The Economics of Waterpipe Tobacco Smoking
WHO FCTC Waterpipe Tobacco Smoking Knowledge Hub Webinar
20 November 2019

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Overview

- Economic costs of tobacco

- Tobacco tax rationale

- Types of tobacco taxes

- Economics of waterpipe smoking

- Ongoing work and future directions

Economic costs of tobacco

Categories of costs

Direct costs: reduction in existing resources
- Direct health care costs
- Direct non-health care costs (e.g., transportation to clinic, time of family members providing care)

Indirect costs: reduction in potential resources
- Lost productivity due to morbidity and premature mortality

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Societal costs

External costs
- Costs that tobacco users impose on others (e.g., costs related to secondhand smoke)

Indirect costs
- Costs paid for by tobacco users and their families incurred as a result of tobacco use (e.g., out of pocket costs for health care to treat diseases cause by smoking)

"Internalities"
- The internal costs that result from the information failures in the market that can be thought of as external costs

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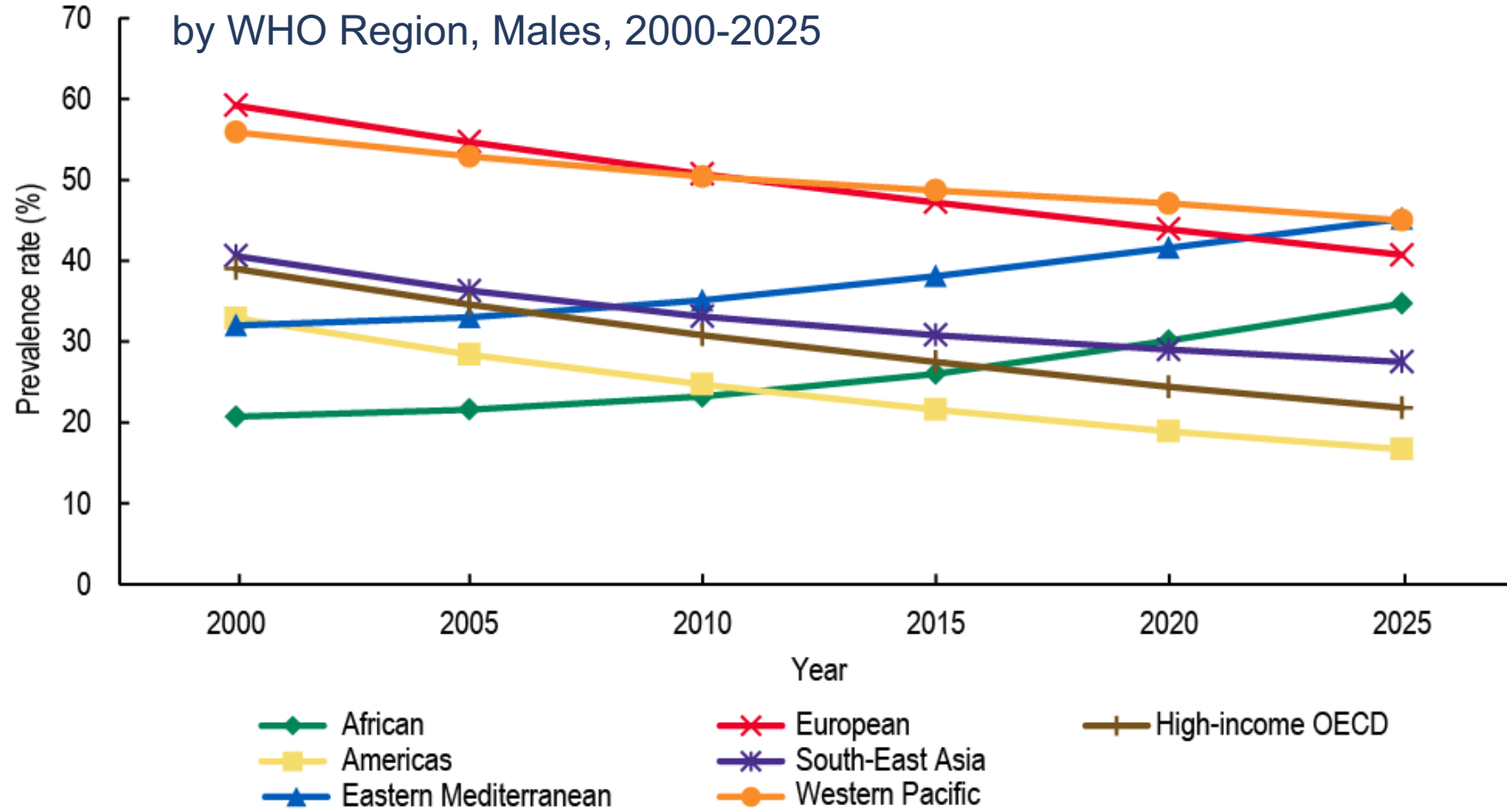
Economic costs of tobacco consumption

Worldwide

- Total economic cost of smoking in 2012 – **$1.4 trillion**
  - 1.8% of world's annual GDP

- Health care costs – $422 billion
- Indirect costs – $357 billion for morbidity
                     $657 billion for mortality

Goodchild M., *et al. Tob Control,* 2017

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Estimated/projected prevalence rates for tobacco use

by WHO Region, Males, 2000-2025

U.S. National Cancer Institute and World Health Organization. The Economics of Tobacco and Tobacco Control. National Cancer Institute Tobacco Control Monograph 21; 2016.

Economic costs of tobacco consumption

$ In Lebanon

- Total economic burden of tobacco consumption estimated in 2008 at $327 million per year or 1.1% of GDP, including

  - Direct and indirect costs for diseases caused by tobacco use among adults (30+ years) estimated at $102.2 million and $64.6 million in lost productivity due to morbidity and mortality, respectively
  - $13.6 million in environmental costs (e.g., fires)

Salti N., *et al. Subst Use Misuse,* 2014

Why tax tobacco?
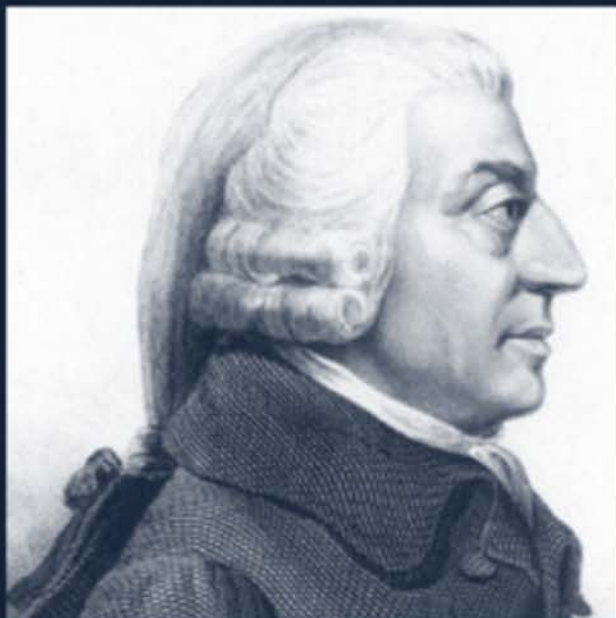
Sugar, rum and tobacco are commodities which are nowhere necessaries of life, which are become objects of almost universal consumption, and which are therefore extremely proper subjects of taxation.

Adam Smith. An Inquiry into the Nature and Causes of the Wealth of Nations, 1776

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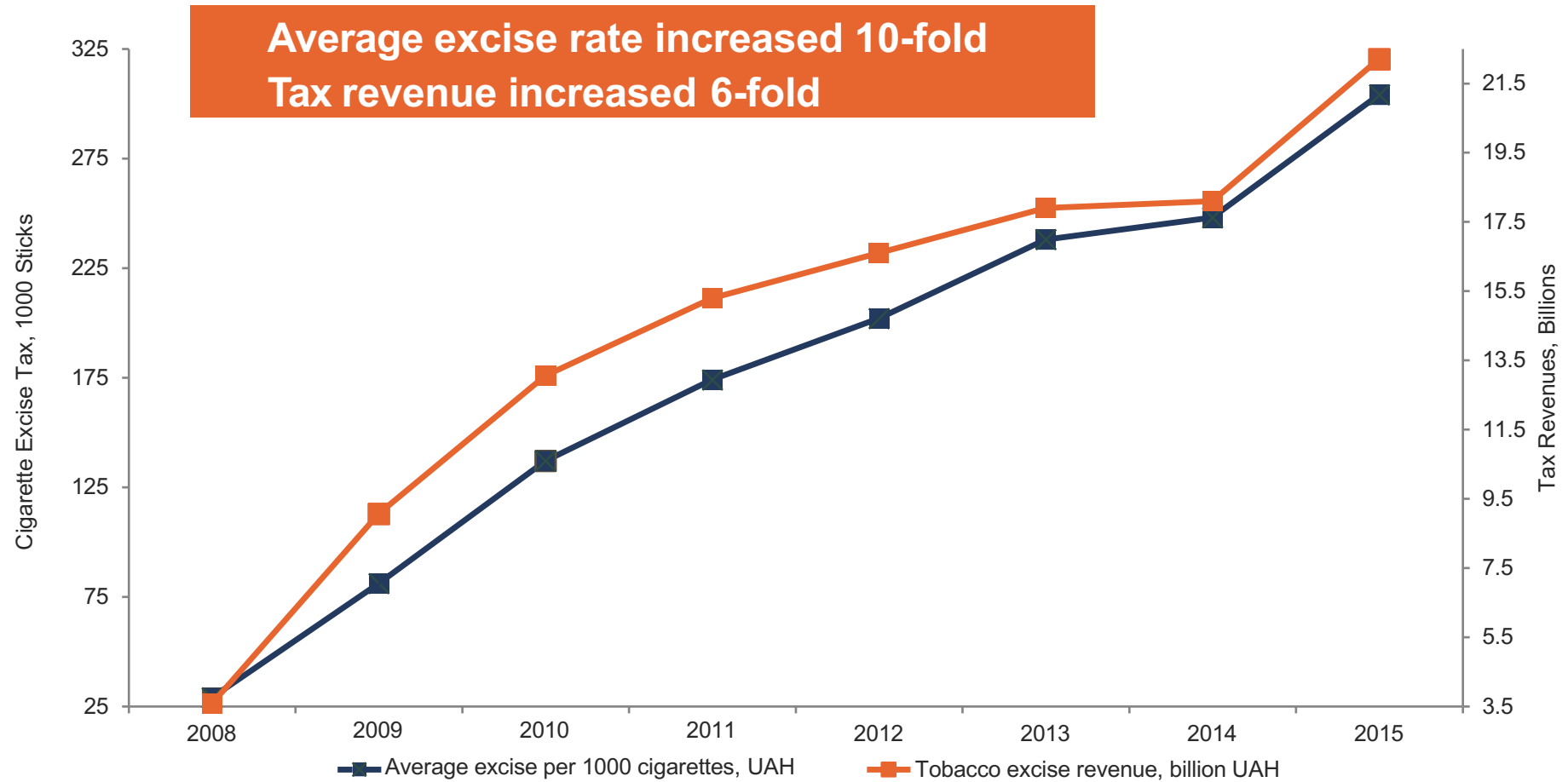UNIVERSITY *of* FLORIDA

Why tax tobacco?

Efficient revenue generation

- Primary motive historically and still true in many countries

- Very efficient source of revenue given
  - Historically low share of tax in price in many countries
  - Relatively inelastic demand for tobacco products
  - Few producers and few close substitutes

Cigarette tax and tax revenues
Ukraine: 2008-2015

Average excise rate increased 10-fold
Tax revenue increased 6-fold

Legend:
- Average excise per 1000 cigarettes, UAH
- Tobacco excise revenue, billion UAH

Left axis: Cigarette Excise Tax, 1000 Sticks
Right axis: Tax Revenues, Billions

Syvak and Krasovsky, 2017 via www.tobacconomics.org

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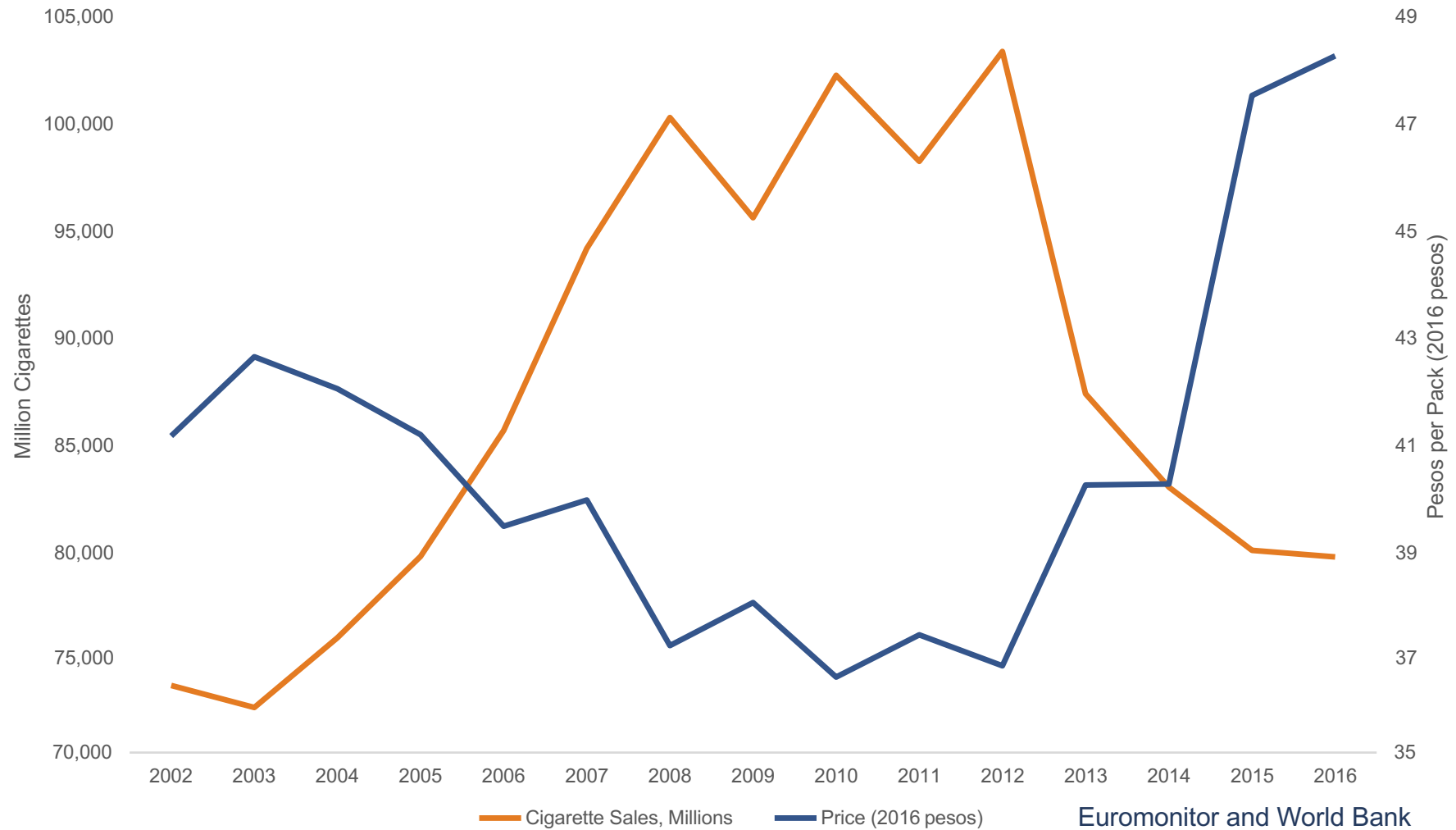**UNIVERSITY** *of* **FLORIDA**

Why tax tobacco?

Promote public health ✛

- Important motive for higher tobacco taxes in high-income countries
  - Increasingly important factor in low- and middle-income countries

- Based on substantial and growing evidence on the effects of tobacco taxes and prices on tobacco use
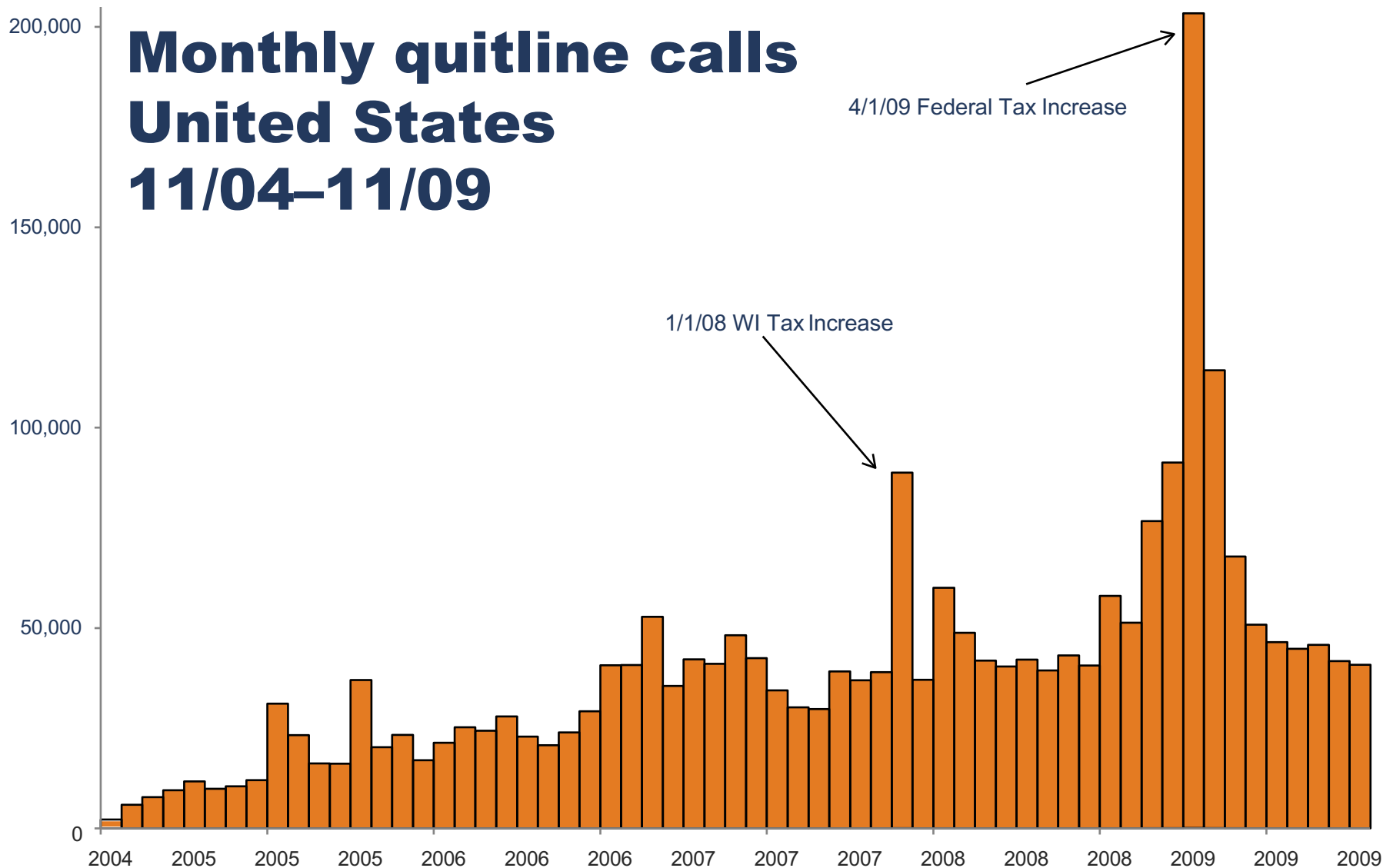 - Particularly among young, less educated, and low-income populations

ECONOMICS OF WATERPIPE TOBACCO SMOKING

Monthly quitline calls
United States
11/04–11/09

4/1/09 Federal Tax Increase

1/1/08 WI Tax Increase

www.tobacconomics.org

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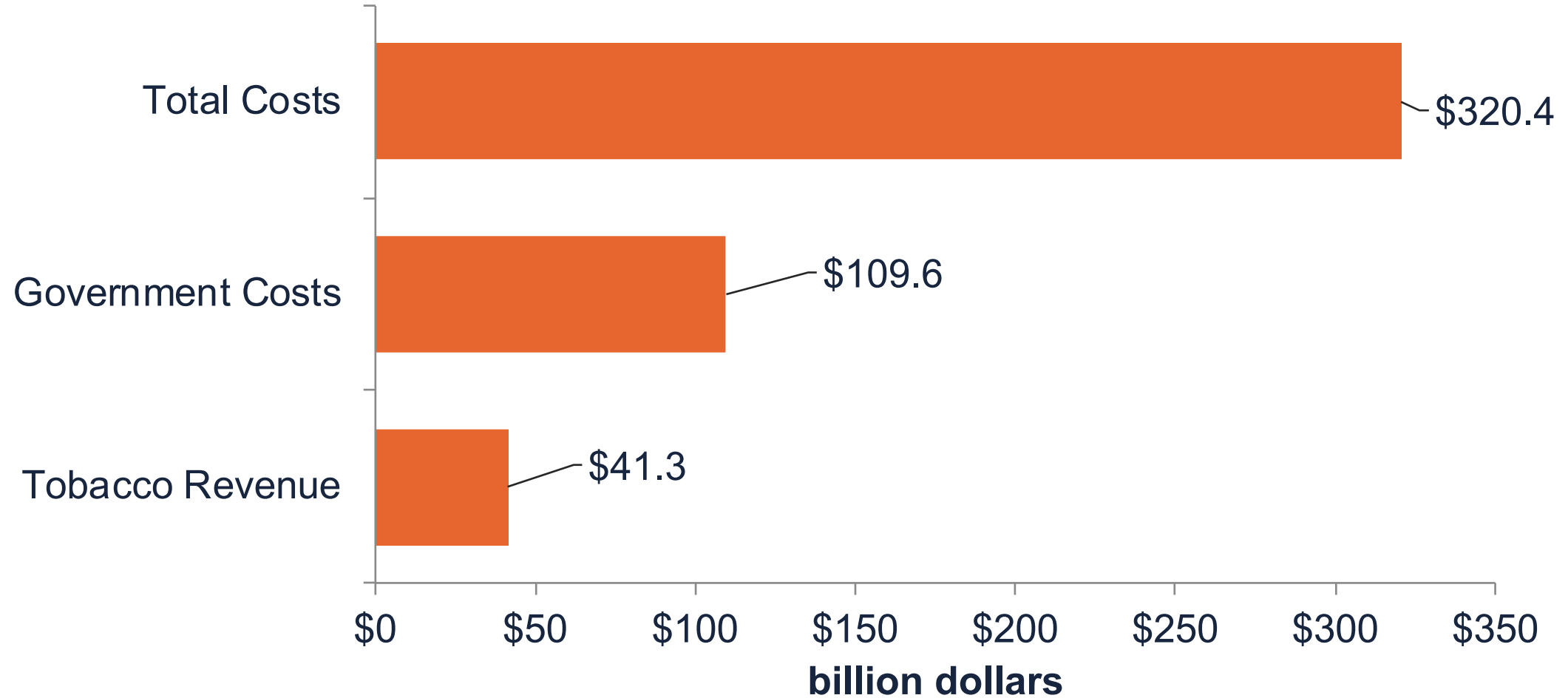
Why tax tobacco?

Cover the external costs of tobacco

- Less frequently used motive

- Accounts for costs resulting from tobacco use imposed on non-users

  - Increased health care costs, lost productivity from diseases/death caused by exposure to tobacco smoke
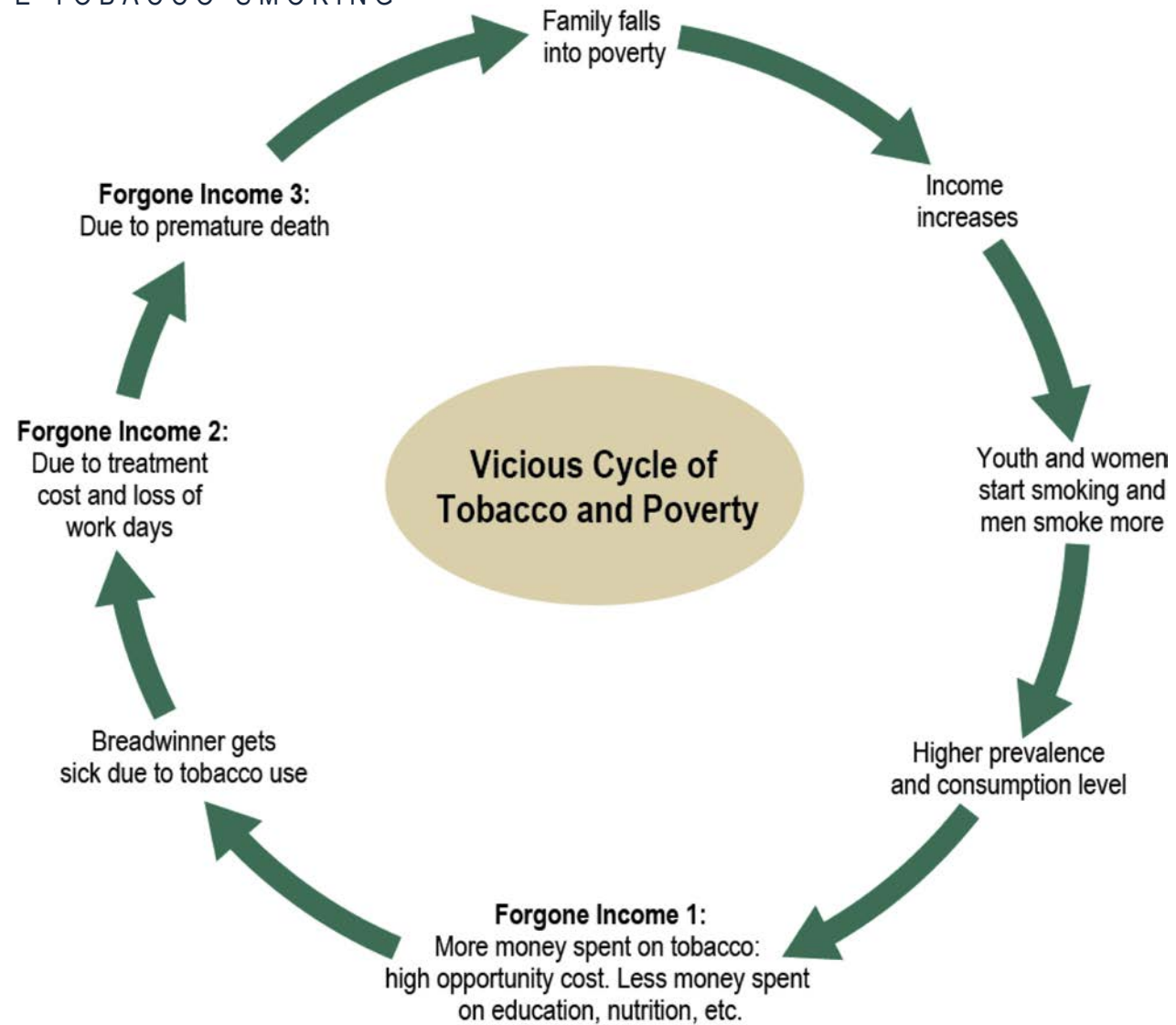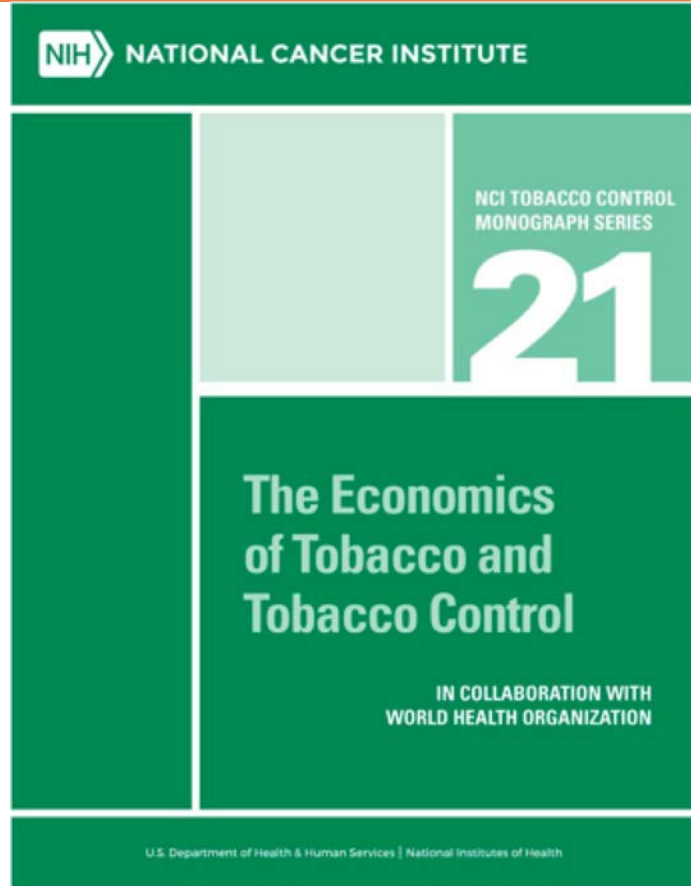
Economic costs of tobacco use

2014 US Surgeon General's Report; Tax Burden on Tobacco, 2014 via www.tobacconomics.org

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Tobacco and poverty

Vicious Cycle of Tobacco and Poverty

Family falls into poverty

Income increases

Youth and women start smoking and men smoke more

Higher prevalence and consumption level

Forgone Income 1: More money spent on tobacco: high opportunity cost. Less money spent on education, nutrition, etc.

Breadwinner gets sick due to tobacco use

Forgone Income 2: Due to treatment cost and loss of work days

Forgone Income 3: Due to premature death

U.S. National Cancer Institute and World Health Organization. The Economics of Tobacco and Tobacco Control. National Cancer Institute Tobacco Control Monograph 21; 2016.

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Effectiveness of tobacco taxes

U.S. National Cancer Institute and World Health Organization. The Economics of Tobacco and Tobacco Control. National Cancer Institute Tobacco Control Monograph 21; 2016.

A substantial body of research, which has accumulated over many decades and from many countries, shows that **significantly increasing the excise tax and price of tobacco products is the single most consistently effective tool for reducing tobacco use**.

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Types of tobacco taxes

Types of tobacco taxes

Variety of tobacco taxes
- Sales taxes/value added taxes
- Customs duties on tobacco leaf/products imports and/or exports
- Implicit taxes when government monopolizes production/distribution

- Excise taxes
  - Excise taxes are of most interest given specificity to tobacco products
  - Specific (per unit, volume, weight) and *ad valorem* (based on price) excises

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# Excise tax structures

Specific (weight- or volume-based)

- Reduces price gaps
- Deters tax avoidance
- Easy to administer
- Stabilizes tax revenue

- Inflation erosion

Ad valorem (value-based)

- Adjusts with inflation
- Imposes higher taxes on higher-priced products

- Leads to greater price gap
- Incentivizes tax avoidance
- May be eroded by discounts
- Tax revenue may drop with dropping prices

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ECONOMICS OF WATERPIPE TOBACCO SMOKING

Excise tax structure: Specific and mixed relying more on the specific component tend to lead to higher prices
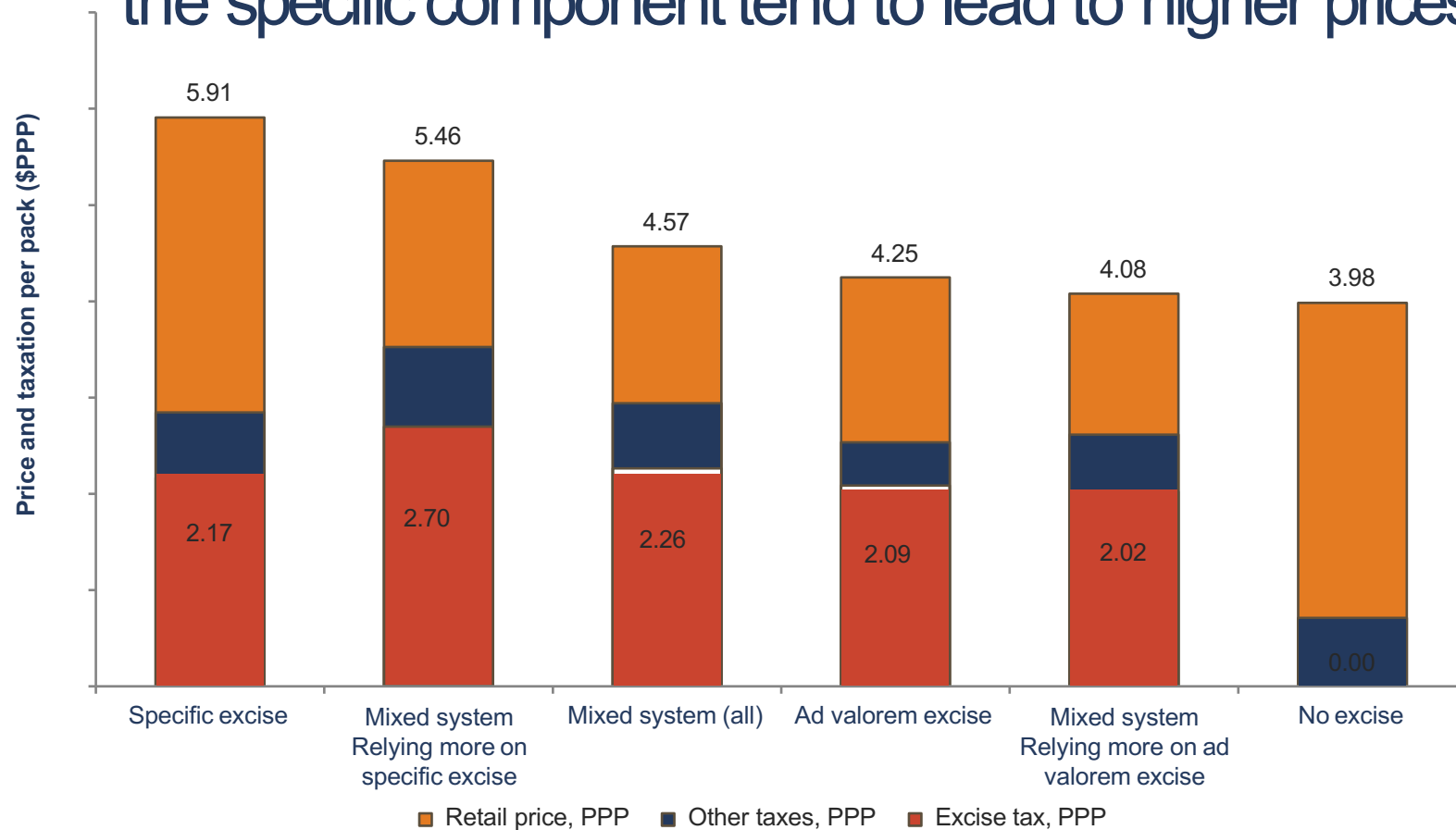
Source: WHO 2017 GTCR data via www.tobacconomics.org
Notes: Averages weighted by WHO estimates of number of current cigarette smokers ages 15+ in each country in 2015; Prices are expressed in Purchasing Power Parity (PPP) adjusted dollars to account for differences in the purchasing power across countries. Based on prices as of July 2016 for 53 high-income, 100 middle-income and 27 low-income countries with data on prices of most sold brand, excise and other taxes, and PPP conversion factors.

Guidelines for implementation of Article 6 of the WHO Framework Convention on Tobacco Control

Sovereign right to establish taxation policy

- "... Should take into account ... both price elasticity and income elasticity of demand, as well as inflation, to make tobacco products less affordable over time in **order to reduce consumption and prevalence**.... having regular (automatic) adjustment processes or procedures for periodic revaluation of tobacco tax levels.

- Parties should implement the **simplest and most efficient system** that meets their health and fiscal needs, with the fewest exceptions and taking into account their national circumstances. From a budgetary as well as a health point of view...implement **specific or mixed excise systems with a minimum specific tax floor**, as these systems have considerable advantages over purely ad valorem systems.

Similar tax burden for different tobacco products

... to avoid negative consequences, such as **product substitution** or an increase in **illicit trade**, all tobacco products should be **taxed in a comparable way, with a similar tax burden**, and should be accompanied by strong policies and measures against illicit trade in tobacco products

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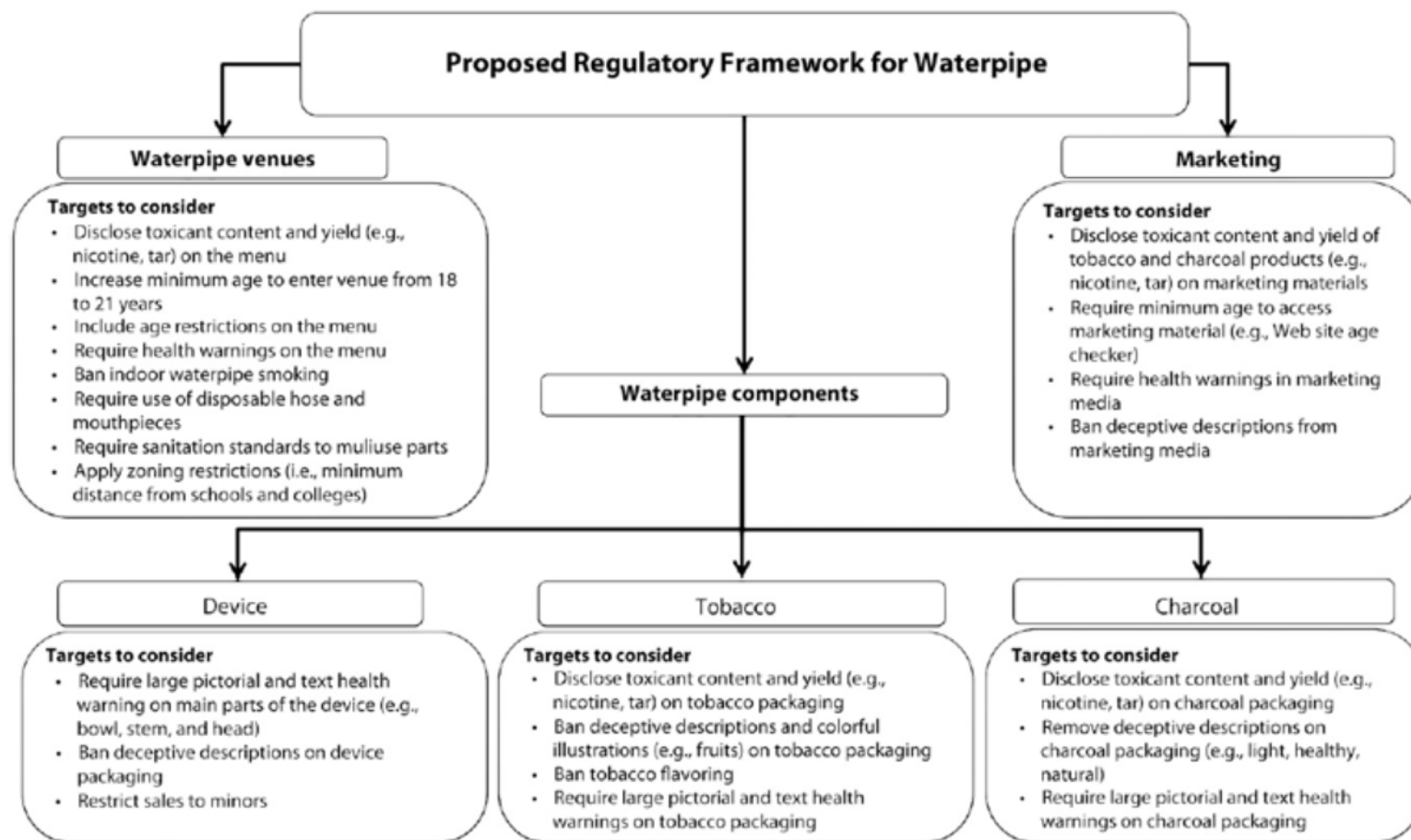**UNIVERSITY** *of* **FLORIDA**

Economics of waterpipe smoking

Price elasticity of demand of non-cigarette products

"... There is sufficient evidence in support of effectiveness of price increases to reduce consumption of non-cigarette tobacco products as it is for cigarettes. Positive substitutability between cigarette and non-cigarette tobacco products suggest that tax and price increases need to be simultaneous and comparable across all tobacco products."

Source: Jawad M, *et al. Tob Control* 2018.

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Regulatory context of waterpipe smoking

Salloum R., *et al. Am J Public Health,* 2016

Patterns and prices of waterpipe smoking

	Egypt (*n* = 728)	Jordan (*n* = 790)	Palestine (*n* = 772)	Total (*n* = 2,290)
Place of most recent waterpipe session, n (%)				
Commercial establishment (café/restaurant)	539 (74.0)	340 (43.0)	346 (44.8)	1,225 (53.5)
At home/someone else's home/university accommodations	72 (9.9)	406 (51.4)	378 (49.0)	856 (37.3)
Missing/unknown	117 (16.1)	44 (5.6)	48 (6.2)	209 (9.1)
Prices				
Currency	Pound	Dinar	Shekel	–
Waterpipe smoking session price	*N* = 505	*N* = 628	*N* = 530	*N* = 1,663
Price in local currency				
Mean (SD)	17.76 (7.32)	5.71 (4.07)	22.67 (14.64)	–
Median ± IQR	15.00 ± 9.00	5.00 ± 4.00	20.00 ± 10.00	–
Price in USD				
Mean (SD)	0.99 (0.41)	8.07 (5.75)	6.05 (3.91)	5.28 (5.11)
Median ± IQR	0.84 (0.50)	7.06 (5.65)	5.33 (2.67)	4.24 (5.73)
Waterpipe tobacco packet price	*N* = 200	*N* = 503	*N* = 393	*N* = 1,096
Price in local currency				
Mean (SD)	15.30 (9.43)	3.51 (3.62)	20.81 (9.25)	–
Median ± IQR	12.00 ± 11.00	2.00 ± 3.00	20.00 ± 10.00	–
Price in USD				
Mean (SD)	0.86 (0.53)	4.96 (5.11)	5.55 (2.47)	4.42 (4.14)
Median ± IQR	0.67 (0.61)	2.82 (4.24)	5.33 (2.67)	2.82 (5.07)

Salloum R., *et al. Subst Use Misuse,* 2018

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Discrete choice experiment of waterpipe smoking

Salloum R., *et al. BMJ Open,* 2015

Scaled estimates of waterpipe smoking preferences

Salloum R., *et al. BMJ Open,* 2015

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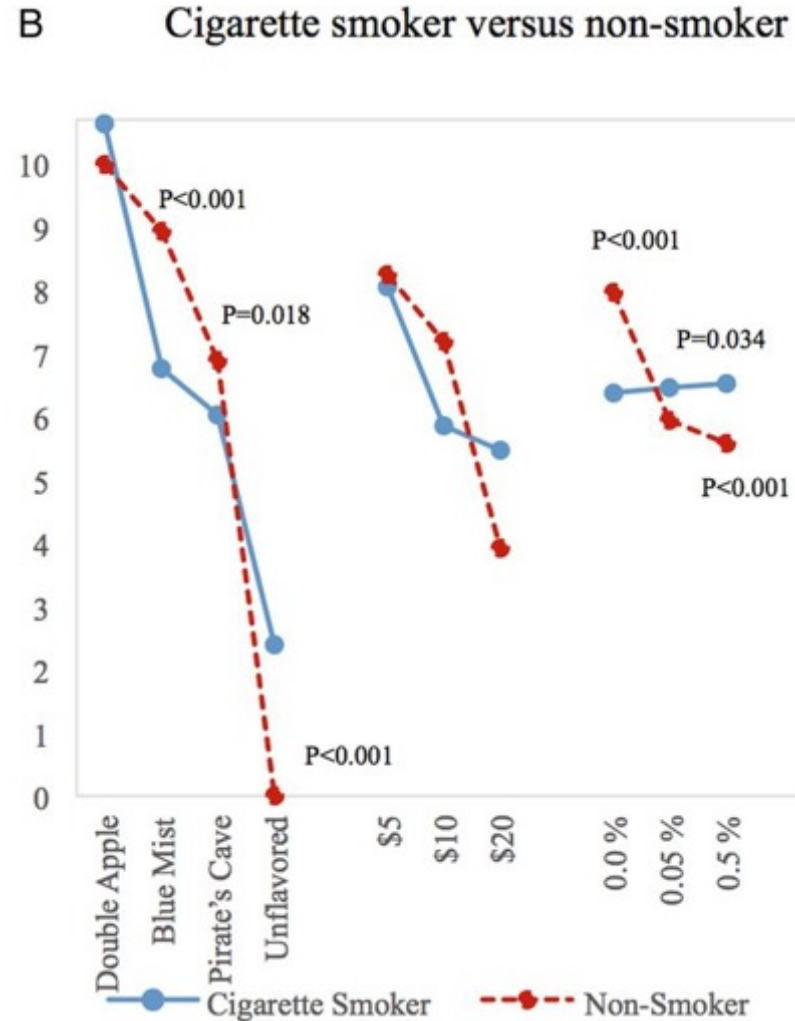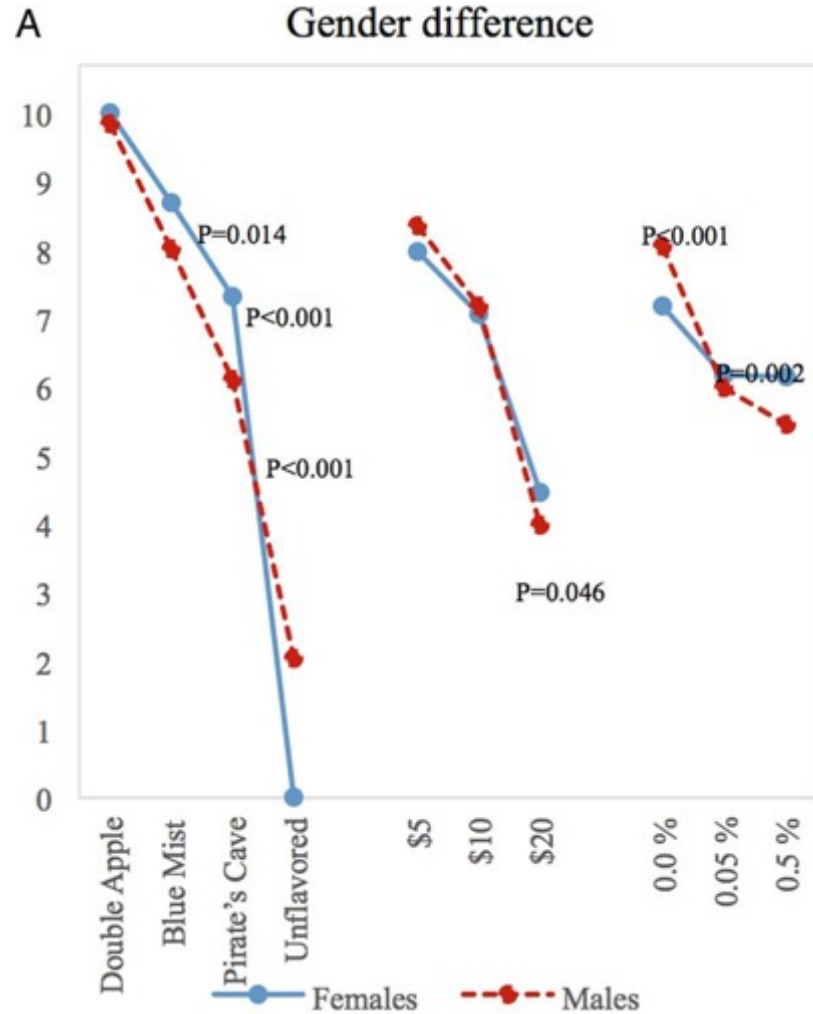
Individual-level determinants of waterpipe demand

	Overall (n = 1859), Coef. (SE)	Gender		Current cigarette smoking		Country			
		Male (n = 1070), Coef. (SE)	Female (n = 768), Coef. (SE)	Smoker (n = 630), Coef. (SE)	Non-Smoker (n = 1173), Coef. (SE)	Jordan (n = 790), Coef. (SE)	Oman (n = 117), Coef. (SE)	Palestine (n = 772), Coef. (SE)	UAE (n = 180), Coef. (SE)
Within subjects (attributes)									
Flavors									
Tobacco (none)	−1.440 (0.039)*	−1.286 (0.049)*	−1.625 (0.064)*	−1.438 (0.067)*	−1.438 (0.047)*	−1.448 (0.086)*	−0.464 (0.130)*	−2.719 (0.139)*	−1.974 (0.178)*
Double Apple	1.088 (0.015)*	1.326 (0.019)*	0.692 (0.027)*	1.229 (0.026)*	1.016 (0.019)*	1.053 (0.053)*	1.269 (0.083)*	1.470 (0.033)*	0.562 (0.064)*
Grape	−0.330 (0.025)*	−0.288 (0.032)*	−0.348 (0.039)*	−0.210 (0.041)*	−0.391 (0.031)*	−0.348 (0.046)*	0.283 (0.090)*	−0.508 (0.052)*	−0.063 (0.078)
Berry	−0.145 (0.023)*	−0.254 (0.032)*	0.016 (0.034)*	−0.307 (0.043)*	−0.072 (0.028)*	−0.032 (0.051)	−0.584 (0.123)*	−0.213 (0.048)*	−0.505 (0.094)*
Watermelon	0.546 (0.018)*	0.382 (0.026)*	0.771 (0.026)*	0.534 (0.032)*	0.557 (0.022)*	0.152 (0.051)*	0.272 (0.091)*	0.745 (0.037)*	1.213 (0.055)*
Lemon Mint	0.281 (0.020)*	0.120 (0.028)*	0.495 (0.029)*	0.192 (0.036)*	0.328 (0.024)*	0.623 (0.037)*	−0.846 (0.130)*	0.635 (0.038)*	0.245 (0.071)*
Nicotine content									
0.0%	0.167 (0.012)*	0.139 (0.016)*	0.204 (0.018)*	0.042 (0.021)*	0.228 (0.015)*	0.168 (0.022)*	0.138 (0.061)*	0.214 (0.024)*	0.137 (0.041)*
0.05%	−0.064 (0.013)*	−0.060 (0.017)*	−0.068 (0.019)*	−0.046 (0.022)*	−0.070 (0.016)*	−0.091 (0.020)*	−0.003 (0.055)	−0.074 (0.023)*	−0.030 (0.042)
0.5%	−0.103 (0.013)*	−0.079 (0.017)*	−0.136 (0.020)*	0.005 (0.022)	−0.158 (0.016)*	−0.078 (0.022)*	−0.140 (0.056)*	−0.139 (0.024)*	−0.107 (0.043)*
Price									
Low (vs. high)	0.171 (0.009)*	0.170 (0.012)*	0.173 (0.013)*	0.196 (0.015)*	0.158 (0.010)*	0.229 (0.015)*	0.286 (0.064)*	0.126 (0.015)*	0.401 (0.189)*
Between subjects									
Health warning	−0.002 (0.022)	0.012 (0.029)	−0.001 (0.033)	−0.029 (0.038)	0.062 (0.026)	0.097 (0.030)	−0.172 (0.102)	−0.003 (0.031)	−0.092 (0.062)

Salloum R., *et al. Health Promot Int,* 2018

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Eastern Mediterranean Consortium on the Economics of Waterpipe Tobacco Smoking (ECON-WTS)

ECON-WTS Aims

Estimate the price elasticity of demand for waterpipe tobacco smoking and the cross-price elasticity between cigarettes and waterpipe

Model the impact of fiscal policies for waterpipe tobacco control on smoking rates, health care costs, and public revenues

Develop a toolkit to guide researchers conducting analyses on the economics of waterpipe tobacco smoking

Develop and evaluate strategies to disseminate knowledge about the economic impact of waterpipe tobacco control policies to government agencies, policymakers, and advocates

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Volumetric choice experiment

Think about the quantity of arguileh and cigarette products you would purchase, based on the following prices:

	Cigarettes premium	Cigarettes discount	Arguileh tobacco premium	Arguileh tobacco discount	Tombac Ajami	Arguileh home delivery	Arguileh café session premium	Arguileh café session discount
	Pack of 20	Pack of 20	250g pack	250g pack	250g pack	1 waterpipe	1 waterpipe	1 waterpipe
Price	2,500 L.L	1,250 L.L	30,250 L.L	34,500 L.L	20,000 L.L	11,250 L.L	33,750 L.L	25,250 LL
Quantity								

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Closing remarks

- The global health and economic burden of tobacco use is enormous and is increasingly borne by LMICs

- Failures in the markets for tobacco products provide an economic rationale for governments to intervene

- Tobacco control does not harm economies

- Tobacco control reduces the disproportionate burden that tobacco use imposes on the poor

U.S. National Cancer Institute and World Health Organization. The Economics of Tobacco and Tobacco Control. National Cancer Institute Tobacco Control Monograph 21; 2016.

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Discussion