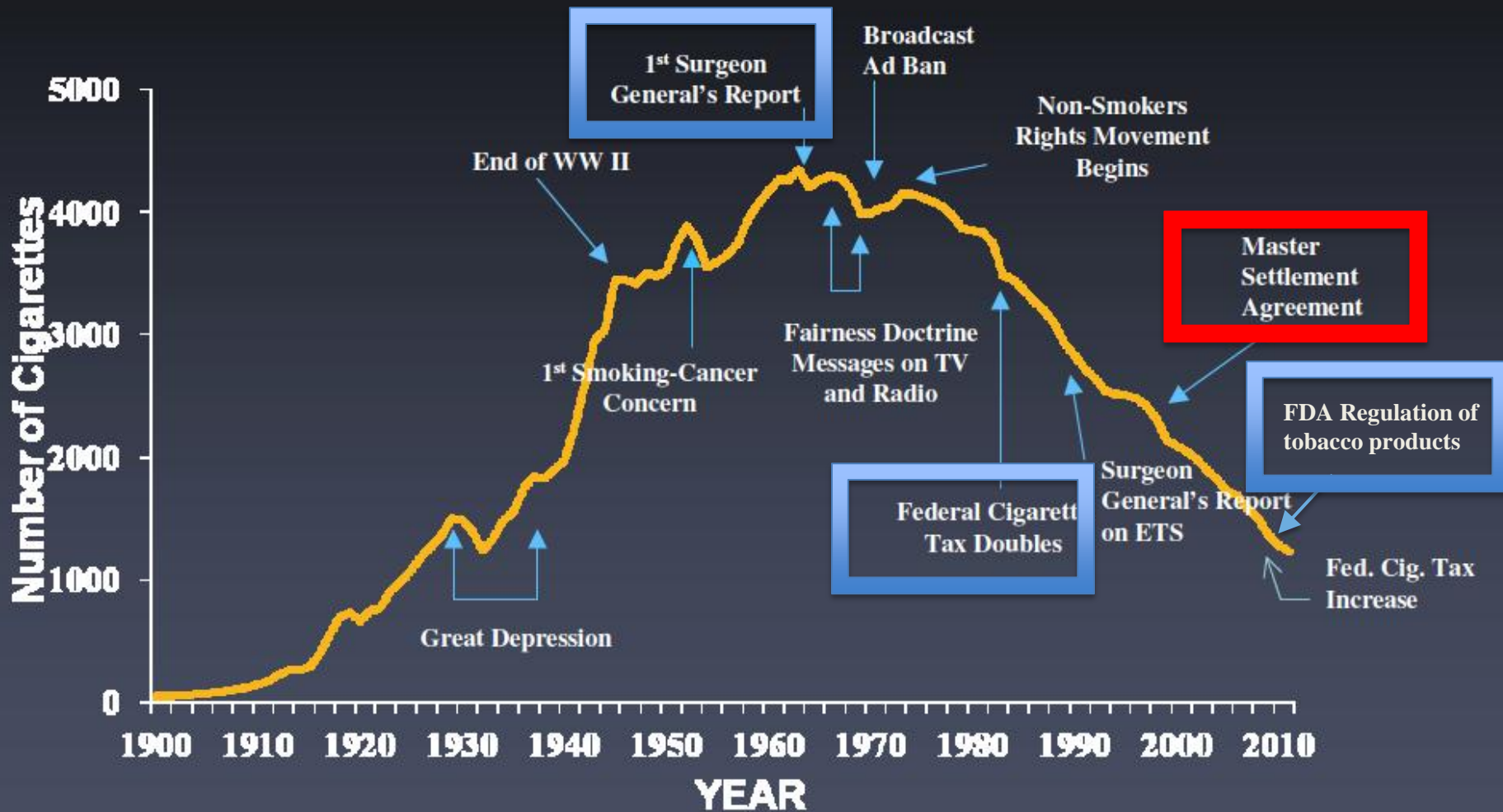
Ending The Tobacco Problem: System Integration  
*Institute Of Medicine: 2007*



Impact = Reach x Efficacy of the  
Intervention

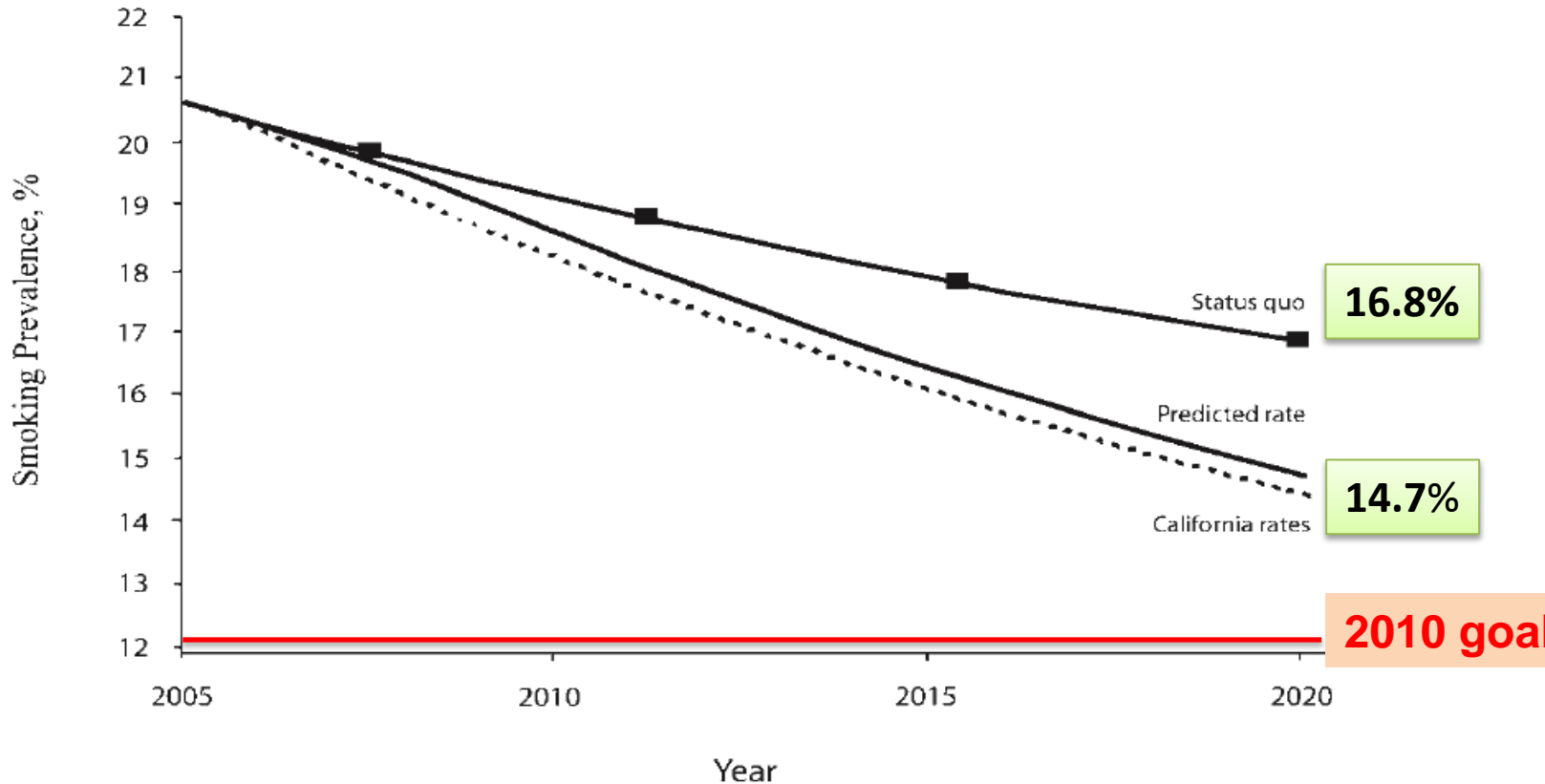
*Abrams D. Comprehensive Smoking Cessation: simplified Integration to Save Lives and Money. In: Bonnie, Stratton, Wallace, eds. Ending the Tobacco Problem: A Blueprint for the Nation. Washington, DC: The National Academies Press 2007. p. A1-A50*

# Adult per capita cigarette consumption, U.S., 1900-2011



# Setting a Challenging Yet Realistic Smoking Prevalence Target for Healthy People 2020: Learning From the California Experience.

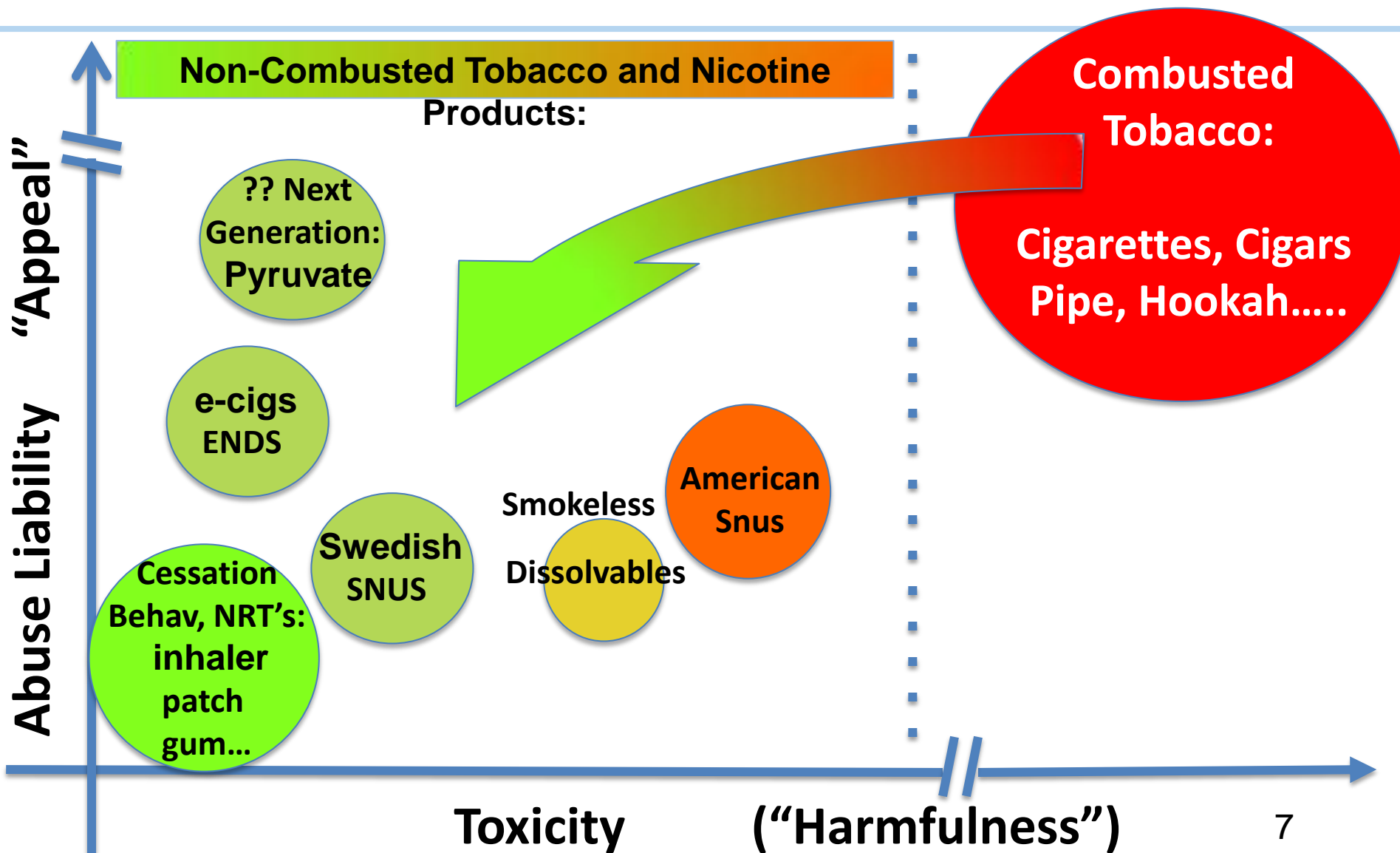
Mendez, D, Warner, KE. *Am J Public Health.* 2008;98:556–559.



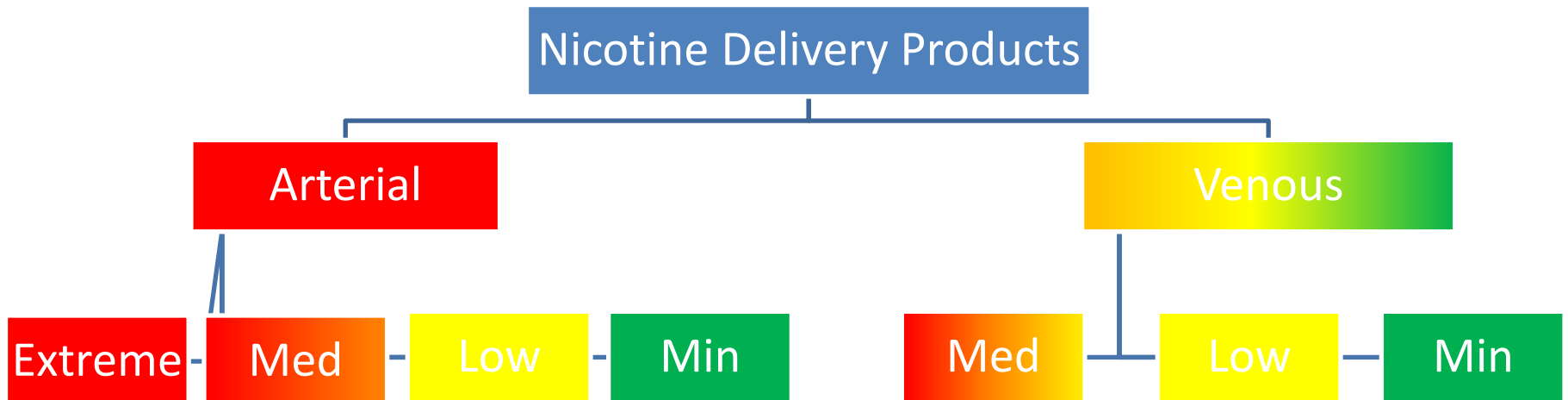
Note. The bottom 2 lines depict corresponding scenarios assuming that the United States as a whole achieves California's 2005 rates (20% initiation rate and 3.33% cessation rate). The dotted line reflects the assumption that such rates are attained instantaneously (in 2006), whereas the solid line reflects the more plausible scenario that such rates will be achieved gradually (by 2010). The status quo initiation rate is 25% and the cessation rate is 2.59%.

**FIGURE 2—Projections of US adult smoking prevalence rates under status quo scenario and California rate scenarios: 2005–2020.**

# Public Health Impact: Zero Tolerance and Harm Reduction Ideology: Data vs Dogma



# As We Reduce Tobacco Product Addictiveness & Appeal We Need To Consider The Place Of Products (Proposed Taxonomy)



Toombak processed by hand



# EMERGING PRODUCTS. POLY-USE

## NON-Combusted Products versus Combusted Products

E-cigs:  
Electronic  
Nicotine  
Delivery  
Systems  
(ENDS) –  
flavored.



Dissolvable  
Tobacco  
Products –  
flavored.



SNUS,  
smokeless  
Products -  
Flavored.



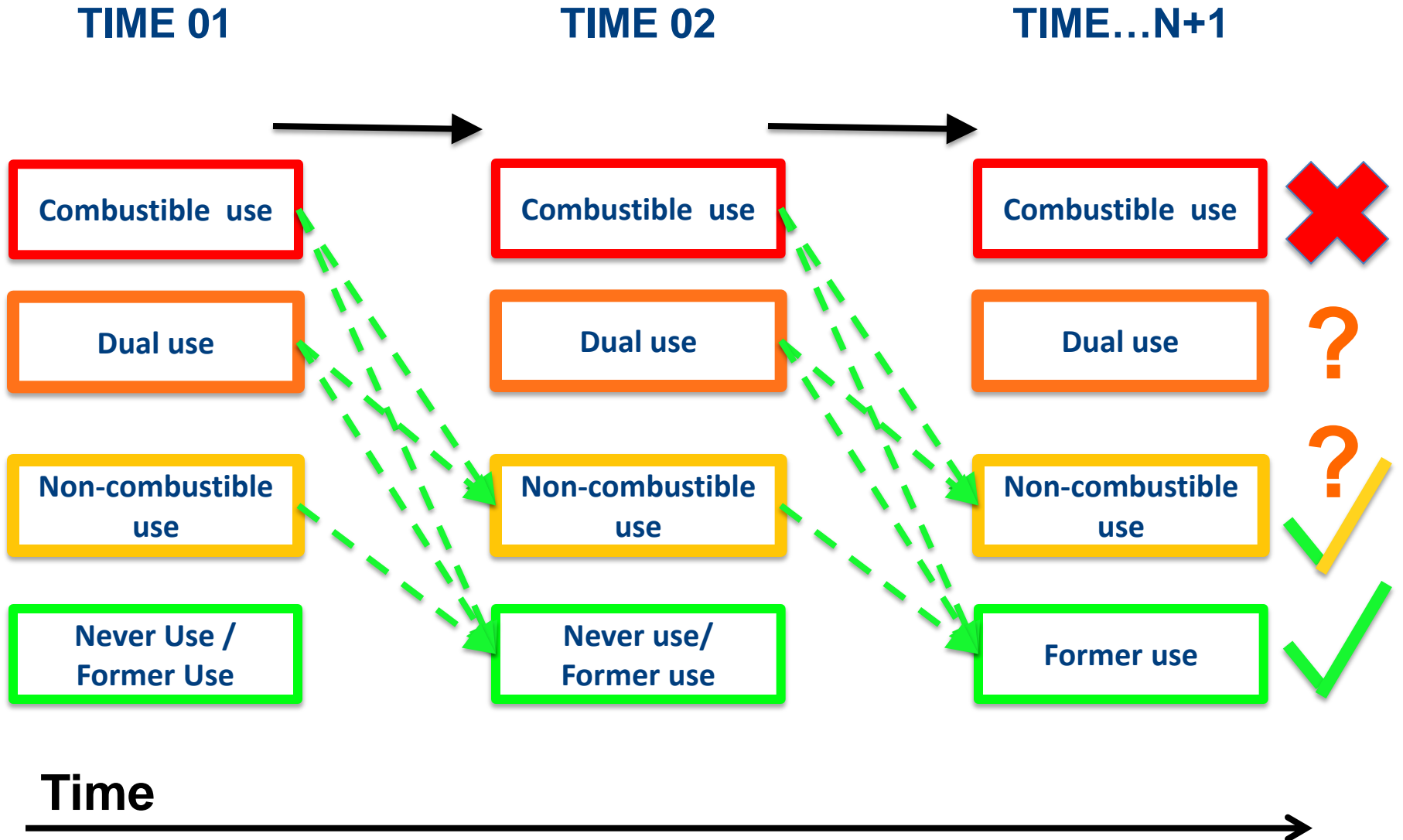
Cigarettes (with or without menthol),  
Little cigars (flavored), Hookah ...



**Dual / Poly-use: A new norm? Blurring differences between lethal combusted, less harmful non-combusted, and safest medicinal forms of nicotine delivery.**

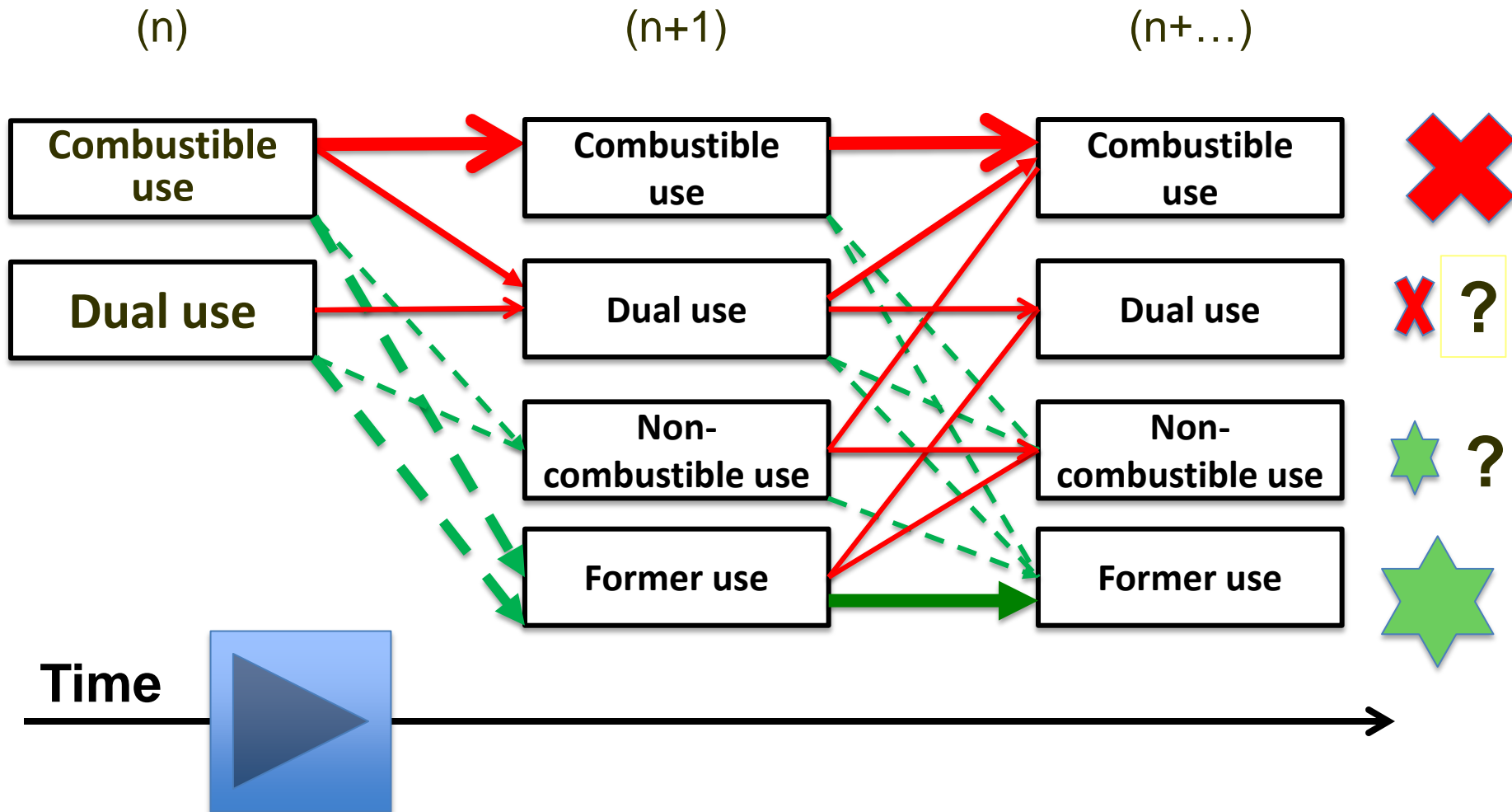
**A game changer for tobacco control?**

# Disruptive Technology: Behavioral transitions: combusted, dual use, non-combusted, none

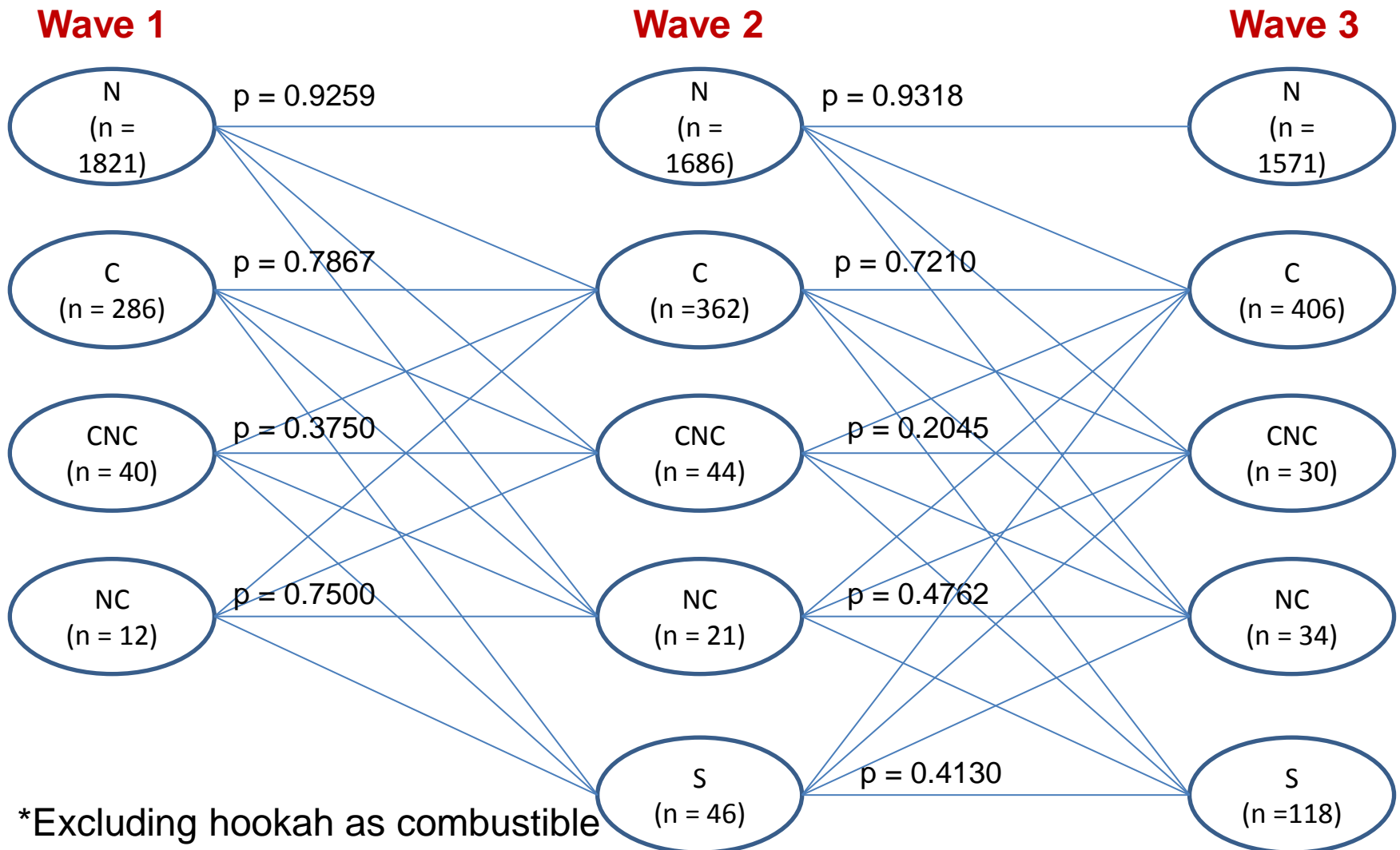


# Patterns of Use and Harm Reduction:

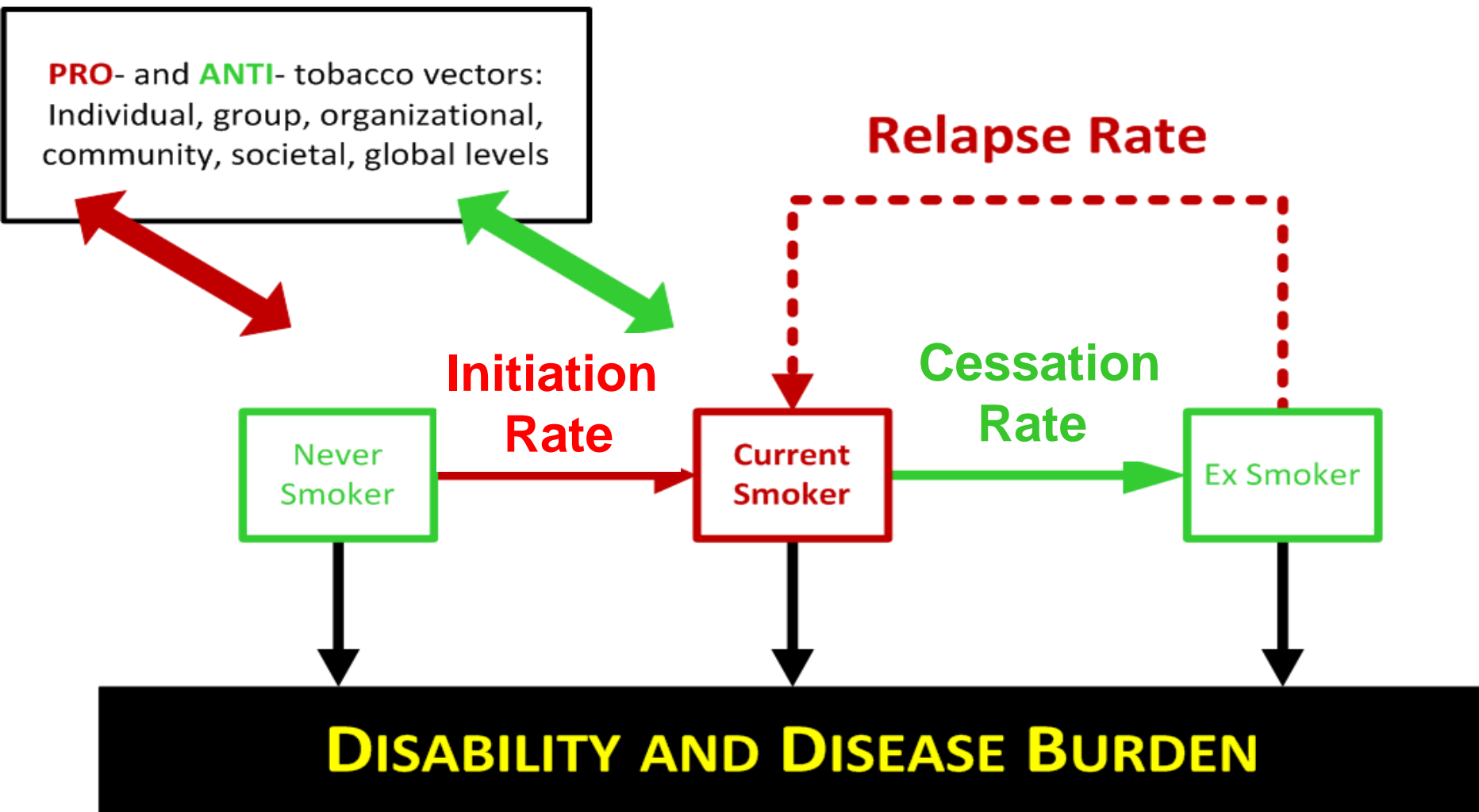
Behavioral transitions from combustibles to dual use of combustible and non-combustibles; exclusive use of non-combustibles and desistence of all or of combustibles.



# Transitions among young adult follow-ups with complete data (n = 2,159)\*



# Population Model of Tobacco Prevalence



# Framing a Harm Reduction Policy Debate.

## A NEW LANDSCAPE

Goal is to eliminate preventable deaths → Cigarette smoking causes vast majority of deaths.

**Continue tradition:** Eliminate all tobacco/nicotine use.

- Don't start. Quit - use medicinal NRT + counseling or die

**OR**

**Adopt harm reduction:** Support cleaner, appealing nicotine products to compete / win over cigarettes

- The **enemy is not nicotine** per se: its burning tobacco = lethal tars toxins CO<sub>2</sub> & nicotine in most addictive form.

***Evolving Vision. Continue “don't start” for youth.  
And Speed elimination of defective cigarette use*** 14

# FDA Regulation - Critical Opportunities For Tobacco Research and Policy

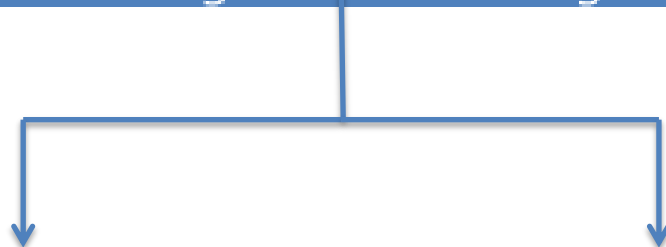


# Regulatory Landscape



**U.S. Food and Drug Administration**

Protecting and Promoting *Your* Health



## Center for Tobacco Products

- ✓ Cigarettes
- ✓ Roll-your-own tobacco
- ✓ Smokeless tobacco
- ☐ Hookah tobacco
- ☐ Cigars/cigarillos/LCCs
- ☐ E-cigs for harm reduction

## Center for Drug Evaluation and Research

- ✓ **Pharma** – NRT, Chantix
- ✓ Other medications for cessation
- ✓ **RJR** – Zonnic: Package, Price Placement
- ✓ ? E cigs for cessation

**Next Generation Products (Aerosol, Pyruvate, Cleaner Nicotine)**



# Family Smoking Prevention And Tobacco Control Act (2009)

## Public Health Standard

Calls for the review of the scientific evidence regarding:


1. Risks and benefits **to the population as a whole**, including both users and non-users of tobacco products;
2. Whether there is an increased or decreased likelihood that existing users of tobacco products will **stop** using such products; and
3. Whether there is an increased or decreased likelihood that those who do not currently use tobacco products, most notably youth, will **start** to use tobacco products
4. Individual safety and efficacy and public health IMPACT

## CTP Regulation: Product standards (menthol, nicotine, ingredients), Education, SE, Other Policy Levers ... and **Section 911**..

- To become an **MRTP**, manufacturers must demonstrate that the product, *as actually used*, will:
  - Significantly reduce the harm and the risk of tobacco related disease to individual users; *and*
  - Benefit the health of the population as a whole, taking into account both users of tobacco products and persons who do not currently use tobacco products – PATTERNS OF ACTUAL USE BEHAVIOR – uptake, continued use, cessation

# Benefits vs. Downside to individuals and to public health

**Can cleaner, appealing tobacco products be supported, while minimizing their downsides:**

- Youth starter and progression to combusted products
- Undermining de-normalization - indoor air policy
- Dual / poly use when one can't smoke without  harm
- Delaying / Promoting cessation of cigarettes.
- Undermining clear messages about SOME tobacco dangers – blurring risk perception of harms, addiction,
- Impact of Internet and social media marketing and KABBB
- BUT the genie is out of the bottle, can we capitalize?<sub>9</sub>

## Biological Effect On Smokers Who, Not Wishing To Quit, Switch To Very Low Nicotine (VLN) Cigarettes

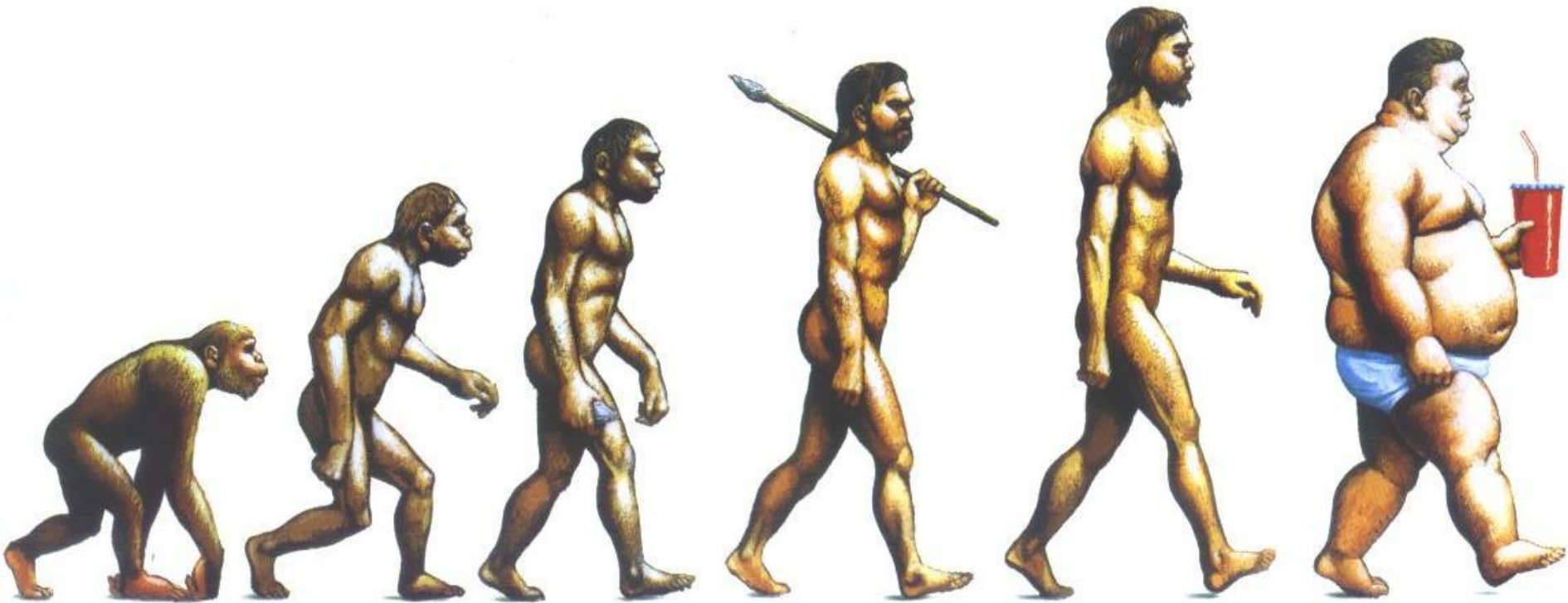
- Cigarettes smoked per day: **halved**
- Addiction score (FTND): **halved**
- Self efficacy in quitting: **doubled**
- Nicotine inhaled per day: **halved**
- CO exhaled (toxicity indicator): **- 66%**
- NNAL in urine (carcinogen indicator): **halved**

**based on Benowitz 2007 10 week study of reduced nicotine cigarettes, smokers not intending to quit.**

## Reducing Addictiveness: Not “All Or Nothing” As We Consider Nicotine Reduction, Could Reduce Addiction Promoting Designs Ingredients

- ❑ Limit maximum nicotine contents and deliveries
- ❑ Prohibit additives, perhaps focusing on those that increase inhalability and “potential” addictiveness
- ❑ Prohibit sugar (#1 Marlboro additive) and other flavorings, including menthol
- ❑ Prohibit ventilation holes that promote larger puffs and free-base nicotine formation, fool the body, AND may be blocked to drastically increase smoke intake

# The shape of things to come



# Framing the Harm Reduction POLICY debate: Emerging products: e-cigs

- The State of the Science:
  - What we know about e-cigarettes: ? the leading edge of an innovative, appealing, reduced harm product ?
- Implications for tobacco control, regulation and policy
- Reduce the death and disease from tobacco use --? especially combusted products - cigarettes

Emerging Tobacco & Nicotine Products:  
DISRUPTIVE: Evolution / Revolution?  
Ending the cigarette century before 100<sup>th</sup> SGR





# What we know: State of the science on e-cigarettes - ENDS

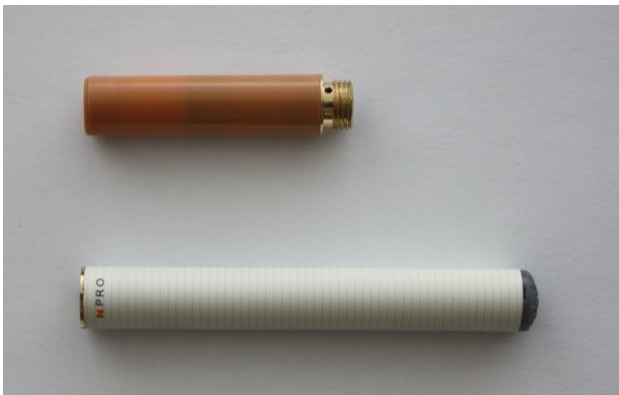
- Evolving e-cig industry: Big tobacco vs independent
- Product features and chemical/particulate content
- Health and safety
- Consumer perceptions and patterns of use
  - Blurring the boundaries between products - poly use or exclusive non combusted use, or quit all
- Policy considerations: Potential benefits vs. harms
- Goldilocks effects: too fast, too slow, over or under regulation short term long term outcomes

# What is an e-cigarette?

The components of a typical e-cigarette are illustrated below:



# DIVERSE eNDS (cigs)



**“Typical” e-cigs**



**“Advanced” e-cigs**

# E-cigarette nicotine solution



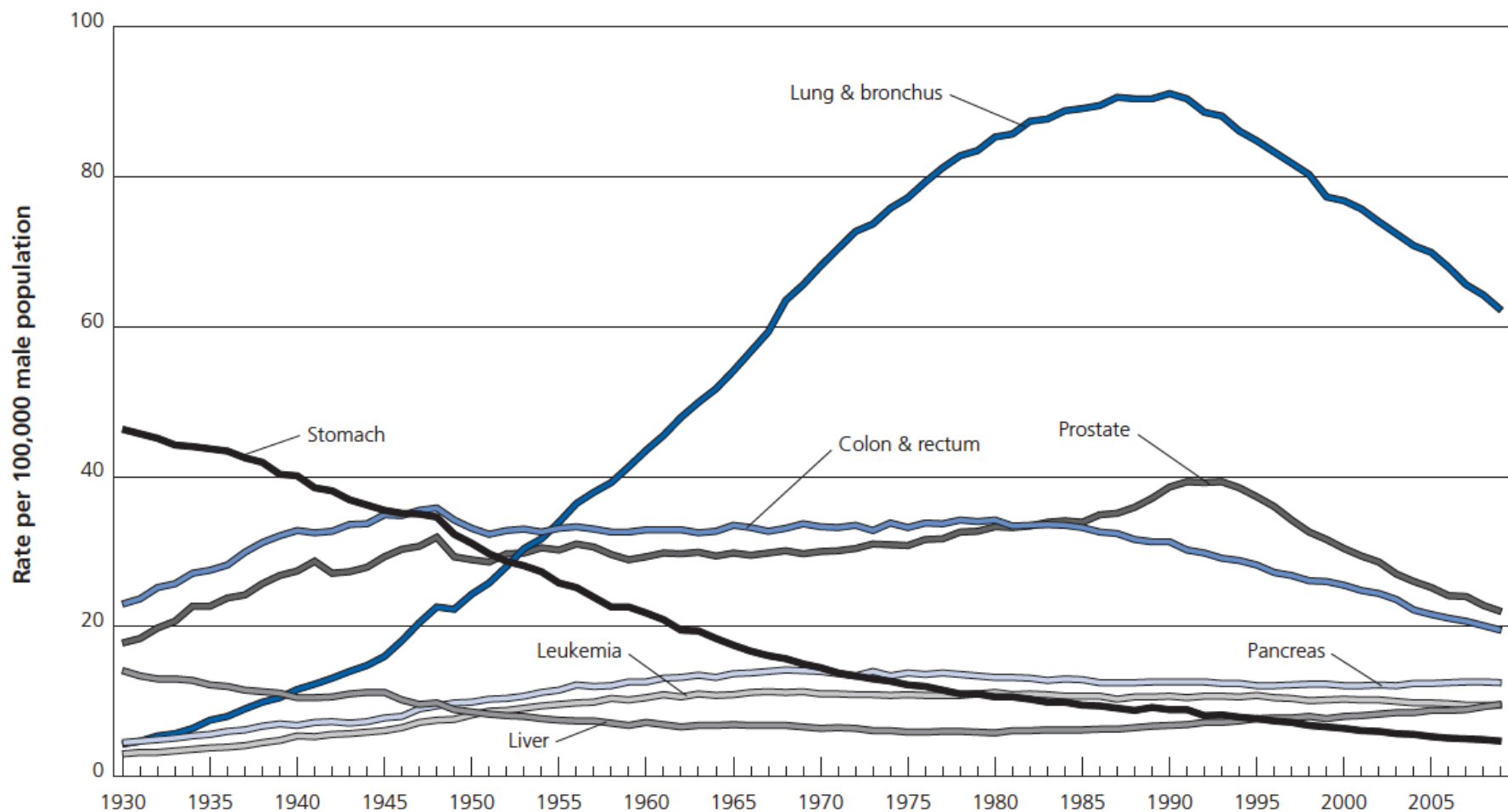
# E-cigs SALES: revolutionizing the tobacco industry - here to stay

The e-cig market is expected to approach **\$2 billion** in retail sales (including on-line) by the end of 2013 and eclipse **\$10 billion by 2017.**

Entrance of the “Big 3” tobacco manufacturers into e-cig market

Deeming regulation and taxation of e-cigs is likely-but many believe long term growth trajectory will be robust.

## Age-adjusted Cancer Death Rates\*, Males by Site, US, 1930-2009



\*Per 100,000, age adjusted to the 2000 US standard population.

**Note:** Due to changes in ICD coding, numerator information has changed over time. Rates for cancer of the liver, lung and bronchus, and colon and rectum are affected by these coding changes.

**Source:** US Mortality Volumes 1930 to 1959, US Mortality Data 1960 to 2009, National Center for Health Statistics, Centers for Disease Control and Prevention.

©2013, American Cancer Society, Inc., Surveillance Research

# Njoy Public statements Independent of big tobacco



**2013**  
**Interviews**  
Craig Weiss:

Craig Weiss, President and Chief Executive Officer



Before joining NJOY in June 2010, Craig Weiss, a U.S. Attorney, practiced law, where he focused on the drafting patent applications for medical device, ecommerce and IT inventions. Weiss has three patents to his own name, in devices. He was also the managing member of a hedge intellectual property. Weiss earned his law degree from and his bachelor's degree from the University of Pennsylvania. Weiss is married with two children and resides



**"We want to make sure the public health discussion about electronic cigarettes takes place based on the science, not on the politics or industry protectionism,"**

**NJOY would pursue a modified risk or reduced harm application with the FDA's Center for Tobacco Products.**

**At NJOY, we are proud to be a leader and believe our products have the potential to render traditional cigarettes obsolete**

**Corporate Responsibility: NJOY deliberately does not offer flavors as part of our electronic cigarette, to avoid appealing to youth.**

# Reynolds American 201 New products



**"Transforming tobacco is a bold vision that we believe in, and our journey is well under way."- Daniel Delen, president and CEO, Reynolds American Inc.**



Vuse e-cigarette is quite different to what's currently available in this fast-growing category.

This innovative product will offer adult tobacco consumers a vapor experience that's significantly superior.”



“In addition, Nicinovum USA is moving ahead with the Zonnic nicotine replacement therapy gum, another innovative product that forms part of our efforts to reduce the harm caused by smoking.



Lorillard

*Lorillard*



**“To Responsibly Bring Pleasure to All Adult Smokers.”** Murray S. Kessler  
Chairman, President and CEO

**Q1 2013 Interview:** “ I've been around new products for 30 years. And I know when I've got a winner. **This thing [E-cig] is selling day in, day out, the repeat purchasers are strong, retailers are asking for the product.**”

**Morgan Stanley Interview 2013:** “I don't have the hurdles that I had with snus at my old job. ”“We don't try to mimic a cigarette. **IF the FDA doesn't do knee jerk regulation, there is nothing to slow it down. This is probably, if they can get their head around it, the biggest harm reduction opportunity they will ever see.**”**We hope we can partner with the FDA and public health community. This is what digital cameras did to film.**”



# NGPs: Our Product Platforms Have Huge Potential

- Our development is focused on products which:
  - Closely approximate consumers' taste, sensory and ritual preferences
  - Have a risk profile similar to cessation
- Consumer interest in e-cigarettes, combined with relatively low adoption rates, confirms:
  - Strong demand for less harmful nicotine and tobacco products
  - Taste and sensory experience from existing e-cigarettes not close enough to traditional cigarettes



Platform 1



Platform 2



Platform 3

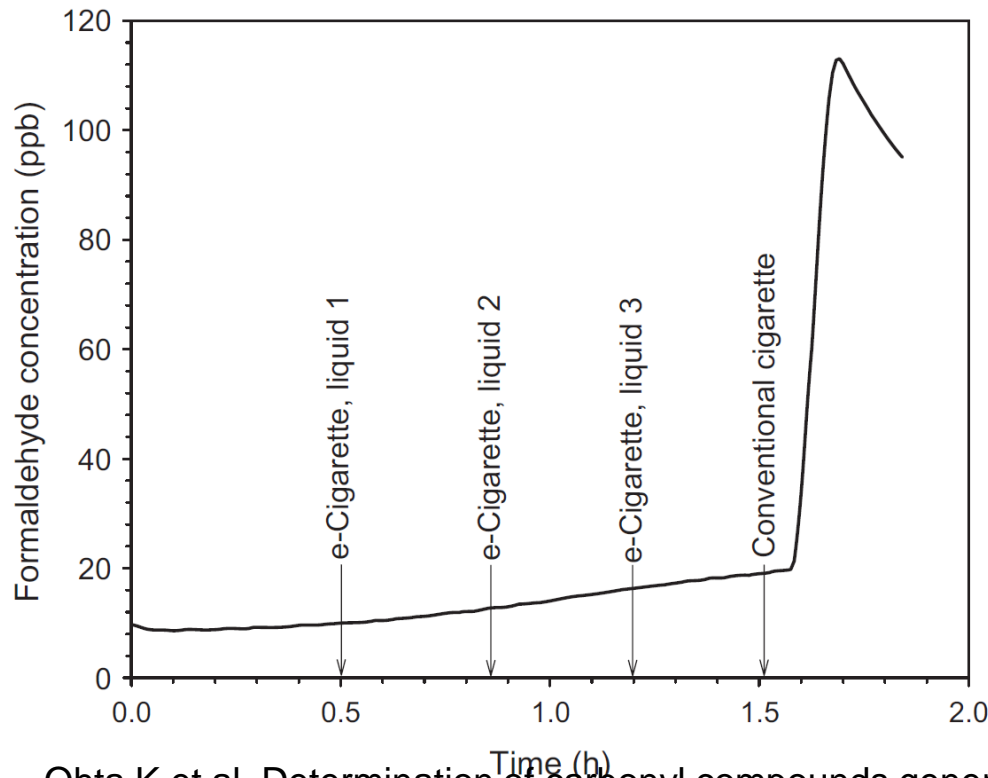
Note: The products described are subject to ongoing development and therefore the descriptions are illustrative and do not necessarily represent the latest stages of product development

# State of the science: PRODUCT FEATURES AND INGREDIENTS

- **Product design:** Variety. less harmful than cigarettes. Quality ?
- **Nicotine:** doses vary, mislabel. Can deliver nicotine effectively, reduces craving. Appeal and Abuse liability less than cigarettes. Future ?
- **Liquid/propylene glycol:** liquids and vapor, not studied for long-term inhalational safety in humans, local irritant
- **Secondhand Vapor:** Health effects not well-studied. Mainstream and secondhand vapor produces ultrafine and fine particulate matter.
- **Other toxicants** (VOCs, TSNAs, heavy metals, flavoring, additives): Fewer constituents at much lower levels than in cigarette smoke but higher in poor quality products.

# State of the science: PRODUCT FEATURES AND INGREDIENTS

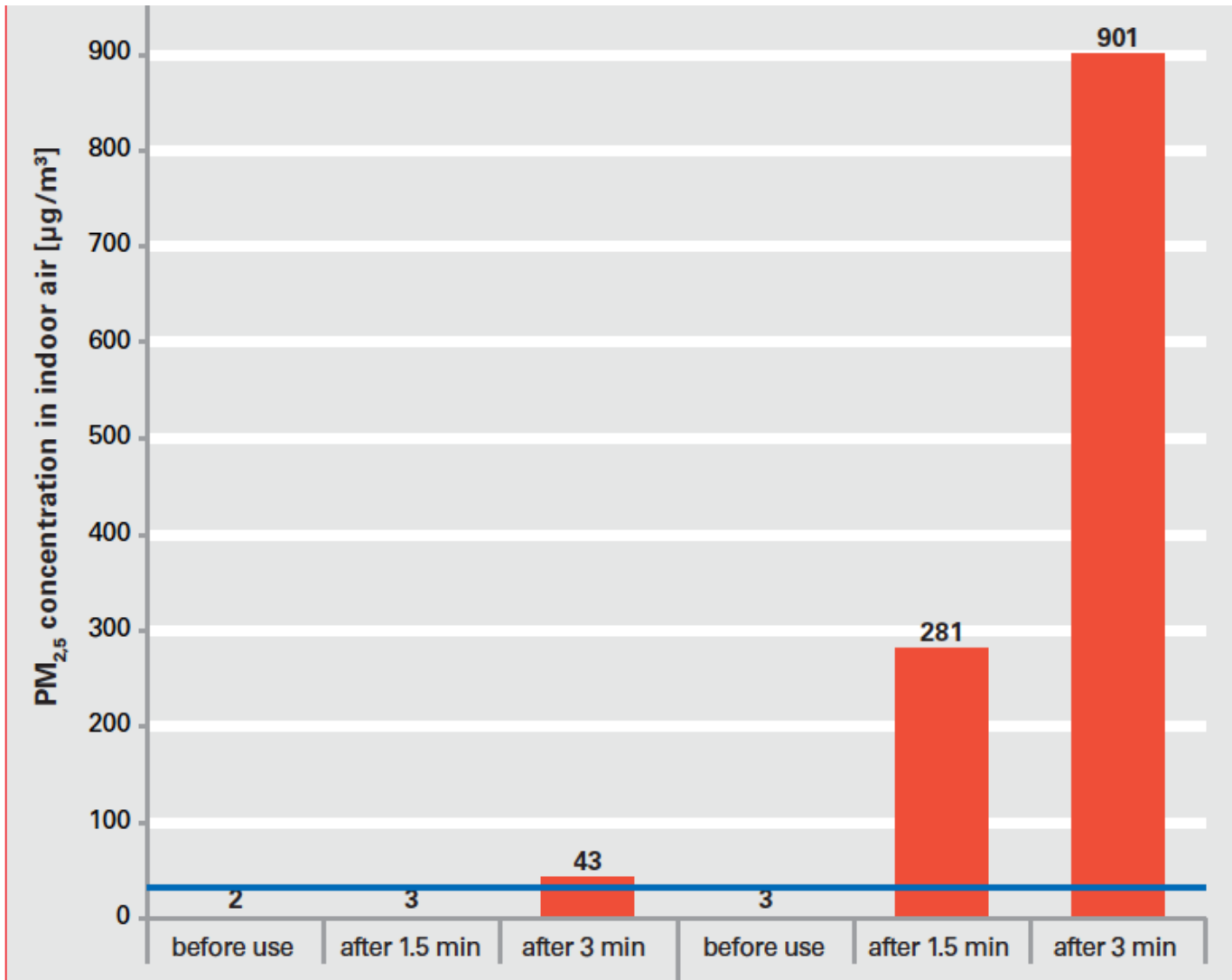
- **Liquid/propylene glycol** not studied for long-term safety..



- Vapor contains measurable amounts of **flavorings** that can be carcinogenic. But low levels.
- **Particulate matter** similar in size to cigarette smoke, but inconclusive in amount.
- **Other toxicants** (VOCs, TSNAs, heavy metals):
- **Although variable, fewer total constituents at much lower levels than in cigarette smoke.**

Ohta K et al. Determination of carbonyl compounds generated from the electronic cigarette using coupled silica cartridges impregnated with hydroquinone and 2,4-dinitrophenylhydrazine. *Bunseki Kagaku*. 2011;60:791-7. *In* Schripp T, Markewitz D, Uhde E, Salthammer T. Does e-cigarette consumption cause passive vaping? *Indoor Air*. 2013;23:25-31.

# State of the science: SECOND HAND VAPOR: HEALTH AND SAFETY



**Figure 3.3**  
Concentration of PM<sub>2.5</sub> (µg/m<sup>3</sup>) in indoor air before and after of using an e-cigarette and a conventional cigarette. Blue line: WHO air quality guideline value for PM<sub>2.5</sub> for short term exposure (24 hour mean). Source: Pellegrino et al.

# Individual health effects

- E-cigarettes MAY:
  - Alleviate the desire to smoke
  - Reduce cigarette consumption and encourage cessation
  - Have short-term negative effects on lung function
  - ...but not induce the same inflammatory response as cigarettes
  - In general e-cigarettes are closer to the harms of medicinal nicotine replacement than cigarettes

# State of the science: consumer perceptions

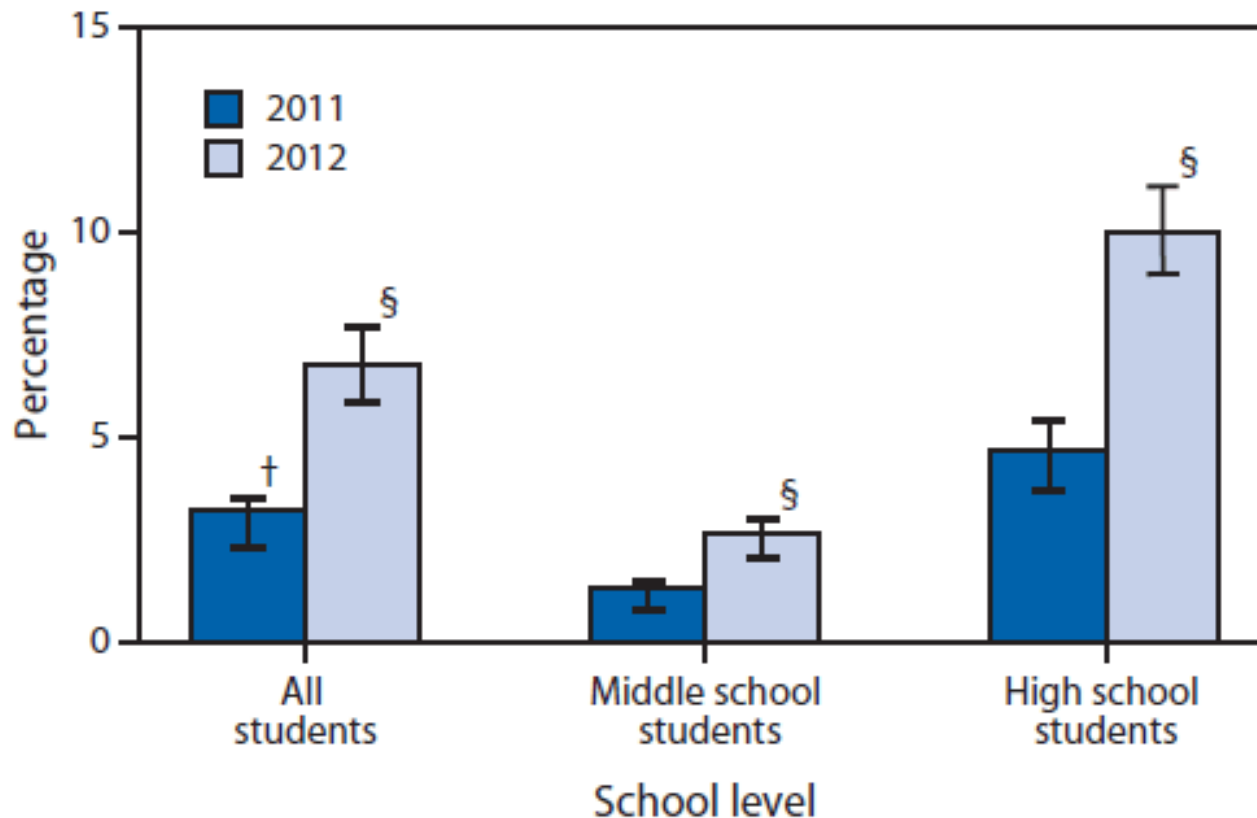
- Most commonly cited **reasons for use** among ever users -- perception that less toxic than traditional cigarettes (83%), aid in tobacco craving (79.0%) and withdrawal symptoms (66%) and for smokers to quit (46%)

Table 4 Reasons for using the electronic cigarette, among ever users.

<i>Among ever e-cigarette users: I use (used) the e-cigarette . . . (very true, %)</i>	<i>All ever users</i>	<i>Current smokers</i>	<i>Former smokers</i>
<i>n</i> ever users	3037	740	2279
E-cigarette less toxic than tobacco	83.5	81.1	84.3
To deal with craving for tobacco	79.0	77.3	79.7
To quit smoking or avoid relapsing	76.8	57.7	83.0
To deal with withdrawal symptoms	66.5	60.2	68.7
E-cigarette cheaper than smoking	57.3	53.8	58.4
To avoid bothering others with tobacco smoke	43.6	42.4	44.0
To deal with situations where one cannot smoke (at work, etc.)	39.4	45.6	37.4
To avoid having to go outside to smoke	34.4	36.9	33.6
To reduce tobacco consumption in preparation of a quit attempt	27.8	42.4	23.0
To reduce tobacco consumption with <i>no</i> intention to quit smoking	20.3	23.5	19.2
Because is unable to stop using it	4.4	4.4	4.4

# State of the science: YOUTH Patterns of USE

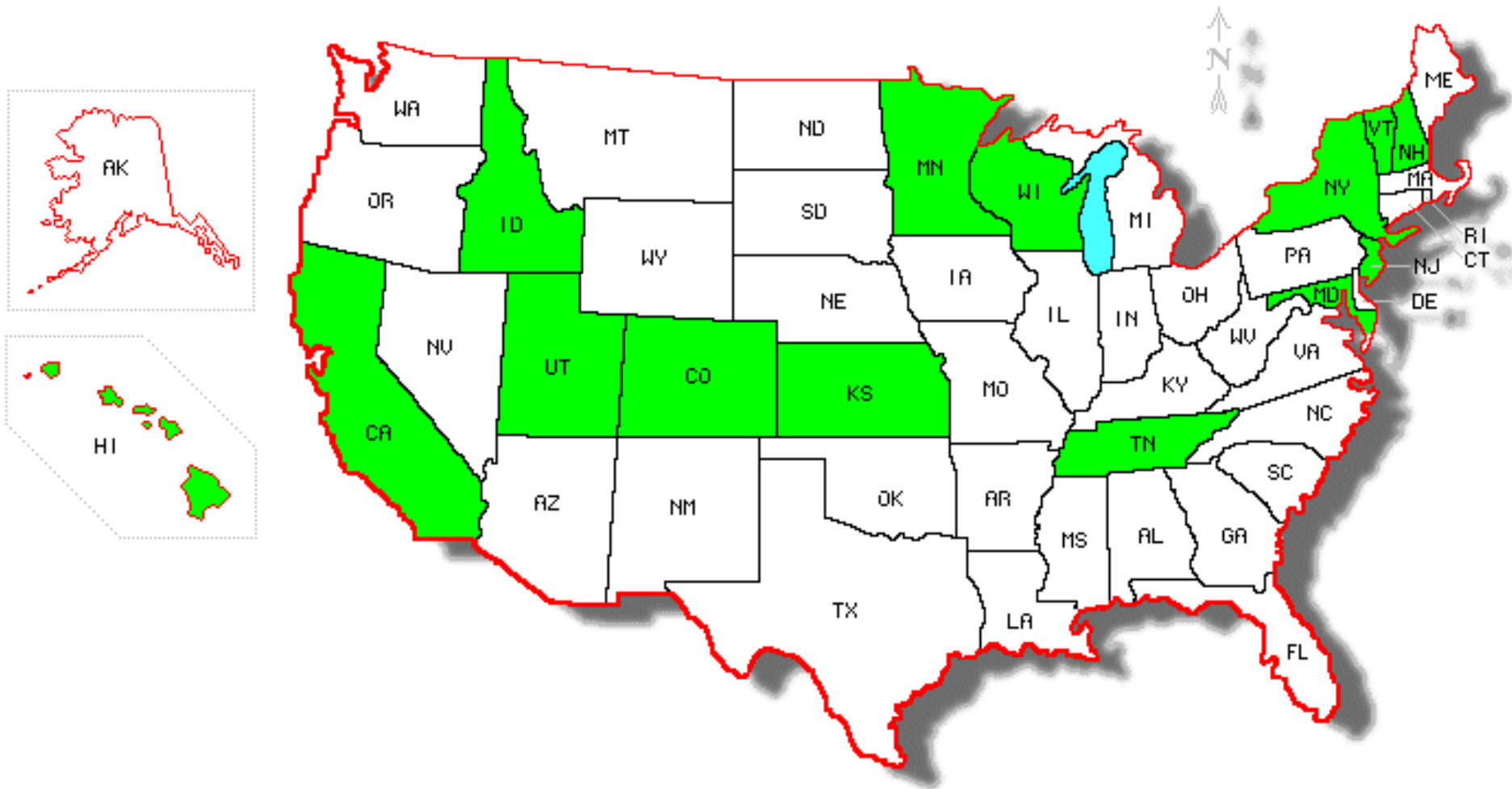
- **Adults:** Awareness (76%) and use (21%) is growing fast among current smokers and young adults. Perceived as less harmful.
- **Youth** (CDC MMWR 2013)



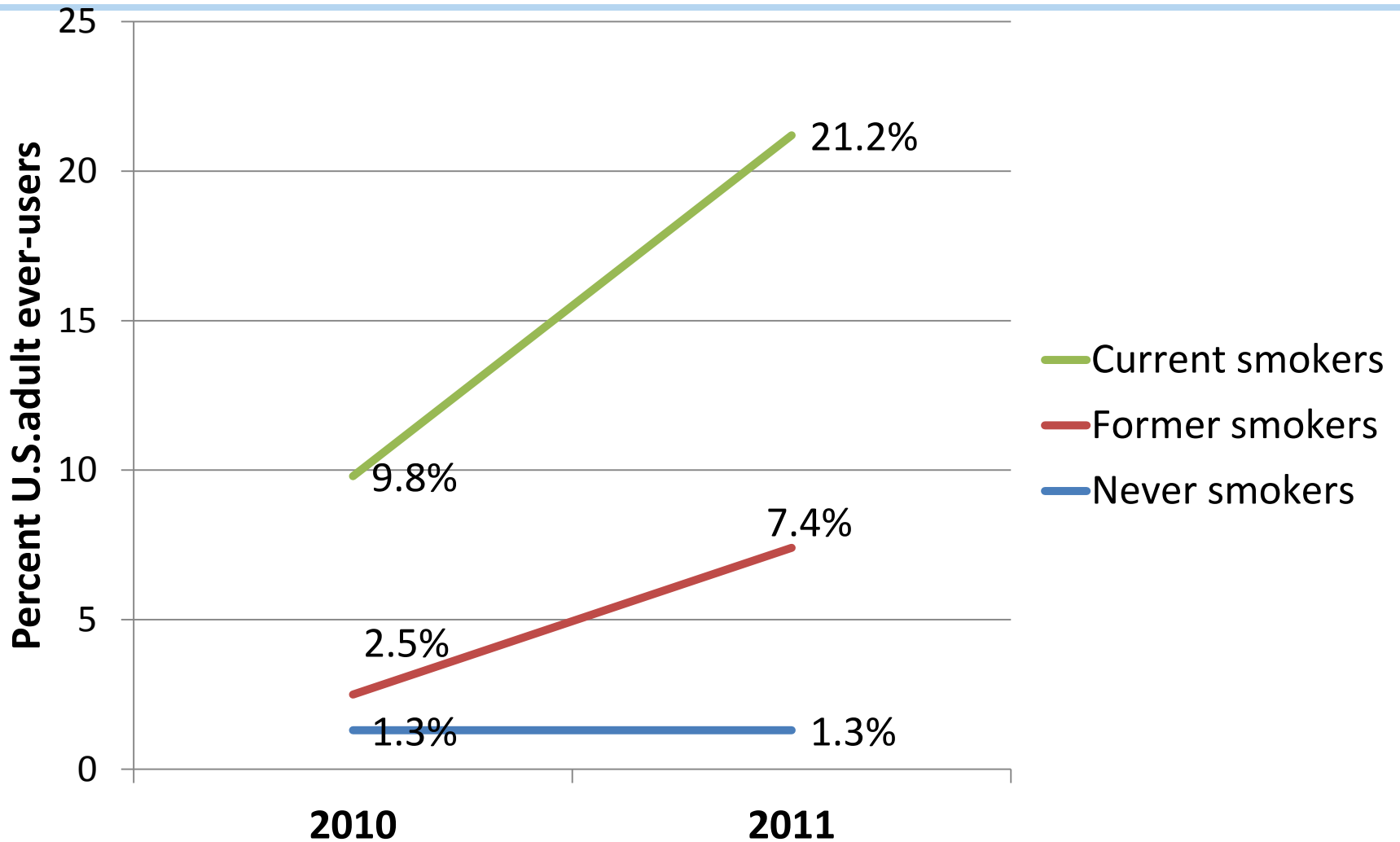
- Use doubled middle and high school students 2011–2012, estimated 1.78 million students ever used.



# States that have banned sales of e-cigarettes to minors



# E-cigarette Use Among U.S. Adults



# State of the science: marketing IMPACT: Blurring lines

- TV ads: first time in 40 years: ? Impact on adults, families
- Radio and TV: diverse ads, from over 300 manufacturers many with misleading claims of reduced harm or cessation
- Online sales. Viral spread by vocal proponents – digital media.
- Appeal: flavorings, freedom to use anywhere, undermining de-normalization of cigarettes indoor air laws, inexpensive
- Blurring boundaries between nicotine and tobacco products

# E-cigarette advertising: consumer patterns of use, beliefs, perceptions

## WHY QUIT? SWITCH TO BLU

blu is the smart choice for smokers wanting a change. Take back your freedom to smoke when and where you want without ash or smell. blu is everything you enjoy about smoking and nothing else. Nobody likes a quitter, so make the switch today. Visit [blucigs.com](http://blucigs.com)




**PREMIUM ELECTRONIC CIGARETTE**

18+ only. CALIFORNIA PROPOSITION 65 Warning: This product contains nicotine, a chemical known to the state of California to cause birth defects or other reproductive harm.

## DEAR SMOKING BAN,



### blu ELECTRONIC CIGARETTE

Take back your freedom to smoke anywhere with blu electronic cigarettes. blu produces no smoke and no ash, only vapor, making it the smarter alternative to regular cigarettes. It's the most satisfying way to tell the smoking bans to kiss off. Okay, maybe the second-most satisfying way.



New blu Smart Pack

[blucigs.com](http://blucigs.com)

18+ only. CALIFORNIA PROPOSITION 65 Warning: This product contains nicotine, a chemical known to the state of California to cause birth defects or other reproductive harm.

## IN STYLE

### Cigarettes

Control when and where you smoke with blu. blu produces no smoke and no ash, only vapor, making it the ultimate choice to tell the smoking bans to kiss off. Okay, maybe the second-most satisfying way.



**look**  
blucigs

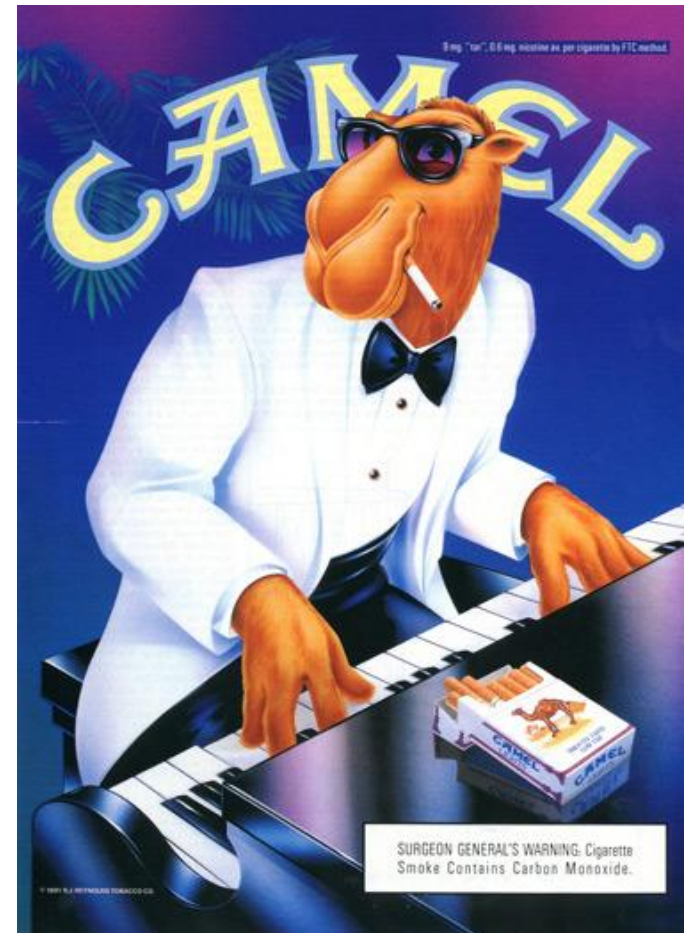
[blucigs.com](http://blucigs.com)

blu is not a smoking cessation product and have not been evaluated by the Food and Drug Administration, nor are they intended to treat, prevent or cure any disease or condition.

## 6. They use cartoons



The web site for Blu e-Cigs has featured a cartoon pitchman named “Mr. Cool.” It was reminiscent of the Joe Camel cartoon character that so Effectively marketed cigarettes to kids in the 1990s.



## 7. Their ads say, “Switch, Don’t Quit.”

Tobacco companies have long tried to discourage smokers from quitting by marketing cigarette changes as reducing health risk. Some e-cigarette ads carry a similar message.



**WHY QUIT?**  
**SWITCH TO BLU**

blu is the smart choice for smokers wanting a change. Take back your freedom to smoke when and where you want without ash or smell. blu is everything you enjoy about smoking and nothing else. Nobody likes a quitter, so make the switch today.

Visit [blucigs.com](http://blucigs.com)

**blu**

\* New blu Smart Pack

**PREMIUM ELECTRONIC CIGARETTE**

18+ only. CALIFORNIA PROPOSITION 65 - **Warnings:** This product contains nicotine, a chemical known to the state of California to cause birth defects or other reproductive harm.



**Considering all I'd heard, I decided to either quit or smoke True. I smoke True.**

**The low tar, low nicotine cigarette. Think about it.**

Warning: The Surgeon General Has Determined that Cigarette Smoking is Dangerous to Your Health.

King Regular: 11 mg "tar", 0.9 mg nicotine av. per cigarette; 100's Menthol: 12 mg "tar", 0.7 mg nicotine av. per cigarette; FTC Report Nov. '96.

# State of the science: cessation

- **New Zealand-based study 2011-2013 (Bullen et al., 2013)**
  - N=657 current smokers motivated to quit. **No difference in abstinence between treatment arms at 6 months between NRT and e-Cigs**
    - **Nicotine e-cig=7.3%, Placebo e-cig=4.1%, NRT patch=5.8%**
  - Rates of smoking reduction ( $\geq 50\%$ ) were higher for nic e-cig (57%) relative to the NRT.
- **Italy-based study 2010-2011 (Caponnetto et al., 2013)**
  - N=300, current smokers curious about trying e-cigs (not motivated to quit)
  - **No difference (nicotine or placebo e-cigs) at 52 weeks. 8.7% quit and 10.3% reduced** their smoking by  $\geq 50\%$  Those who **at first** dual used were likely to relapse.
- **Among quitline callers from 6 states in 2011-2012 (Vickerman et al., 2013)**
  - E-cig groups (used for 1 mo or more than 1 mo) **were less likely to be abstinent** at 7-months compared with participants who had never tried e-cigs. 21.7%, 16.6% vs. 31.3%
- **In 2011 a nationally rep. study of U.S. adults (Popova & Ling, 2013):**
  - **E-cig ever users were 78% more likely to be an unsuccessful quitter** compared with non-users of e-cigs (OR: 1.78,  $p < .05$ ).
  - Population impact ? : studies have methods limitations. E.g. observational, indication bias: Could be the users are more addicted smokers / have harder time to start with (like limits of Alpert, Connolly Biener NRT study )

Bullen C, Howe C, Laugesen M, McRobbie H, Parag V, Williman J, Walker N. Electronic cigarettes for smoking cessation: a randomised controlled trial. *Lancet*. September 9 2013.

Caponnetto P, Campagna D, Cibella F, et al. Efficiency and Safety of an eElectronic cigAreTte (ECLAT) as tobacco cigarettes substitute: a prospective 12-month randomized control design study. *PLoS one*. 2013;8(6):e66317.

# State of the science: Policy & regulation, federal and state

- Product classification (medicinal, recreational, other)
- Product safety standards – regulation - light or heavy?
- Claims of modified risk / reduced harm.
- Use in public places (indoor air laws, de-normalization)
- Youth protection (24 states restrict sales to minors)
- Taxation ?
- FTC: correction of misleading labels and claims



# EU TODAY VOTE ON FIRST READING

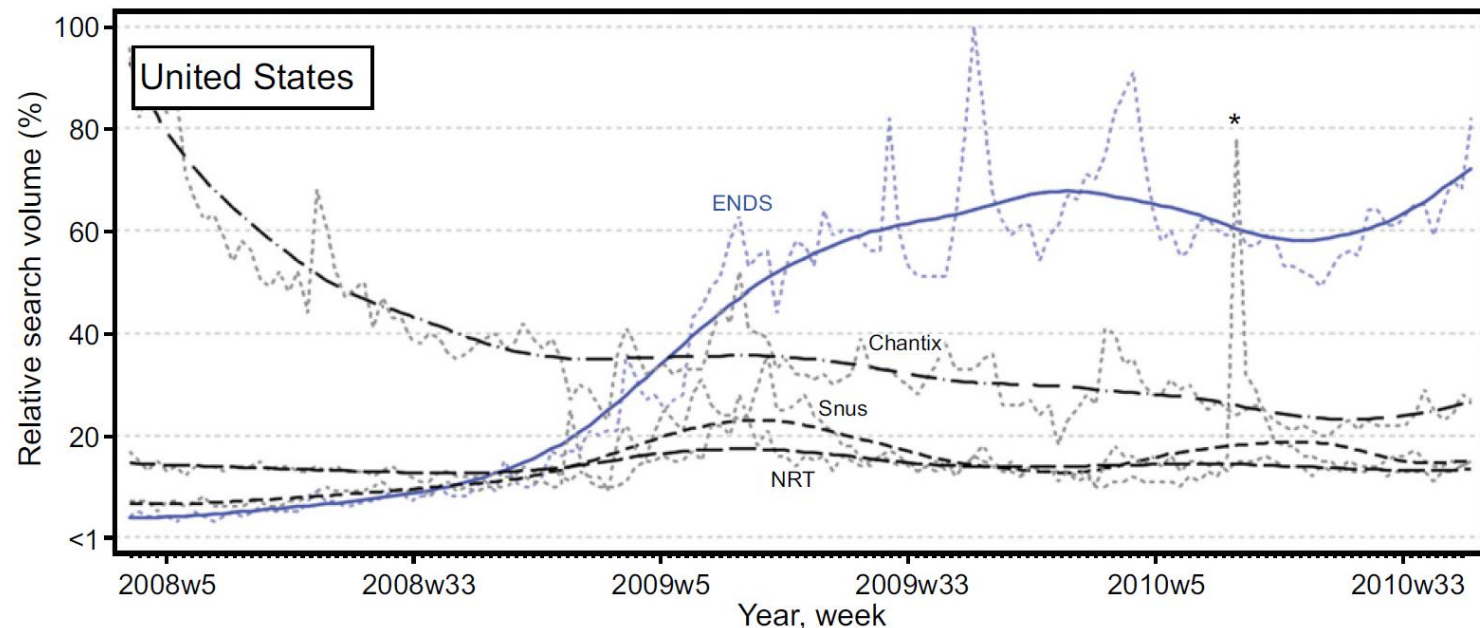
**Ban on menthol cigarettes supported** – with a five-year delay. We note that menthol cigarettes are roughly 3% of total EU volume (vs. 30-32% of US volume).

**Rejected the European Commission proposal to classify e-cigs as medicines** - a win for the burgeoning e-cigarette market, these will not be broadly classified as medicines, which would have restricted sales. However, member nations could apply their own e-cig regulatory policies (or taxation). The UK has already proposed regulating e-cigs as medicinal products starting in 2016.

Although more negotiations will be conducted before the law is enacted, **we view this outcome as neutral to slightly positive for the global tobacco manufacturers.**

# State of the science: marketing IMPACT

- **Radio and TV:** diverse, from over 300 manufacturers many with misleading claims of reduced harm or cessation
- **Online presence:** more widely searched than snus and NRT; YouTube videos
- **Appeal:** flavorings, freedom to use anywhere, undermining de-normalization of cigarettes indoor air laws, inexpensive



# HARM REDUCTION AND Cessation Claims made online –Forensic analysis. (Cobb, Brookover & Cobb, 2013)

The collage consists of four distinct sections:

- Left Section:** A weather forecast for the 'Rocky Mount' area, showing a map and a 'Weird Pill Kills Blood Pressure' article featuring an anatomical diagram of a human torso.
- Middle Section:** A 'Consumer Weekly Tips' article titled 'Are E-Cigarettes Better For Your Health? The Doctors Weigh In...'. A red circle highlights a video player showing a man speaking, with a red arrow pointing to a text box that reads: 'For A Limited Time, E-Cig Brand™ Is Offering A Free\* Electronic Cigarette Trial Kit To Our Readers'. Below this, another red arrow points to a claim: 'Here are some of the claims we were able to verify from our investigation:'. A red arrow also points to the bottom of the article.
- Right Section:** An advertisement for 'No Flame' e-cigarettes. It features a 'SPECIAL OFFER ACTIVATED!' banner with a price of '\$4.95!'. Below the banner, there are two steps: 'STEP 1 Review Your Kit' and 'FINAL STEP 2 Payment Info'. The kit includes an 'Exclusive No Flame Starter Kit' with items like a 'No Flame Starter Kit', 'Advanced No Flame Atomizer', 'Rechargeable Li-Ion Battery', 'Tobacco Flavored Cartridges', 'USB Charger', 'Travel Charger', 'Charger Carrying Case', 'Soft Touch Hard Plastic Travel Case', and 'Full Color Instruction Manual'. The total price is '\$4.95'. There is a 'Confirm My Order' button and a 'McAfee SECURE' logo.

- “...when she tried electronic cigarettes she was able to become cigarette free two days later.”
- “In the United States alone, over 700,000 smokers have already switched to electronic cigarettes.”

Source: Cobb NK, Brookover J, Cobb CO. Tob Control Published Online First: Sept 15<sup>th</sup> 2013 . doi:10.1136/

# *Latest trends on smoking in England: from the Smoking Toolkit Study*



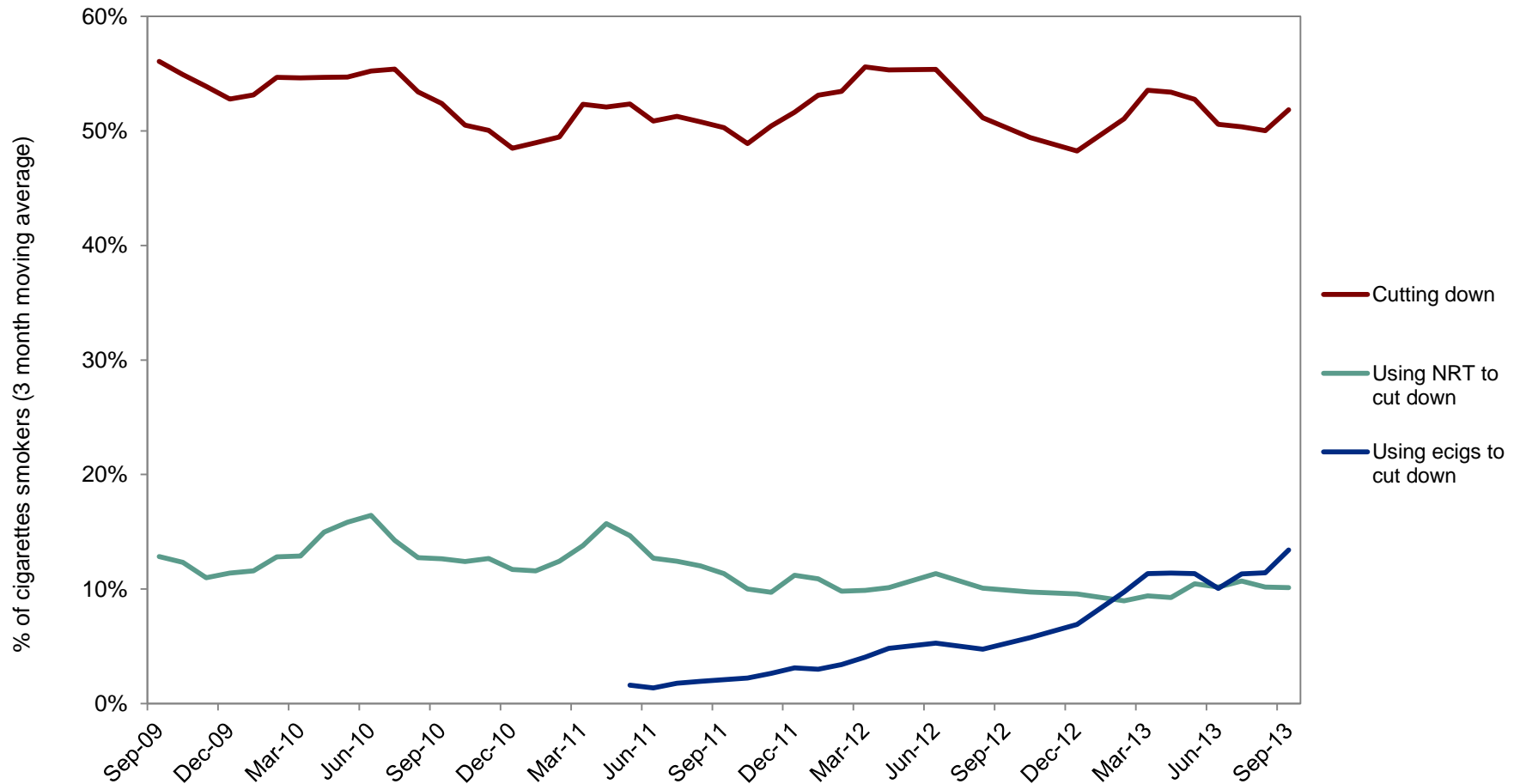
*Robert West  
Jamie Brown*

*Last updated: 2<sup>nd</sup> Sept 2013*

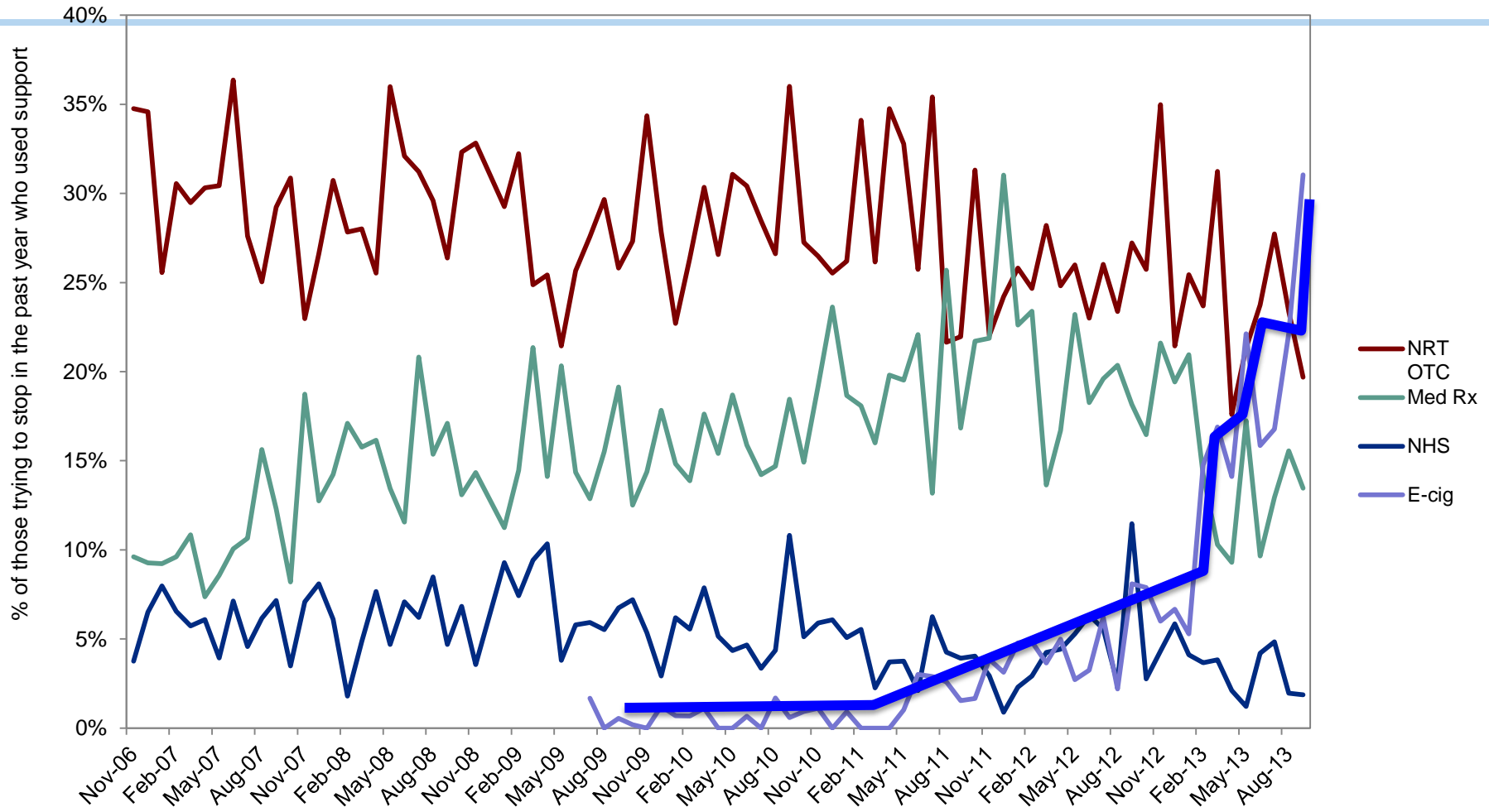
*[www.smokinginengland.info](http://www.smokinginengland.info)  
[jamie.brown@ucl.ac.uk](mailto:jamie.brown@ucl.ac.uk)*



# Harm reduction? Using e-cigs to cut down



# Support used in quit attempts



NRT OTC: Nicotine replacement therapy bought over the counter; Med Rx: Prescription medication; NHS: NHS Stop Smoking Service; E-cig: Electronic cigarette

# Appeal: Minors versus Adults : Flavors ?



# Hypothetical Patterns of E-cig use

**Current smokers in the U.S.**

Source-King et al., 2013  
National rep. survey performed in 2011

**21% Ever tried an e-cig**

**79% Never tried**

**8.7% Quit smoking**

**10.3% Reduce their smoking by  $\geq 50\%$**

**81% Dual use/continue to smoke**

**1.8% of current smokers in U.S.**

**2.2% of current smokers in U.S.**

**17% of current smokers in U.S.**

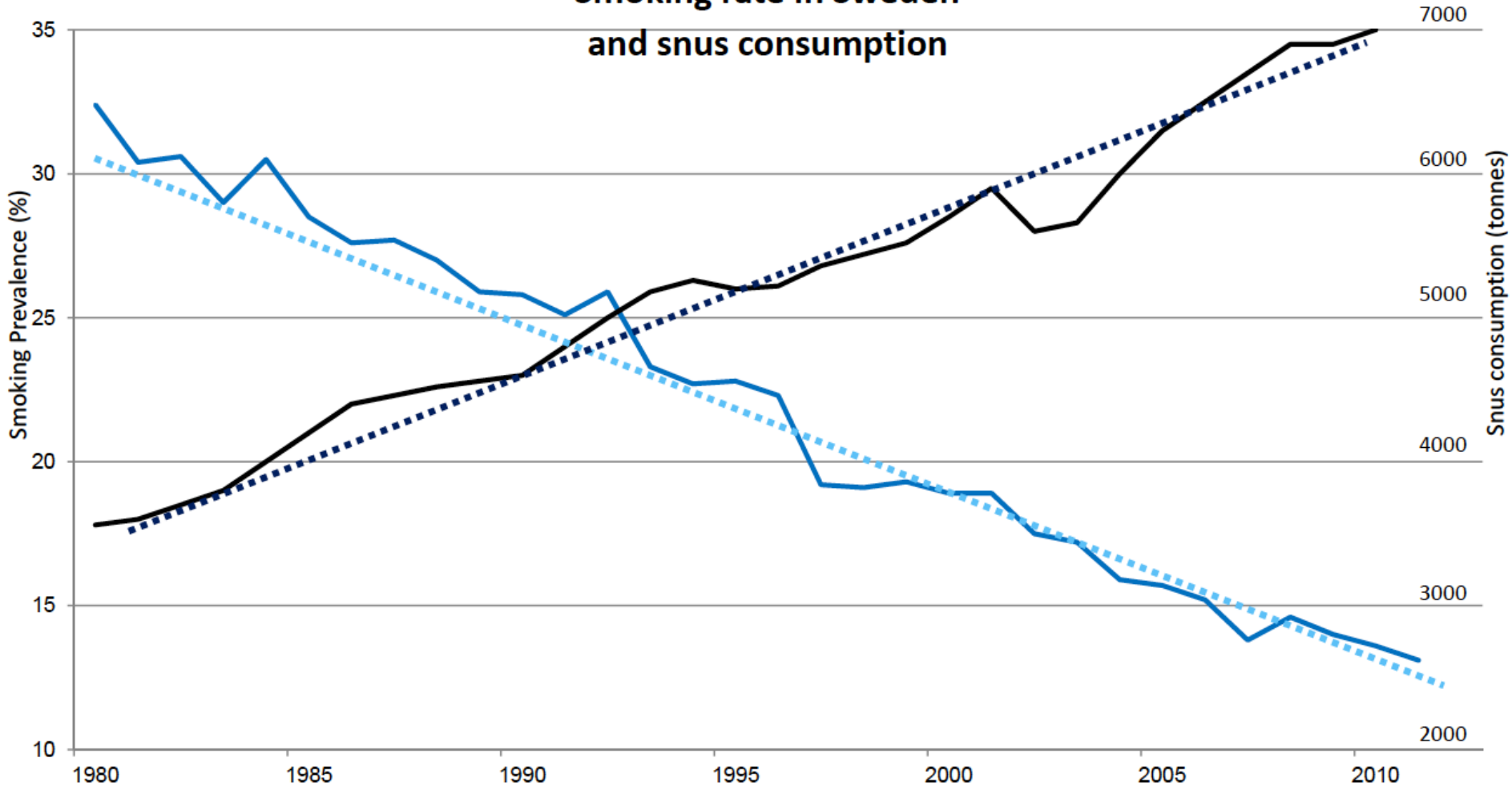
Source-Caponnetto et al., 2013  
RCT among smokers not interested in quitting in 2010-2011

**ESTIMATES** based on King et al., 2013; Caponnetto et al., 2013

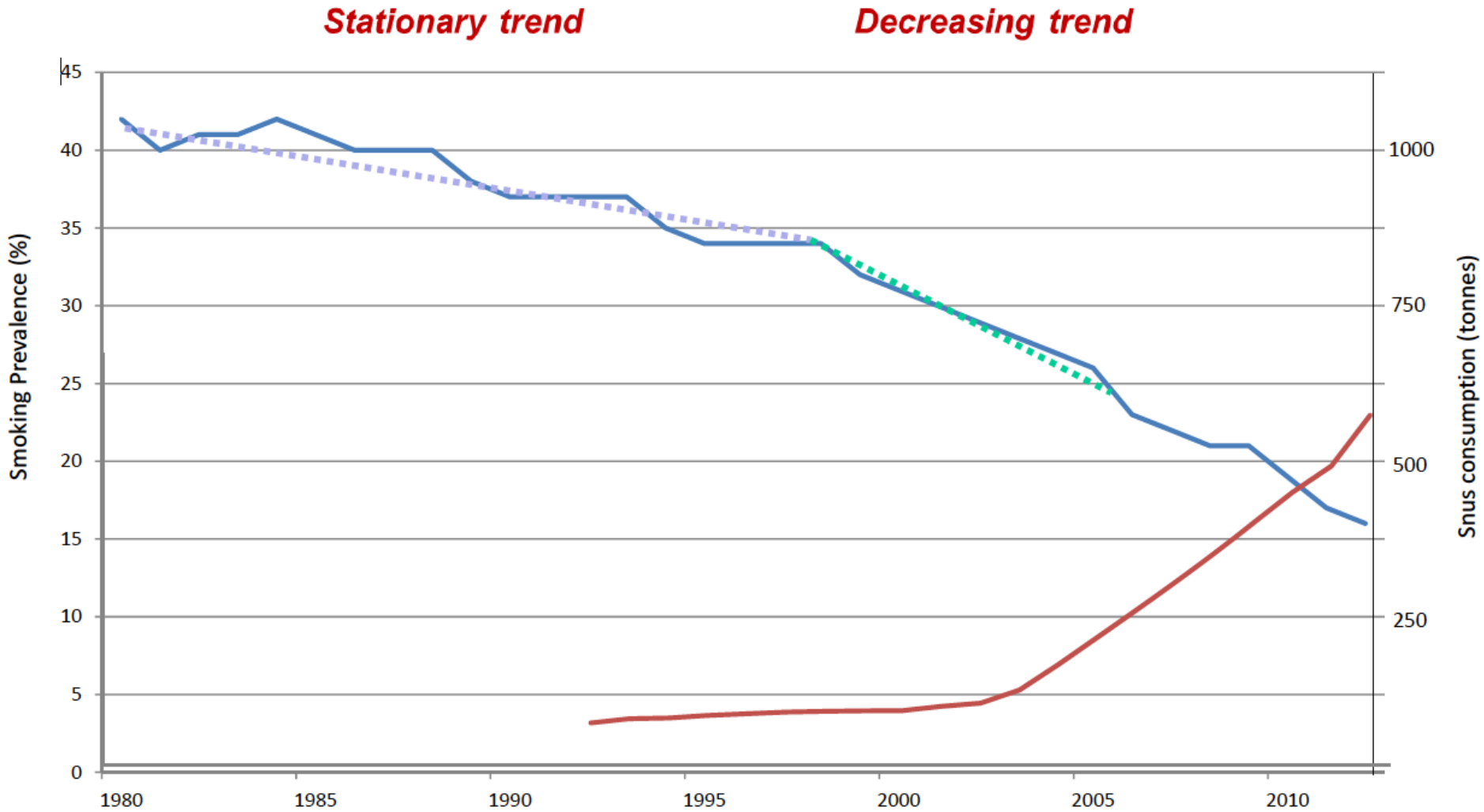


# CASE STUDY SWEDEN

## Smoking rate in Sweden and snus consumption



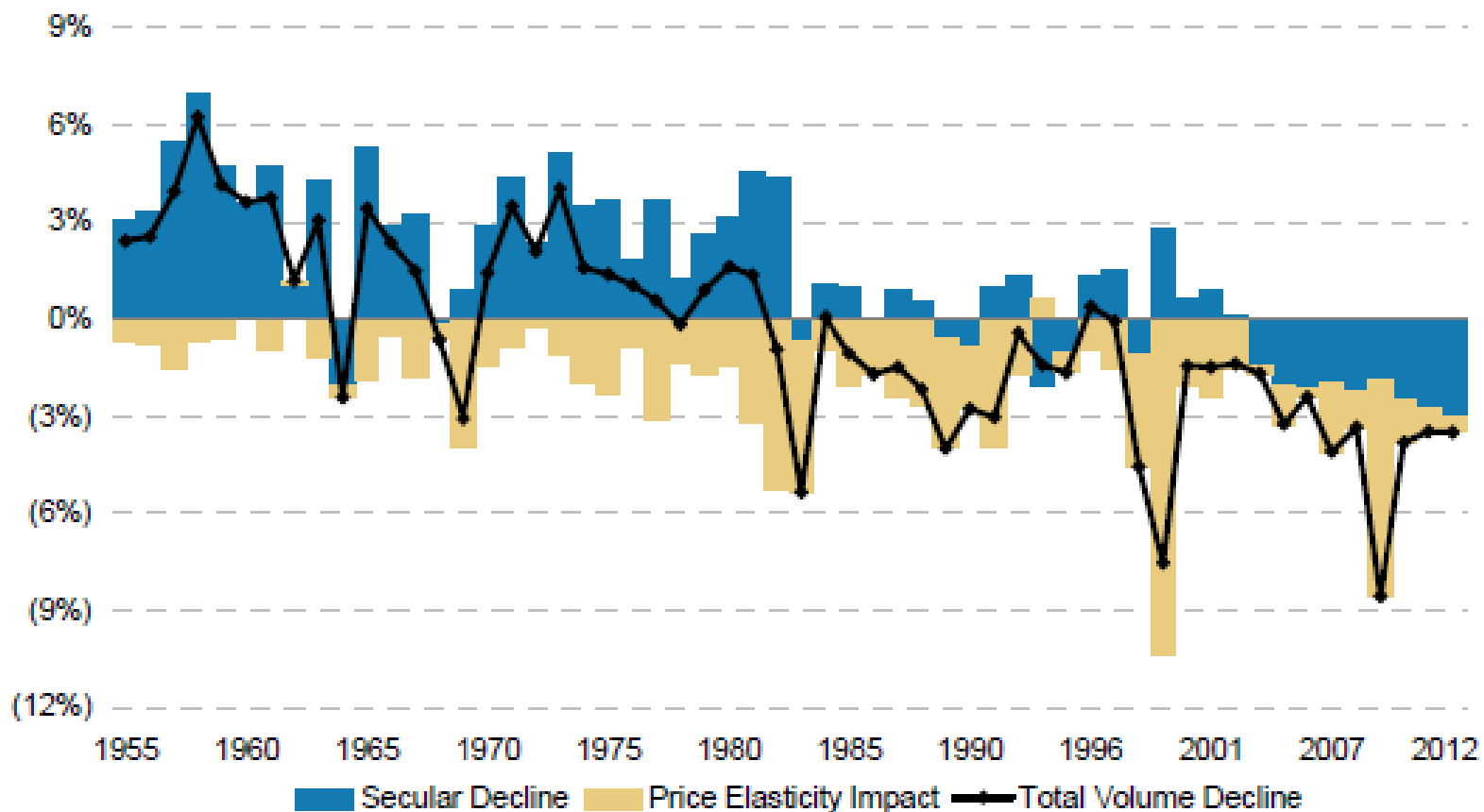
# CASE STUDY: NORWAY



# Market trends favor movement to less harmful products

## Secular rate of US Cigarette Decline is Increasing

US Cigarette Volume Decline Composition

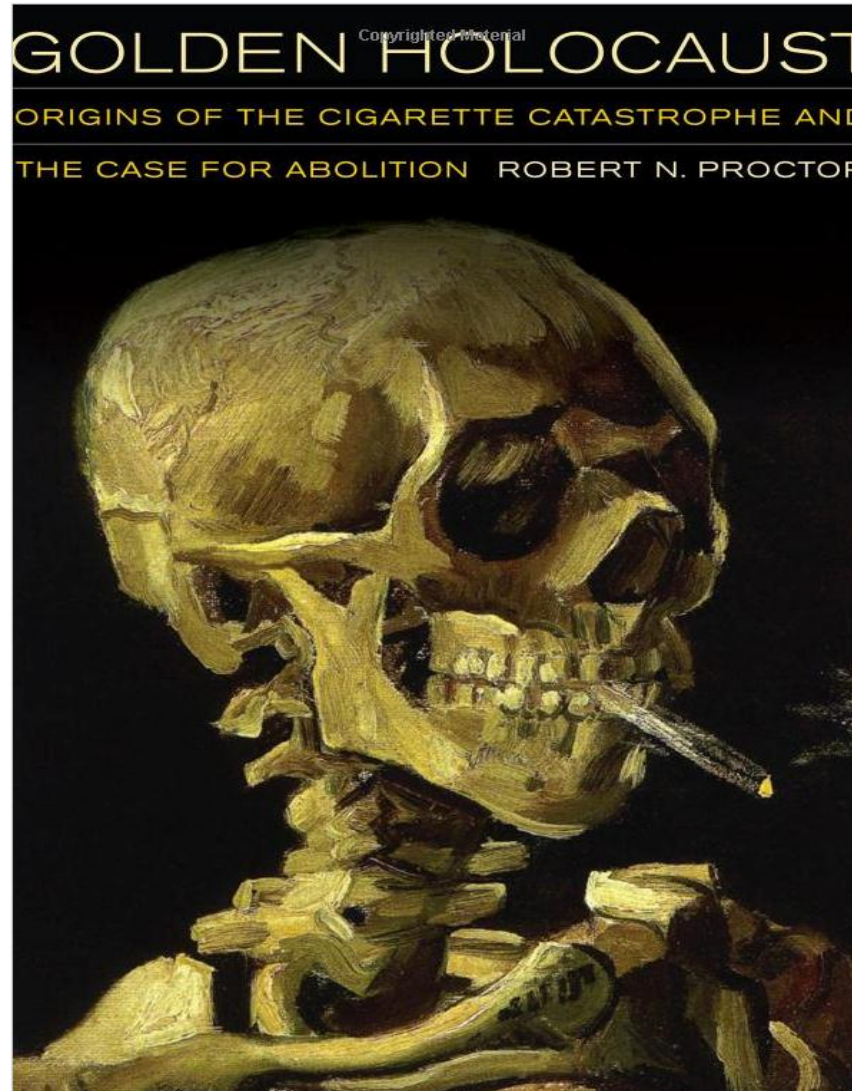


# The Norwegian Experience

- Snus use has been increasing in Norway and the Ministry of Health and Care Services instructed the Institute for Alcohol and Drug Research (SIRUS) to examine this development and address the public health implications.
- 2009 SIRUS report: *A Tobacco-Free Society or Harm Reduction? Which Objective is Best for the Remaining Smokers in Scandinavia?*
- 2013 SIRUS report: *Tobacco Harm Reduction in the Real World: Has the Availability of Snus in Norway Increased Smoking Cessation?*
- Study Director Karl Erik Lund:
  - “The use of snus has not increased overall tobacco consumption but has reduced cigarette smoking in Norway, and this has happened without people becoming new users.”
  - “If the aim is to reduce tobacco-related mortality, letting snus compete with cigarettes is a good idea.”
  - “The aim should be to combat mortality, and there both snus and electronic cigarettes can play a role.”

# End Game Strategies

## Robert Proctor: Golden Holocaust



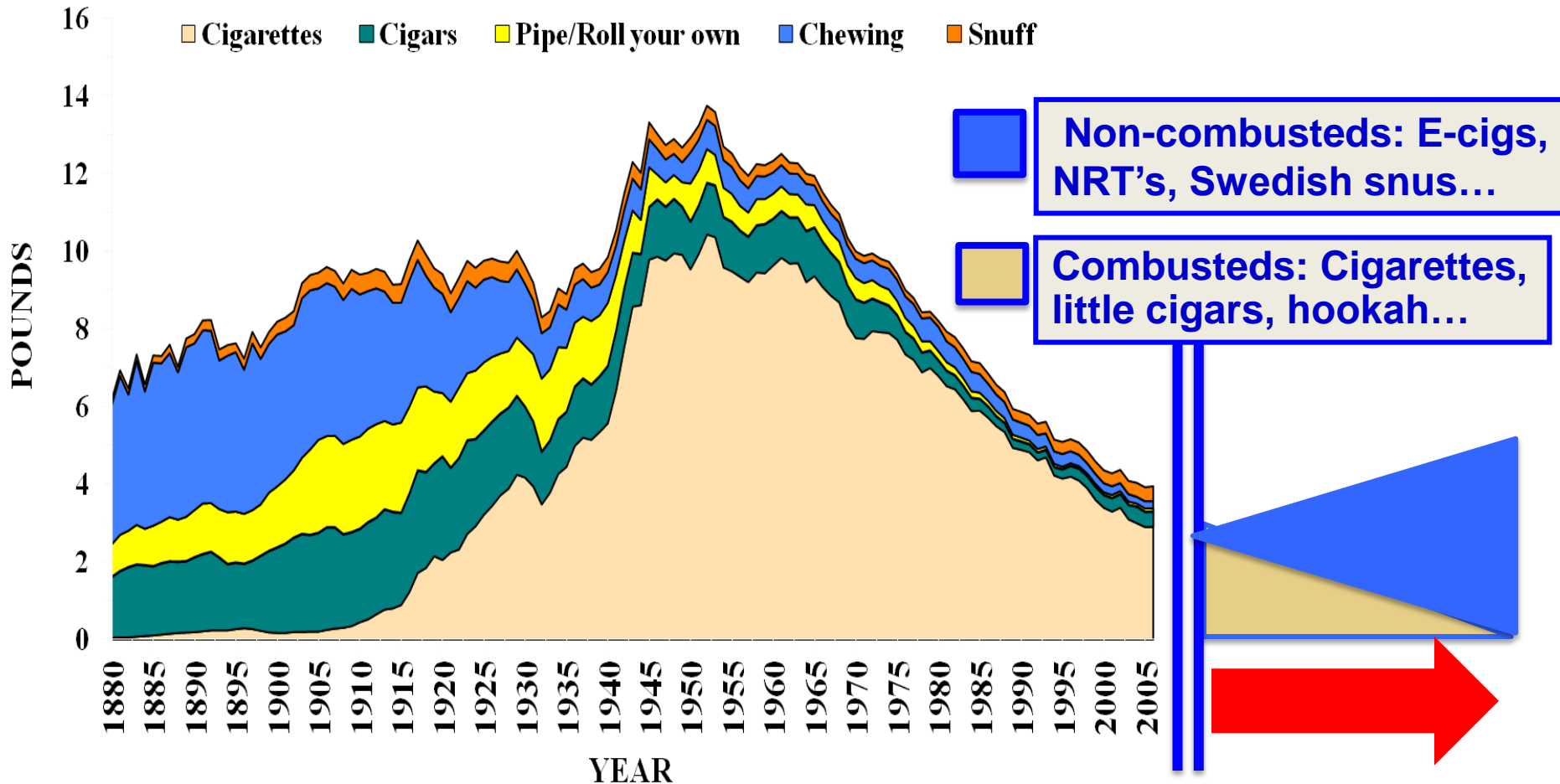
- Reduction/elimination of combustible tobacco use: Abolition of cigarettes
- Provide only “clean” recreational nicotine products (pharmaceutical grade, clean nicotine delivery systems), or even in “safer” non-combustible forms (snus, smokeless and dissolvables):
- FDA, state and local - role in new noncombustible products

# Controversial Extreme: Take Home Messages

- Smoking rate is the key success criterion for tobacco regulation
- Declines in smoking rates in the 70s and 80s reflect the growing awareness and acceptance of government health messages
- Smoking rates have been levelling out since 2000
- No correlation between tobacco control score and smoking rates
- No evidence that smoking rates have been greatly impacted by tobacco regulation
- If smoking rate reduction equals success, denormalisation is not an effective public health strategy
- Smoking rates are still falling consistently in markets where a viable choice/alternative to smoking is presented to consumers

# Trends in Per Capita Consumption of Various Tobacco Products – United States, 1880-2005 and Beyond.

**Back To The Future ? (based on Giovino article)**



Source: US Department of Agriculture

# SCIENCE Questions, SUMMARY

- Less harmful than cigarettes when good quality, but unknown long term health effects of e-cigarette use?
- How does e-cigarette use and marketing affect **current smokers**?
  - Delay cessation? Promote cessation?
  - Reduce cigarette consumption or give the impression of less harm because of imagined reduced cigarette consumption?
  - Dual use when one can not smoke and alleviate discomfort
- Do e-cigarettes encourage **former smokers** to return to nicotine use and relapse to cigarette smoking?
- How do e-cigarettes affect **non-smokers** ?
  - Potential **uptake among youth and young adults**
  - “SHV” exposure and use indoors where smoking is banned



# POLICY CHALLENGES, QUESTIONS

- Primary goal: Reduce the death and disease - almost all caused by combusted tobacco – cigarettes.

## Zero Tolerance vs Harm Reduction?

- Up to now “Tobacco/Nicotine Free” was the norm for policy: clean indoor air laws, media campaigns, taxes, youth prevention, cessation treatment and regulation - federal and state.

## IMAGINE:

- **A world where virtually no one uses combustible tobacco. Can safer nicotine put combustibles out of business? What will it take to do this ?**

# Harm Reduction POLICY -- Questions

- Regulate them - Federal, State, Local? Taxation, sales to minors, product standards, indoor air restrictions? Cessation Aid and Harm reduction tool - reduce to quit, relapse prevention
- Communicate about them – Truthfully..
- Speed obsolescence of combusted tobacco use BUT minimize unintended consequences – youth uptake, dual use, delayed cigarette cessation, denormalization of indoor air laws, tax base loss

**Change a core principle of tobacco control ?  
From elimination of all tobacco/nicotine use (no safe product) to harm reduction - elimination of combusted products.**

The background consists of several overlapping circles in various shades of blue, creating a layered, abstract effect. The word "Discussion" is centered in a white, sans-serif font.

# Discussion

# From Dr. Ray Niaura : Draft Table

## E-cigarettes: Belief propositions and what is known

<b>Proponents</b>	<b>Opponents</b>	<b>Facts</b>
Ecig use is increasing	Ecig use is increasing	Ecig use is increasing but it is still a small fraction of cigarette market Mostly smokers are trying ecigs
Ecigs save lives: (smokers will quit all tobacco or smokers will switch to ecigs)	Ecigs do not save lives: (smokers will not quit or smokers will dual use)	Unknown Ecigs do not help smokers quit (sparse evidence) Most smokers who try ecigs dual use
	Ecigs perpetuate nicotine addiction	Unknown
Denormalizes smoking	Normalizes smoking	Unknown
Normalizes “vaping”	Glamorizes smoking	Unknown
Ecigs are safe	Ecigs are not safe	Unknown
Ecigs are safer than cigarettes	Ecigs are safer than cigarettes	Ecigs are safer than cigarettes
Secondhand vapor is safe	Secondhand vapor is unsafe	Secondhand vapor is safer than secondhand smoke
Ecigs are not a gateway to smoking: (among never smokers - youth) (among former smokers – relapse)	Ecigs are a gateway to smoking: (among never smokers - youth) (among former smokers – relapse)	Unknown Unknown Unknown
Over-regulation is a risk	Under-regulation is a risk	Unknown
This problem is too important to worry about getting it right	This problem is too important to worry about getting it right	Unknown