tobacconomics

Economic Research Informing Tobacco Control Policy

Fiscal Policy & Health

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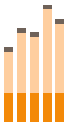
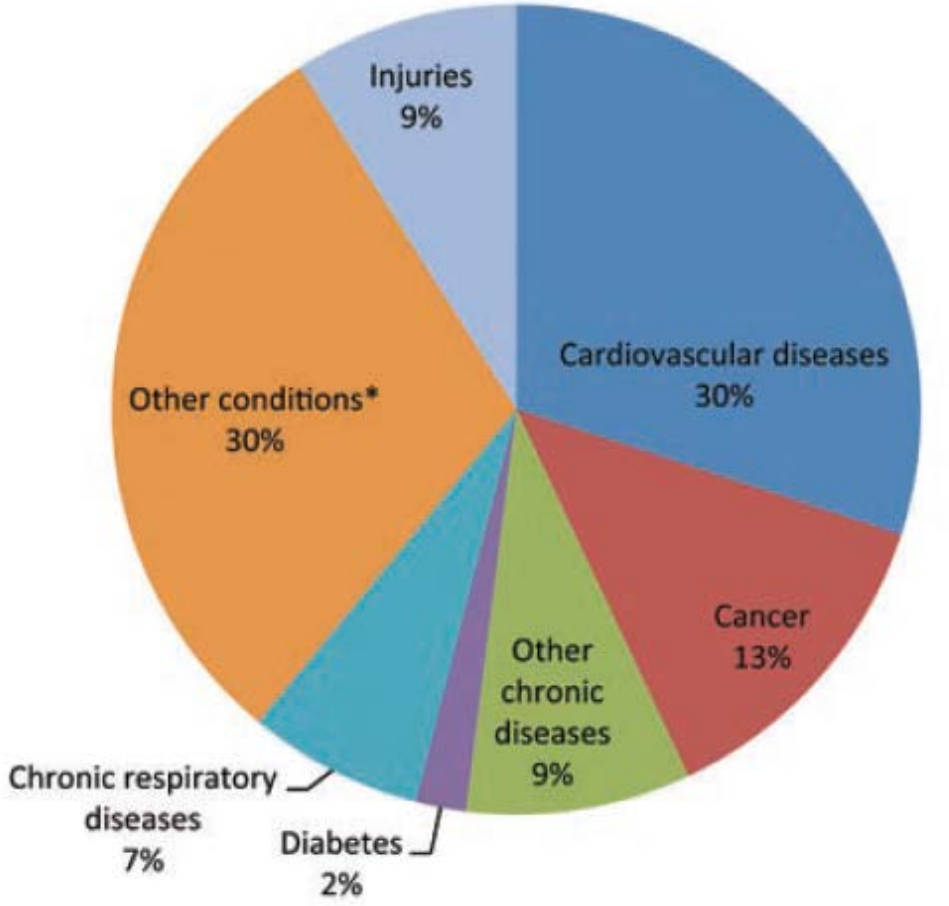
Overview

- Health & Economic Impact of Non-Communicable Diseases
- Impact of Tobacco, Alcohol, and Sugary Beverage Taxes on Use and Consequences of Use
- Myths and Facts About Economic Impact of Taxes



Health & Economic Impact of NCDs

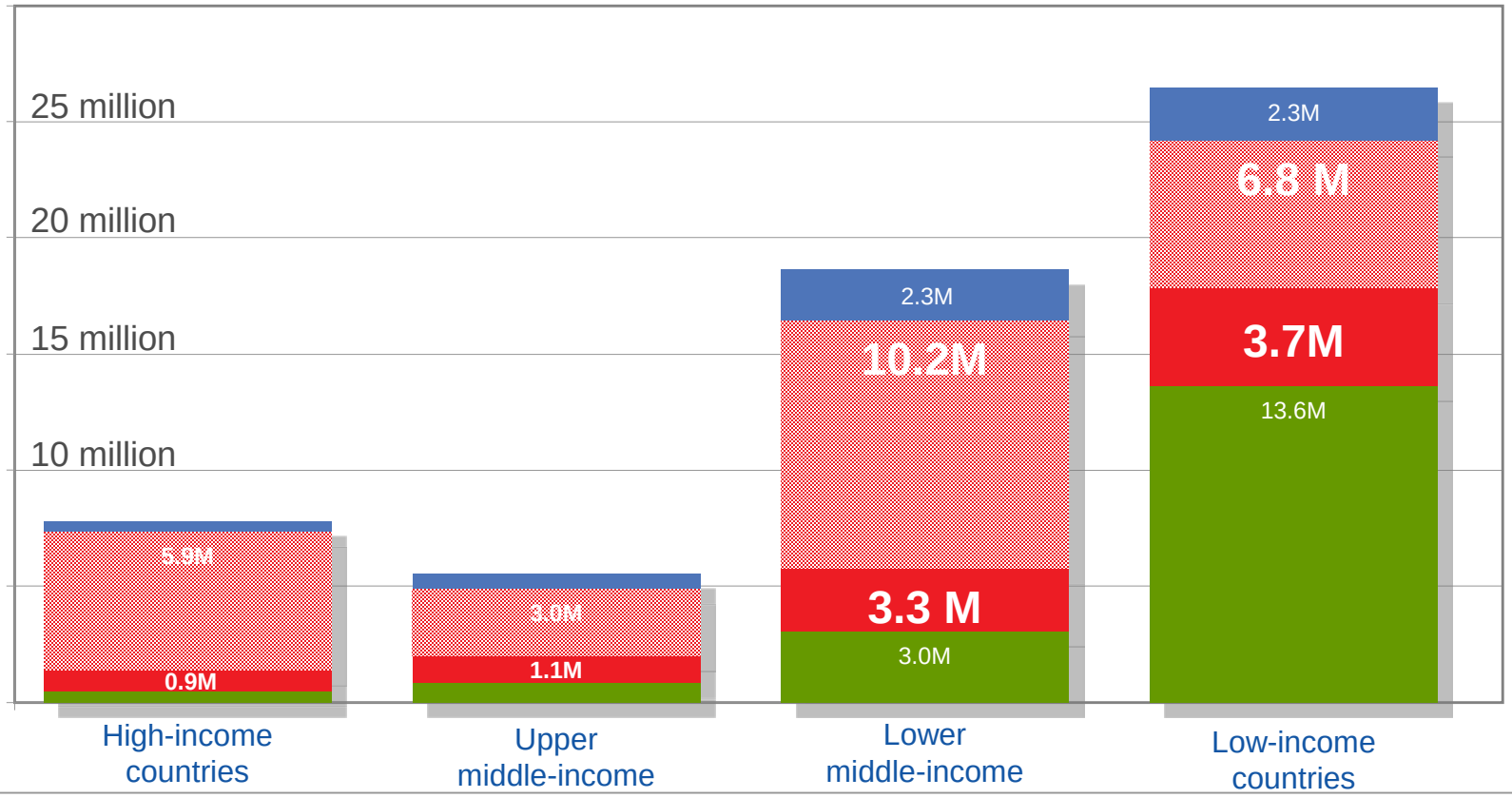
Leading Causes of Death Globally



Source: World Economic Forum & Harvard School of Public Health, 2011
Other Conditions include communicable diseases, maternal/perinatal conditions, and nutritional deficiencies

Total Deaths by Income

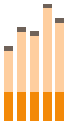
Sourc:



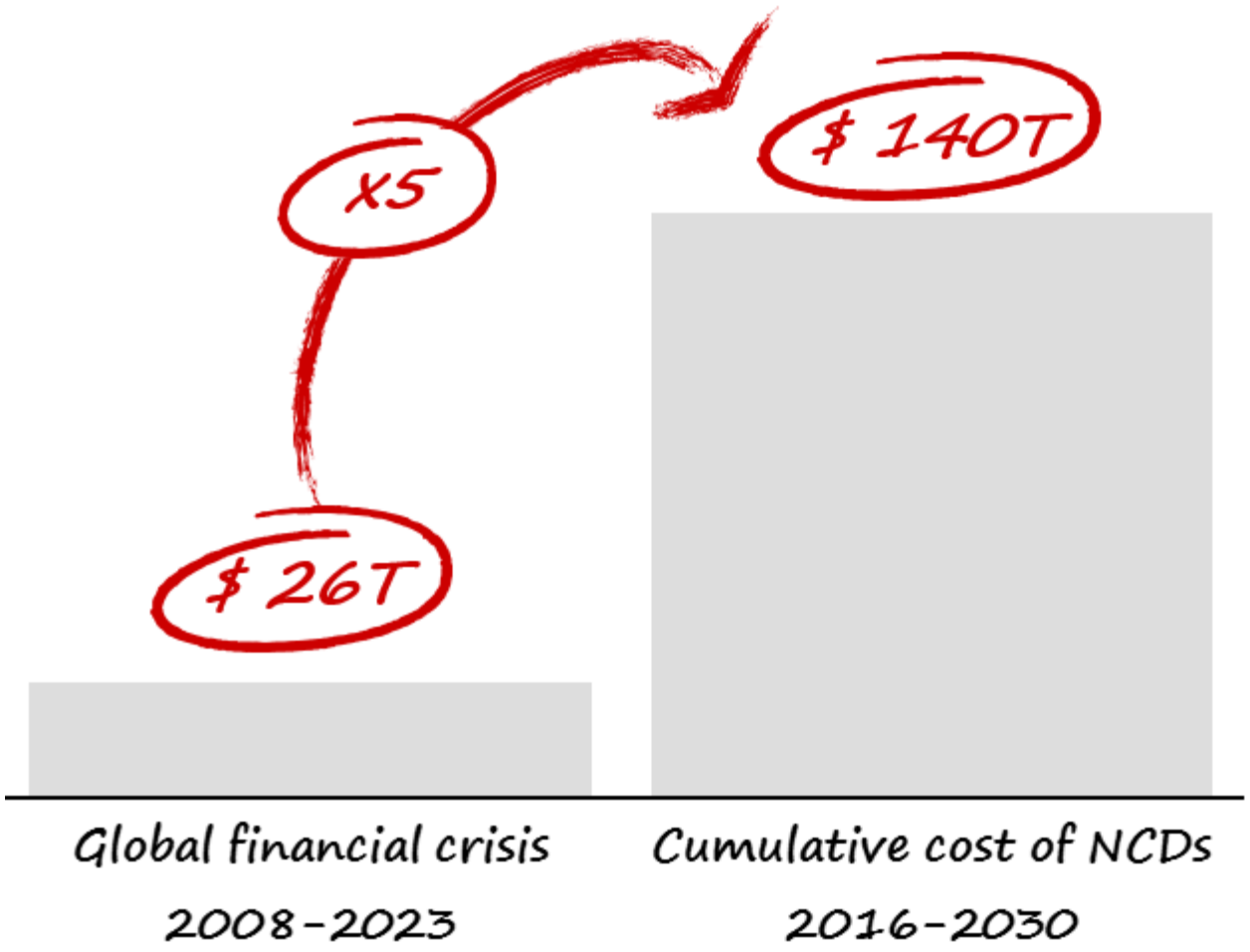
Source: WHO 2010

Economic Consequences of NCDs

- **Large economic burden from NCDs:**
  - Considerable, growing health care costs from treating NCDs
  - Significant lost productivity
  - Cause of poverty
  - Account for much of inequalities in health



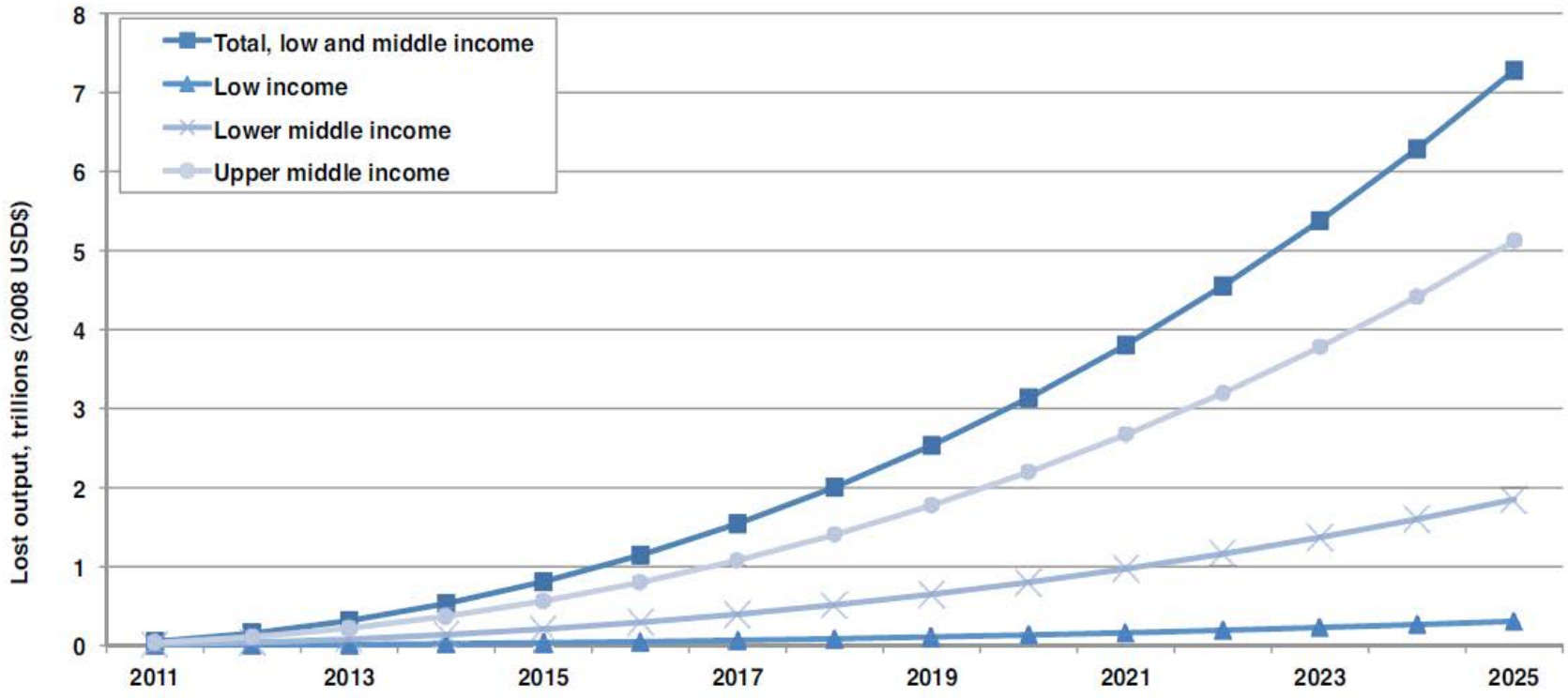
Significant Economic Costs



Source: World Economic Forum & Harvard School of Public Health

Growing Economic Costs

Figure 2: Cumulative NCD loss, beginning in 2011



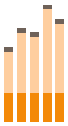
Source: Based on The Global Economic Burden of Non-communicable Diseases – Prepared by the World Economic Forum and the Harvard School of Public Health (2011)

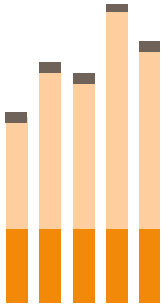
Source: World Economic Forum & Harvard School of Public Health, 2011

NCDs: Major Risk Factors

Major NCD	Major modifiable causative Risk Factors			
	Tobacco Use	Unhealthy Diet	Physical Inactivity	Harmful Use of Alcohol
Heart Disease & Stroke	√	√	√	√
Diabetes	√	√	√	√
Cancer	√	√	√	√
Chronic Lung Disease	√			

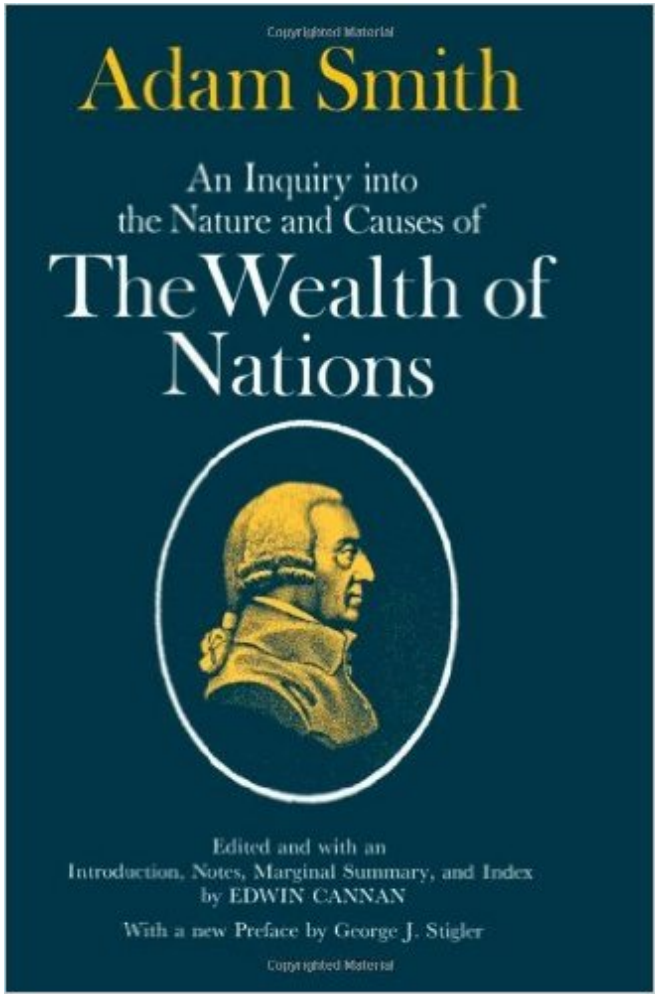
Source: WHO, 2010; Mackay, 2012





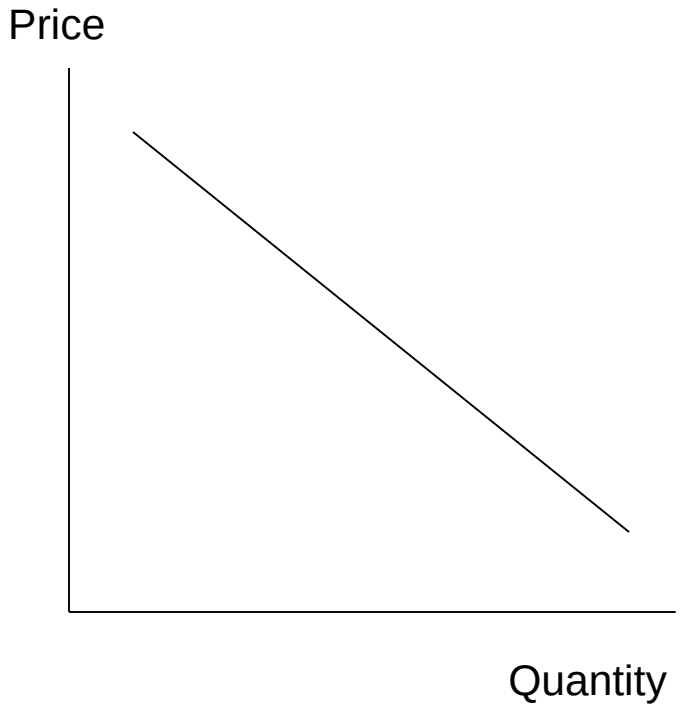
Impact of Taxes & Prices on Unhealthy Behaviors

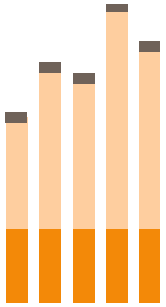
"***Sugar***, ***rum***, *and* ***tobacco***, *are commodities which are no where necessaries of life, which are become objects of almost universal consumption, and which are therefore* ***extremely proper subjects of taxation***.



Economics 101

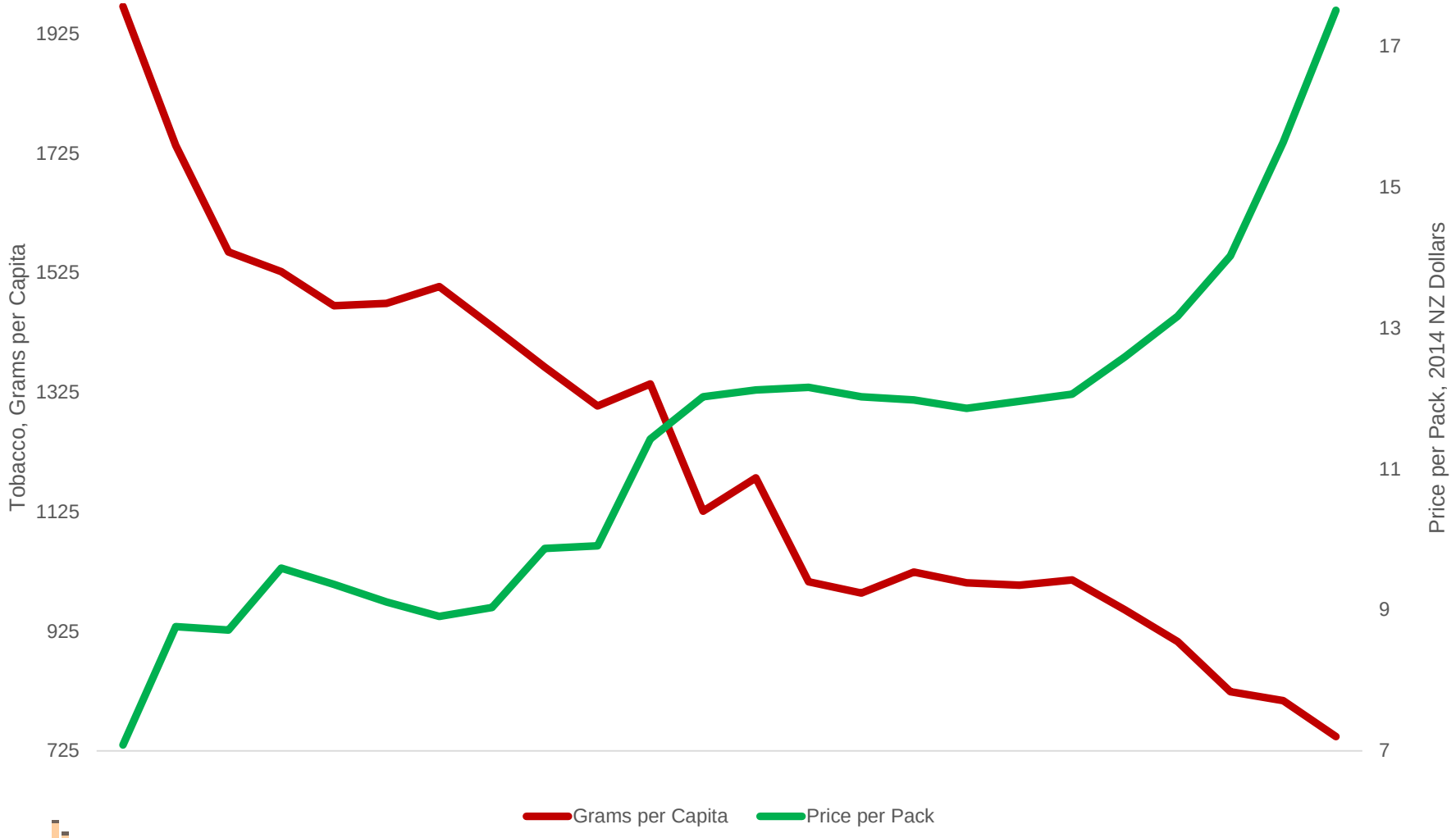
- **Law of the downward sloping demand curve:**
  - Increase in price leads to reduction in the quantity consumed and vice-versa
- **Price elasticity of demand**
  - Percentage reduction in quantity demanded resulting from one percent increase in price





Taxes, Prices & Tobacco Use

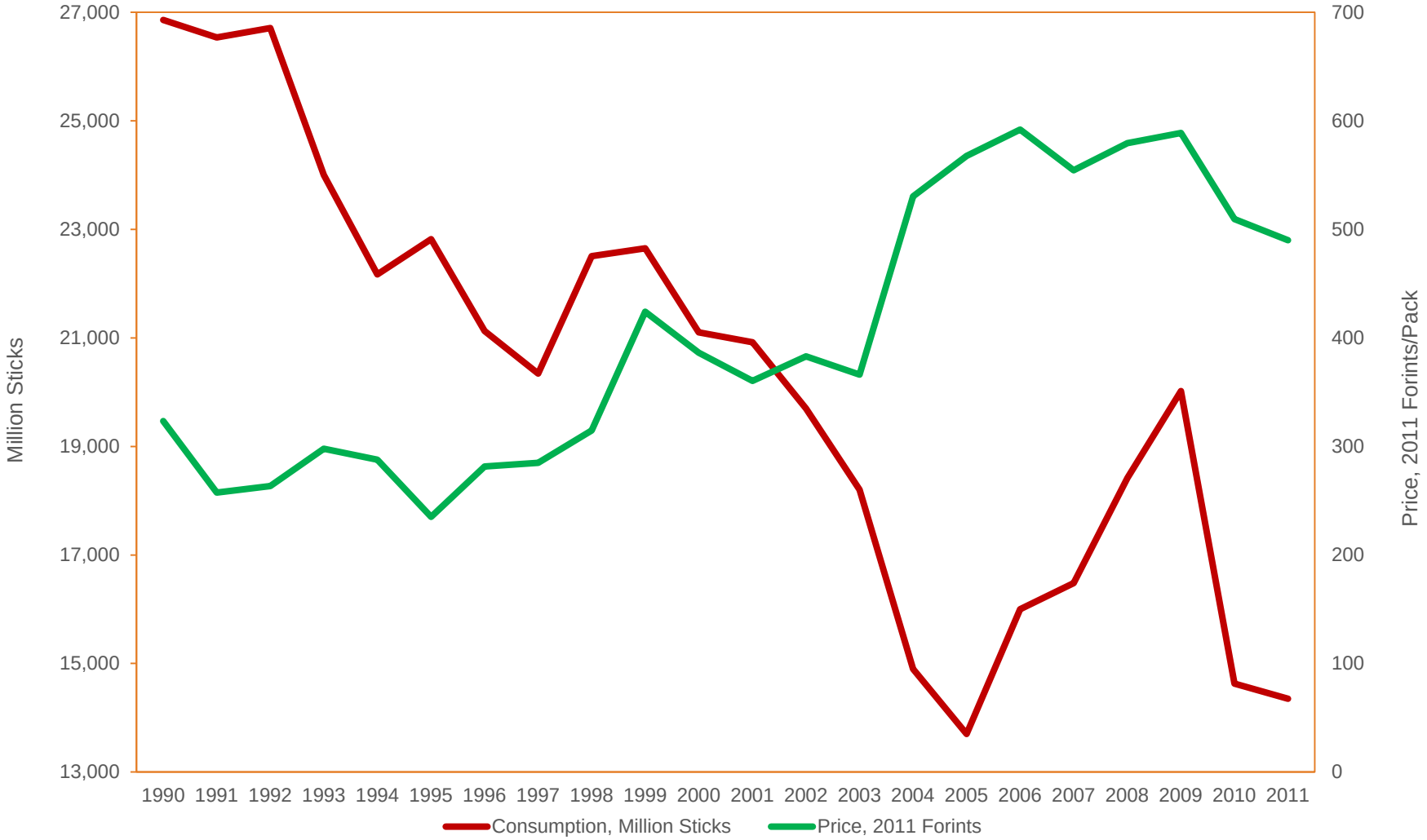
Tobacco Consumption and Cigarette Prices New Zealand, 1990-2013, Inflation Adjusted



Sources: EIU, World Bank and OECD

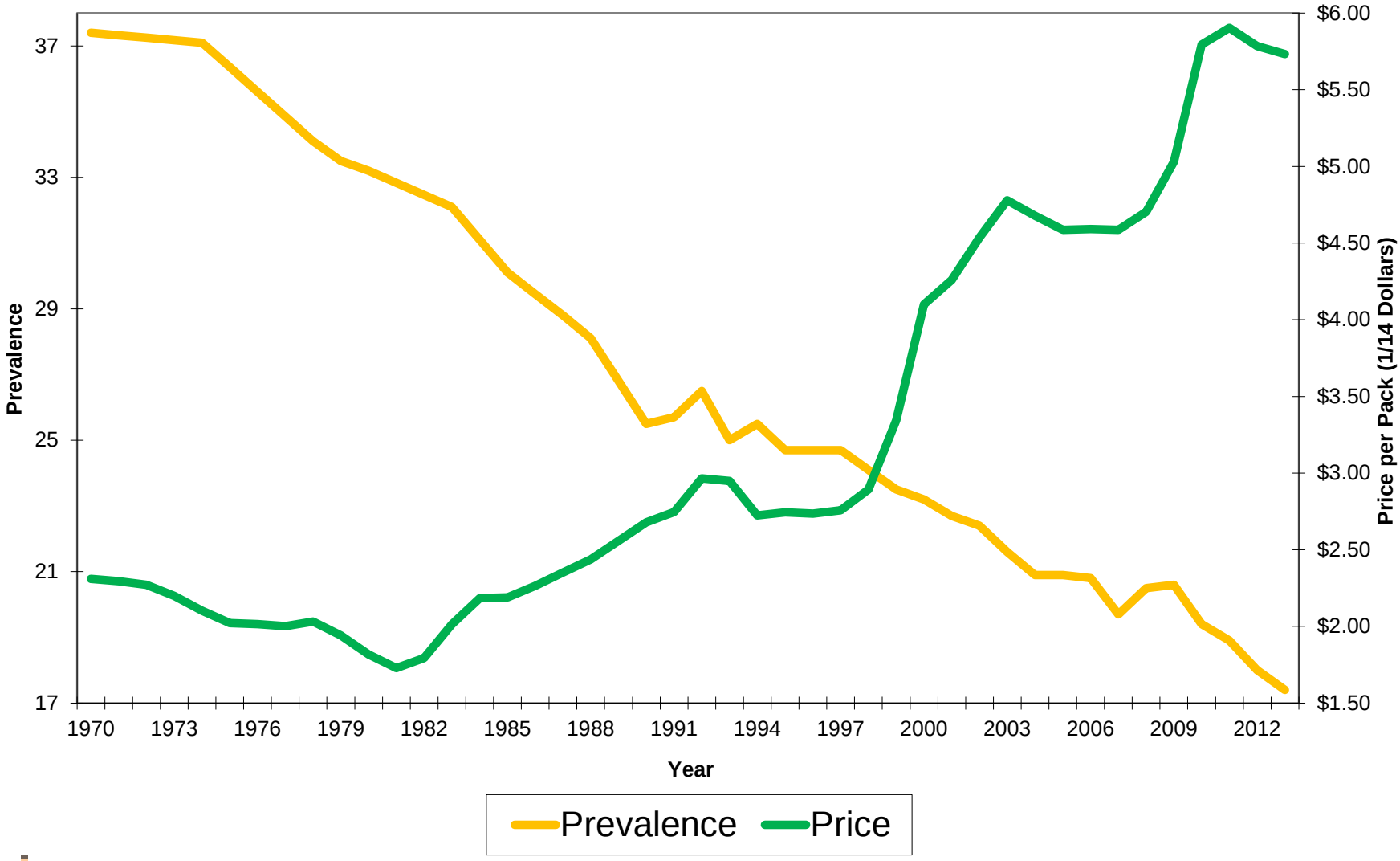
Cigarette Price & Consumption

Hungary, 1990-2011, Inflation Adjusted



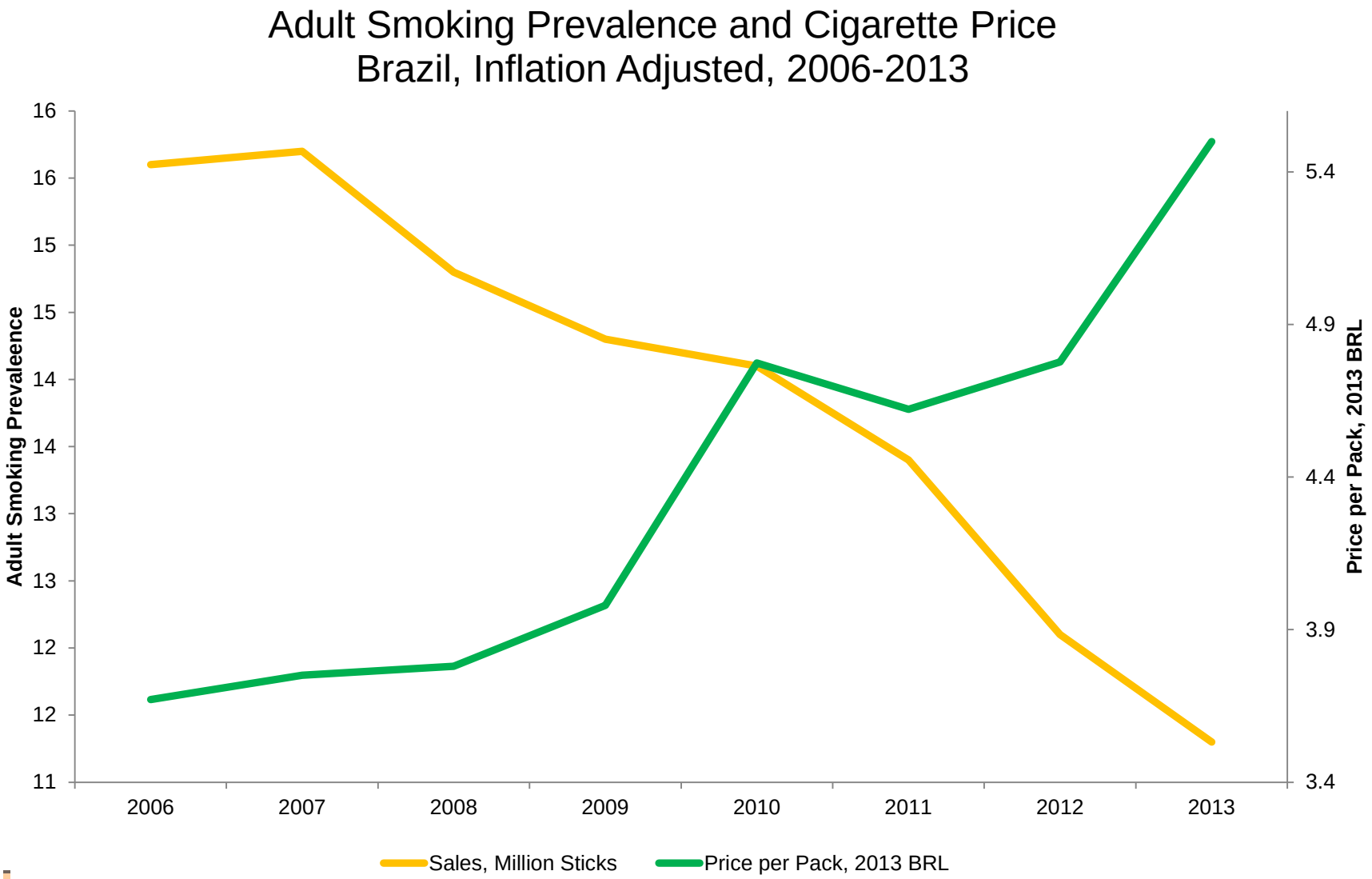
Sources: EIU, ERC, and World Bank

Cigarette Prices & Adult Smoking Prevalence United States, Inflation Adjusted 1970-2013



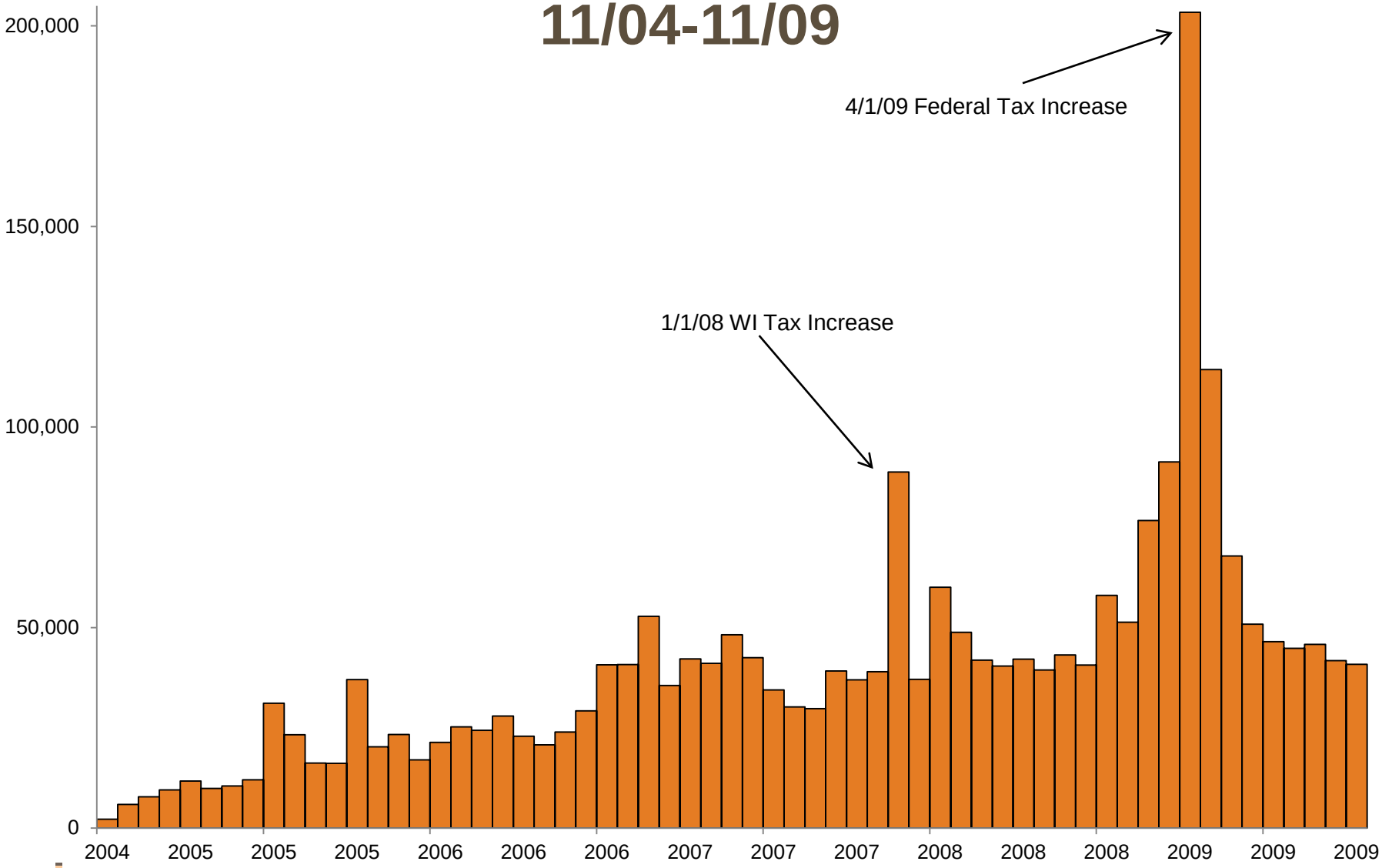
Sources: *Tax Burden on Tobacco,* BLS, NHIS, and author's calculations

Adult Prevalence & Price, Brazil

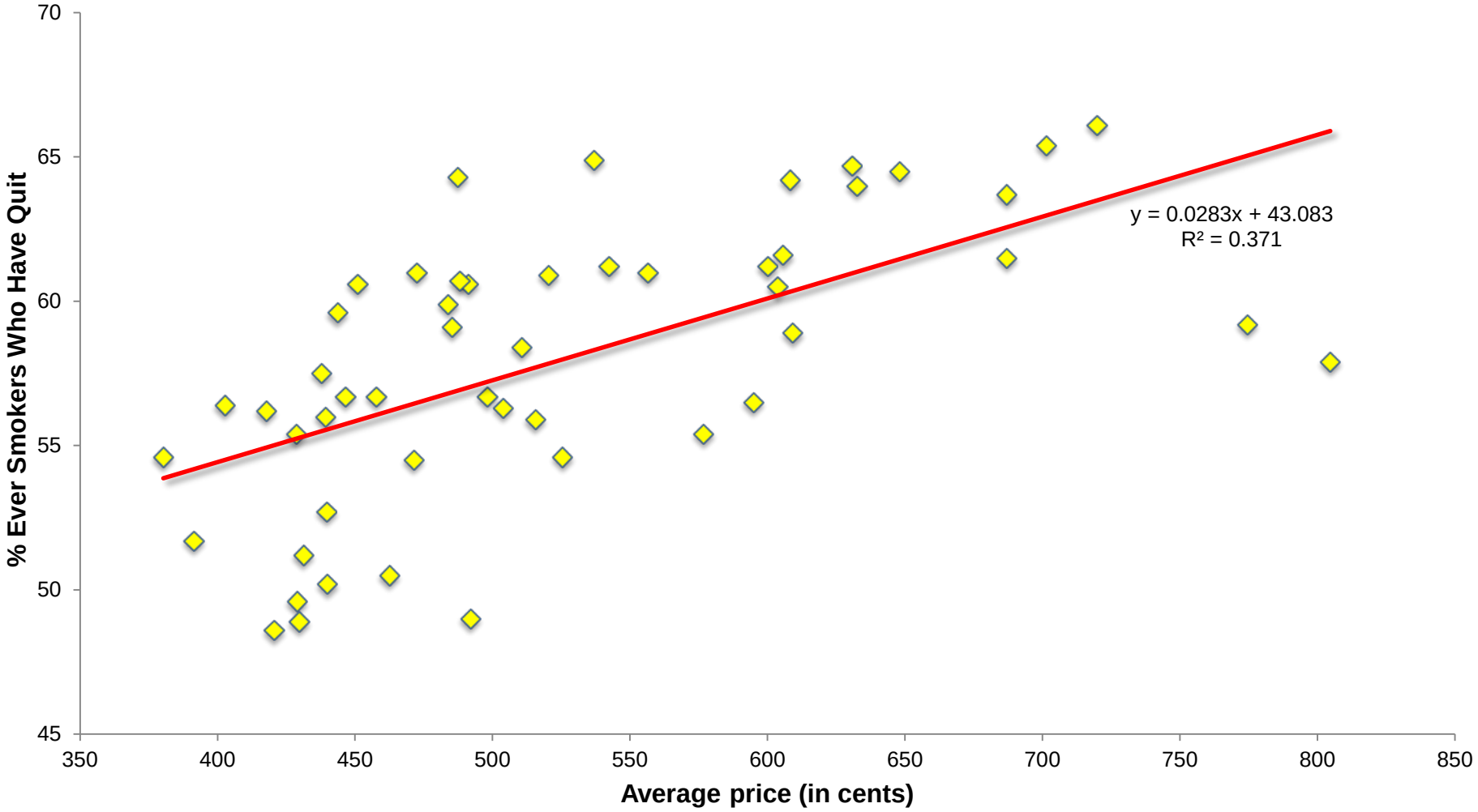


Sources: Ministry of Health, Brazil; EIU; World Bank

Monthly Quit Line Calls, United States 11/04-11/09

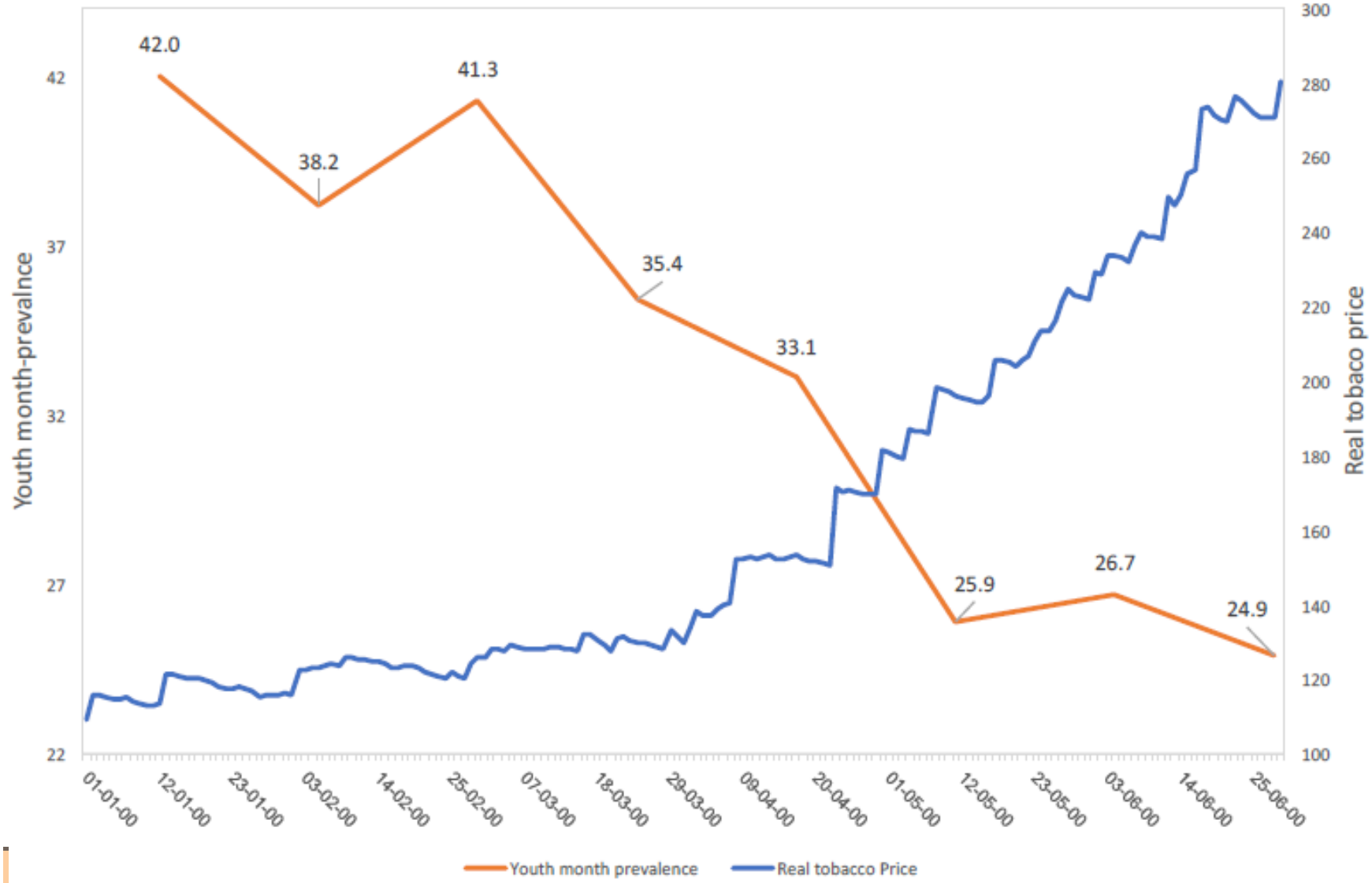


Cigarette Prices and Cessation
US States, 2009



Source: BRFSS, *Tax Burden on Tobacco,* 2010, and author's calculations

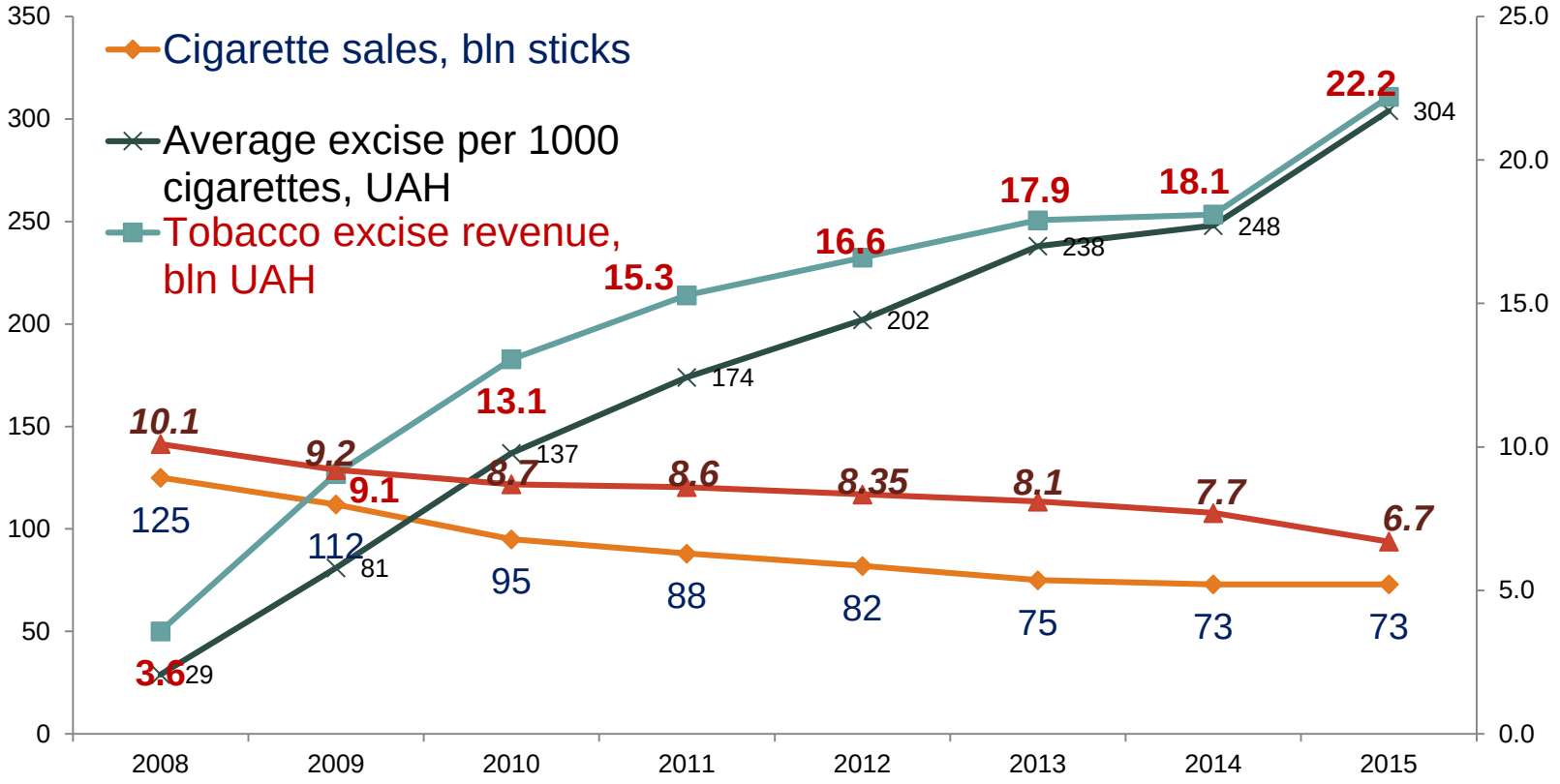
Cigarette Price & Youth Smoking Prevalence Chile, 2000-2015



Source: Paraje, 2017

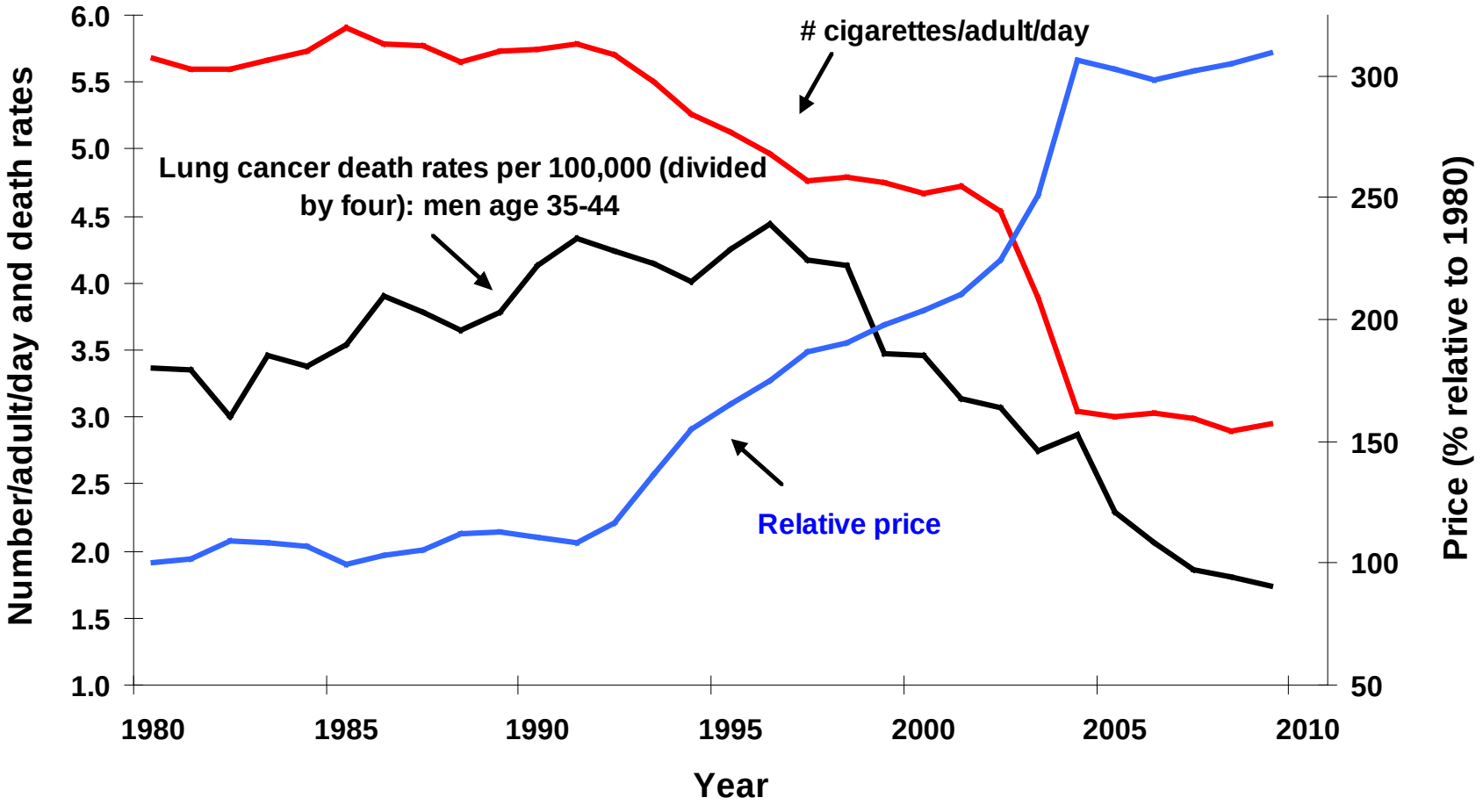
Tobacco Taxes in Ukraine, 2008-2015

Average excise rate for cigarettes – increased 10-fold
Annual tobacco excise revenue – increased 6-fold
Cigarette sales – decreased by 40%
Daily smoking prevalence - decreased by 28%

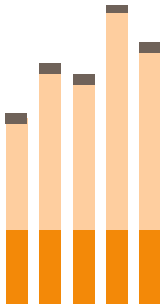


Source: Syvak & Krasovsky, 2017

France: smoking, tax and male lung cancer, 1980-2010



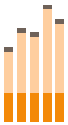
Source: *Jha, in progress*



Taxes, Prices & Excessive Drinking

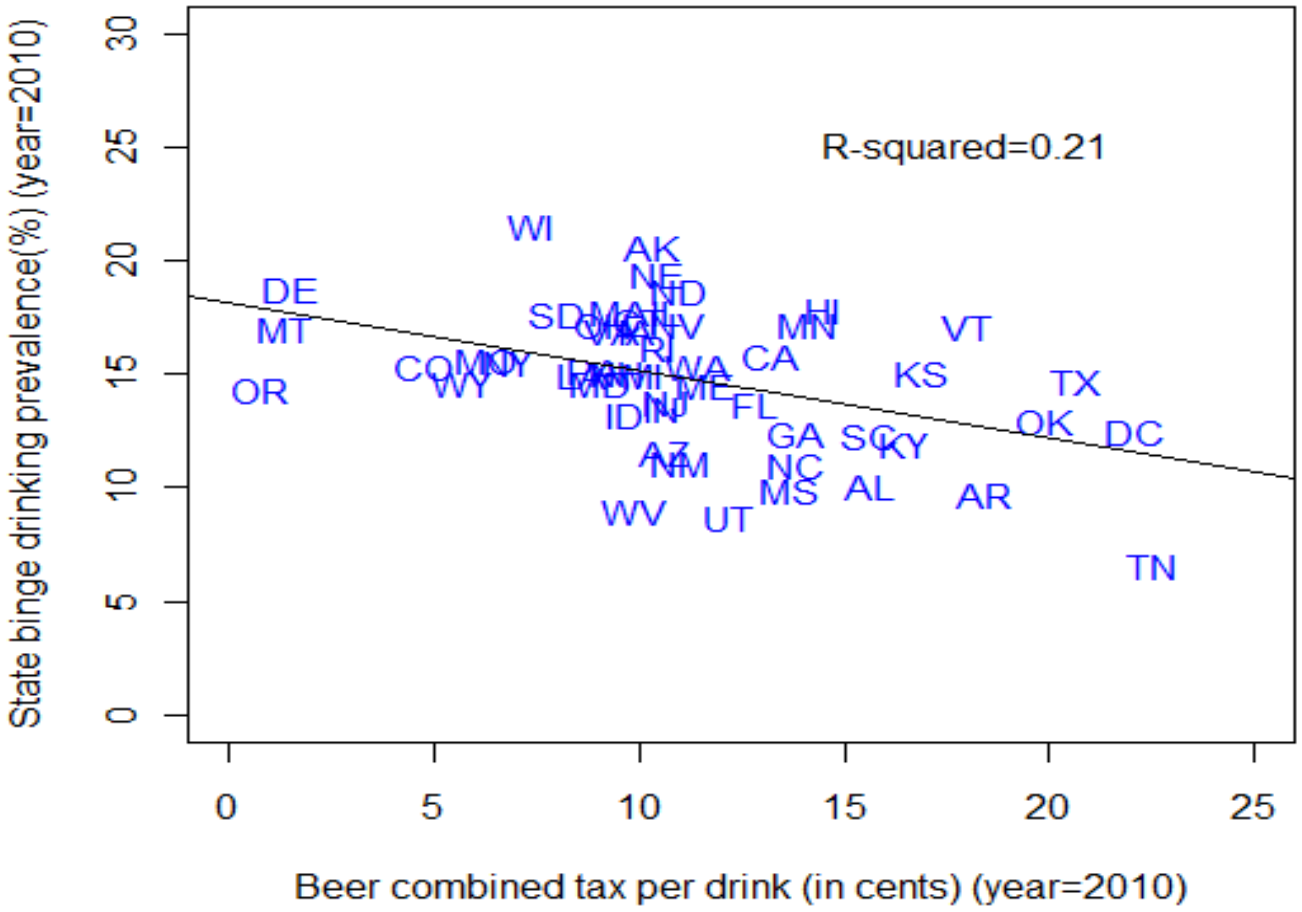
Alcohol Prices & Drinking

- **Similarly extensive econometric and other research shows that higher prices for alcoholic beverages significantly reduce drinking:**
  - 10 percent price increase would reduce:
    - Beer consumption by 1.7 to 4.6 percent
    - Wine consumption by 3.0 to 6.9 percent
    - Spirits consumption by 2.9 to 8.0 percent
    - Overall consumption by 4.4 percent
    - Heavy drinking by 2.8 percent
    - Generally larger effects on youth and young adults



Source: Wagenaar et al., 2009

Beer Tax and Binge Drinking Prevalence US States, 2010

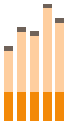


Source: Xuan et al., 2013

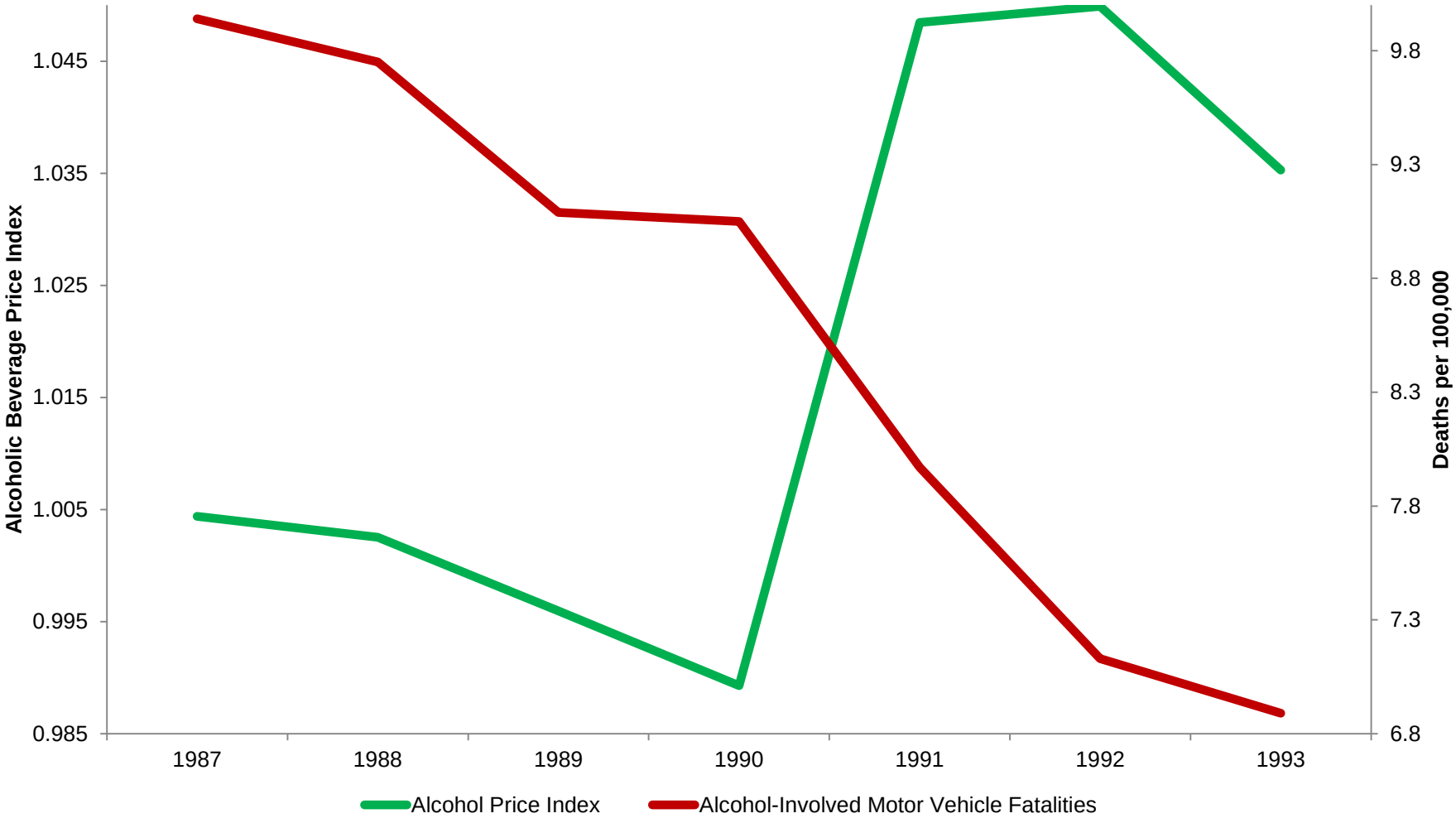
Alcohol Prices & Consequences

- **Extensive econometric and other research shows that higher prices for alcoholic beverages significantly reduce:**
  - Drinking and driving, traffic crashes, and motor-vehicle accident fatalities

Source: Xin & Chaloupka, 2012; Wagenaar et al., 2010

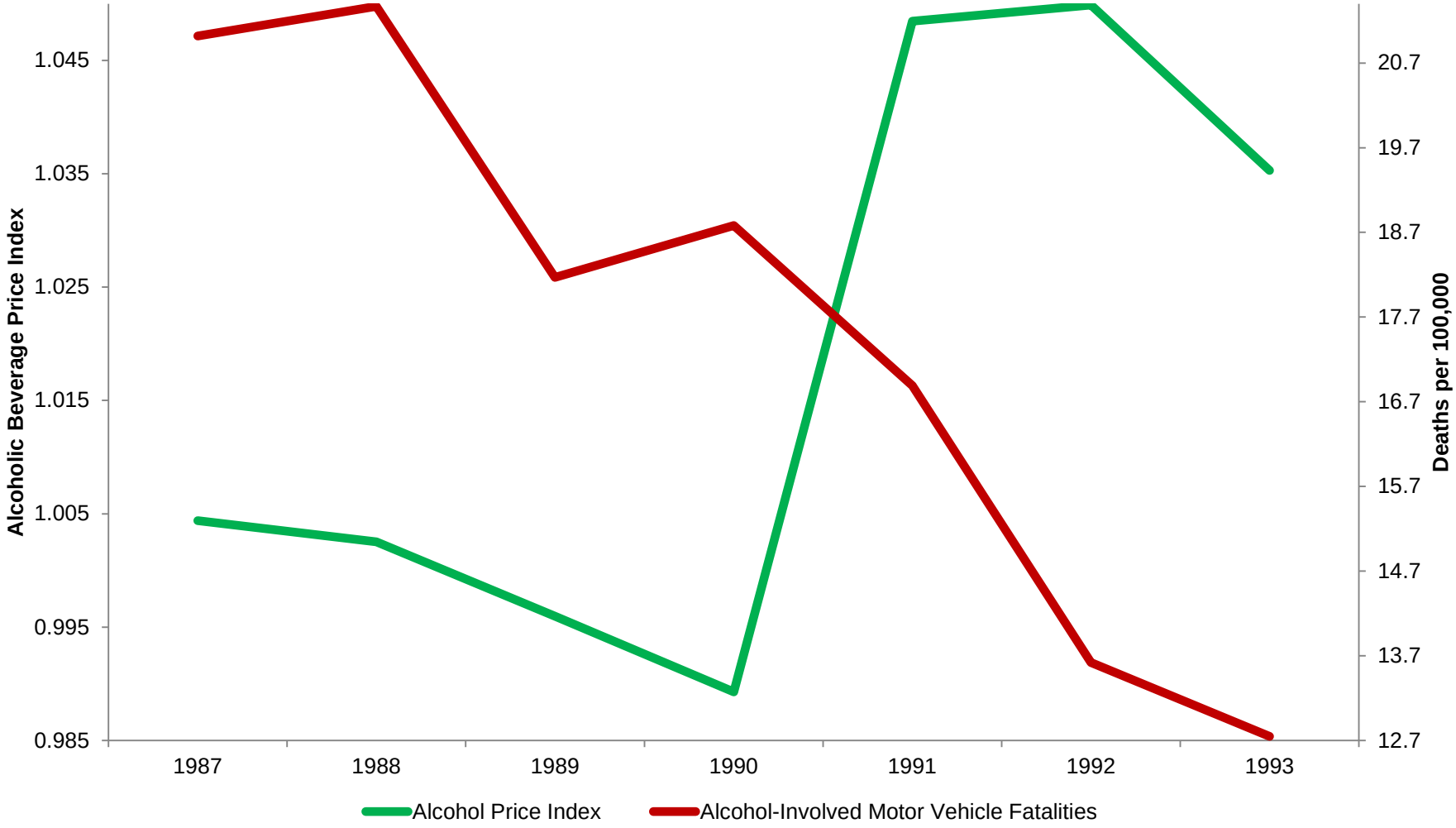


Alcohol Prices and Alcohol-Related Traffic Fatalities, US, All Ages, 1987-1993



Source: NHTSA, BLS, and author's calculations

Alcohol Prices and Alcohol-Related Traffic Fatalities, US, Ages 16-20, 1987-1993



Source: NHTSA, BLS, and author's calculations

Alcohol Prices & Consequences

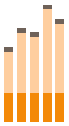
- **Econometric and other research shows that higher prices for alcoholic beverages significantly reduce:**
  - Deaths from liver cirrhosis, acute alcohol poisoning, alcohol-related cancers, cardiovascular diseases, and other health consequences of excessive drinking
  - Violence (including spouse abuse, child abuse, and suicide) and other crime
  - Other consequences of drinking, including work-place accidents, teenage pregnancy, and incidence of sexually transmitted diseases

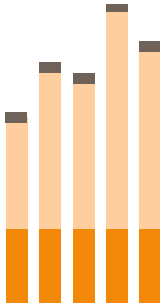
Source: Xin & Chaloupka, 20129; Wagenaar et al., 2010

Alcohol Prices & Consequences

- Recent systematic review concluded:
  - Doubling of alcohol taxes would reduce:
    - Alcohol-related mortality by 35%
    - Traffic crash deaths by 11%
    - Sexually transmitted disease by 6%
    - Violence by 2%
    - Crime by 1.4%

Source: Wagenaar et al., 2010





Taxes, Prices & Diet

Prices and Food & Beverage Consumption

Extensive economic research on the impact of food and beverage prices on consumption of various products; estimates suggest 10% own-price increase would reduce:

- Cereal consumption by 5.2%
- Soft drink consumption by 7.8%
- Sweets consumption by 3.5%
- Food away from home consumption by 8.1%

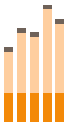
Source: Andreyeva, et al., 2010

Prices and Food & Beverage Consumption

Our more recent review finds similar evidence, with 10% increase in own-price leading to reductions in:

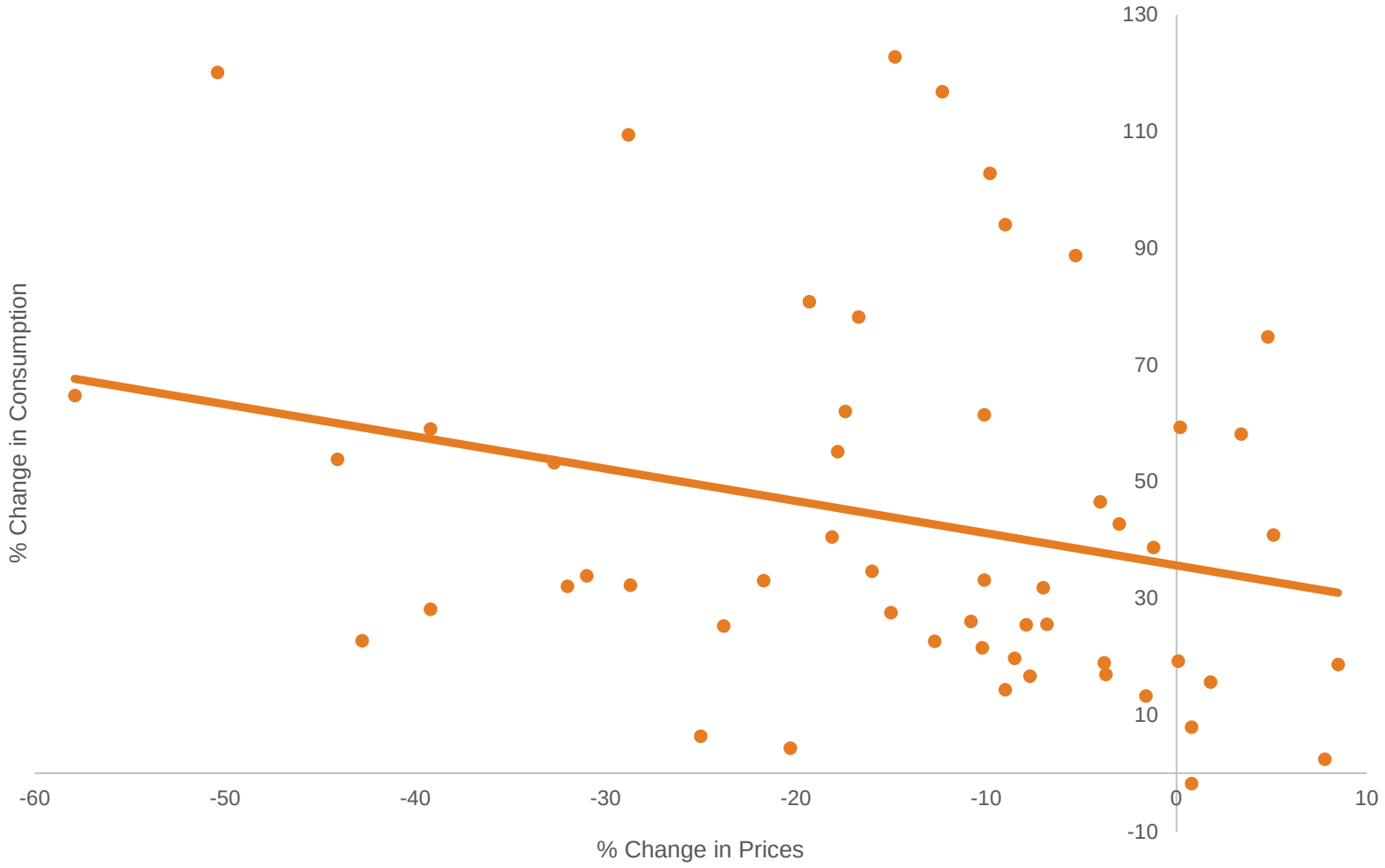
- Sugar-sweetened beverage consumption by 12.1%
- Fruit consumption by 4.9%
- Vegetable consumption by 4.8%
- Fast food consumption by 5.2%

Source: Powell, et al., 2013



Sweet & Savory Snack Prices & Consumption

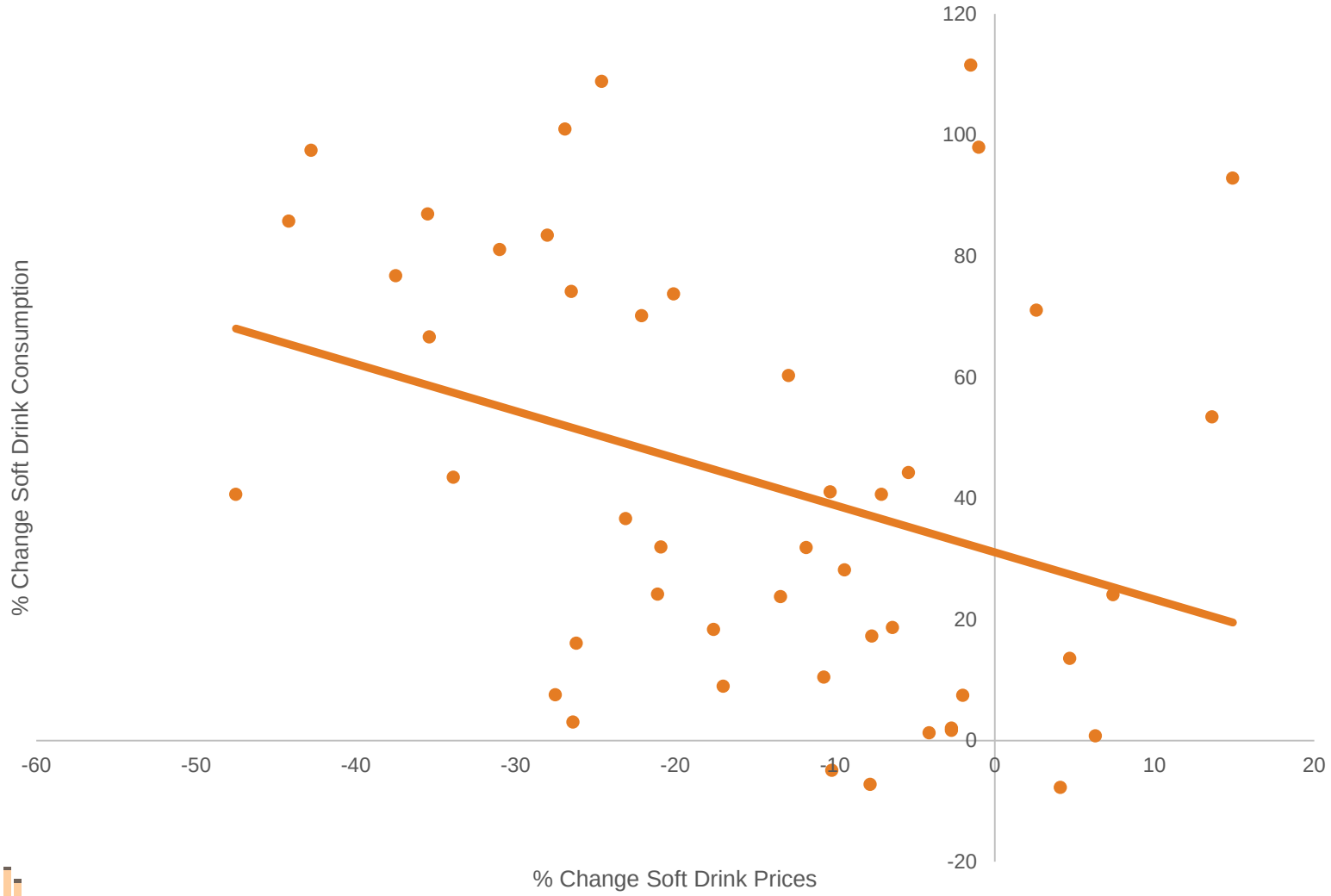
Percentage Change, 2000-2014, Selected Countries



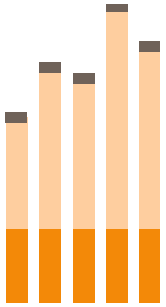
Source: Euromonitor, 2015, and author's calculations

Soft Drink Prices & Consumption

Percentage Change, 2000-2014, Selected Countries



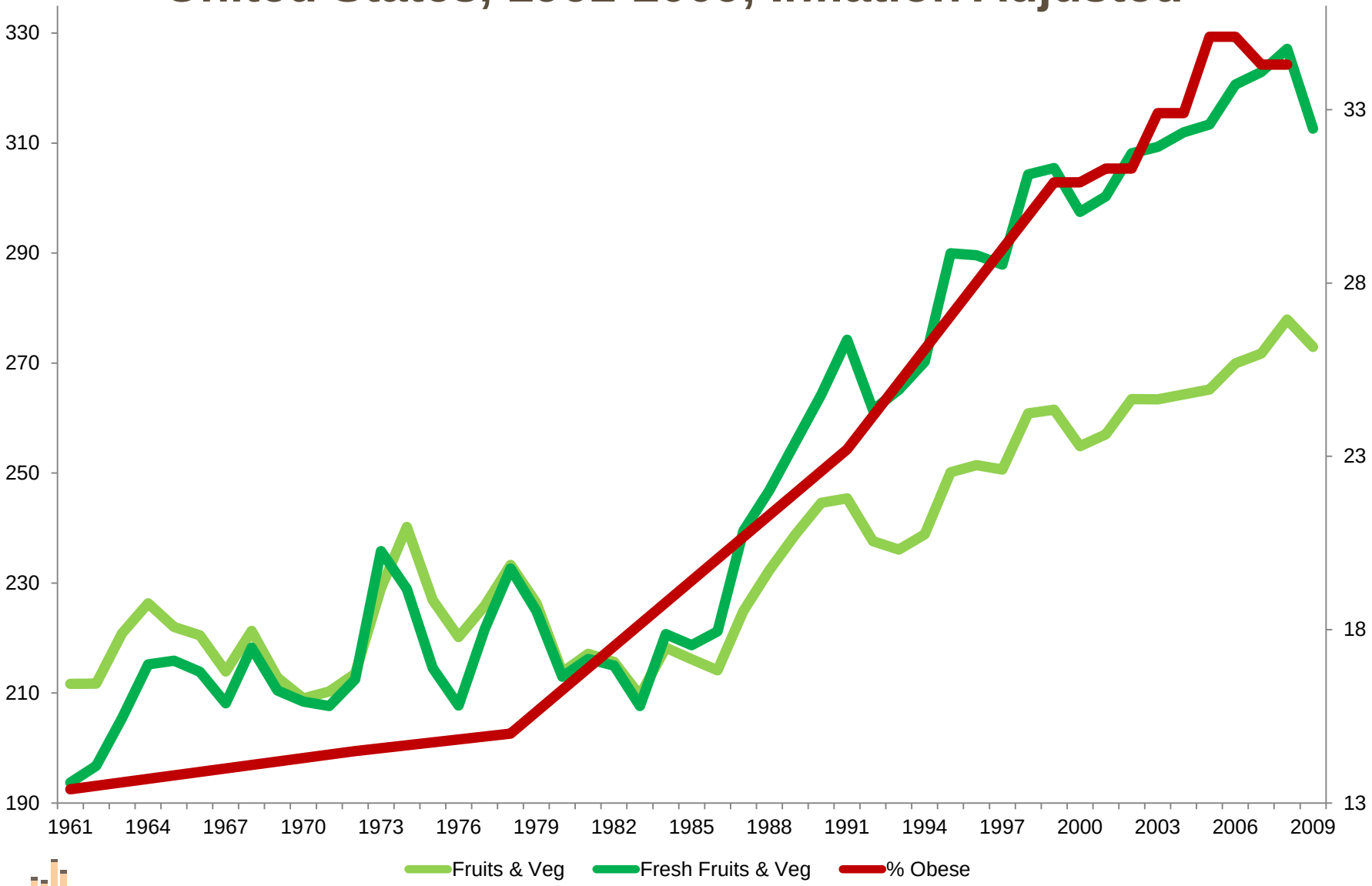
Source: Euromonitor, 2015, and author's calculations



Taxes, Prices & Obesity

Selected Food Price & Adult Weight Trends

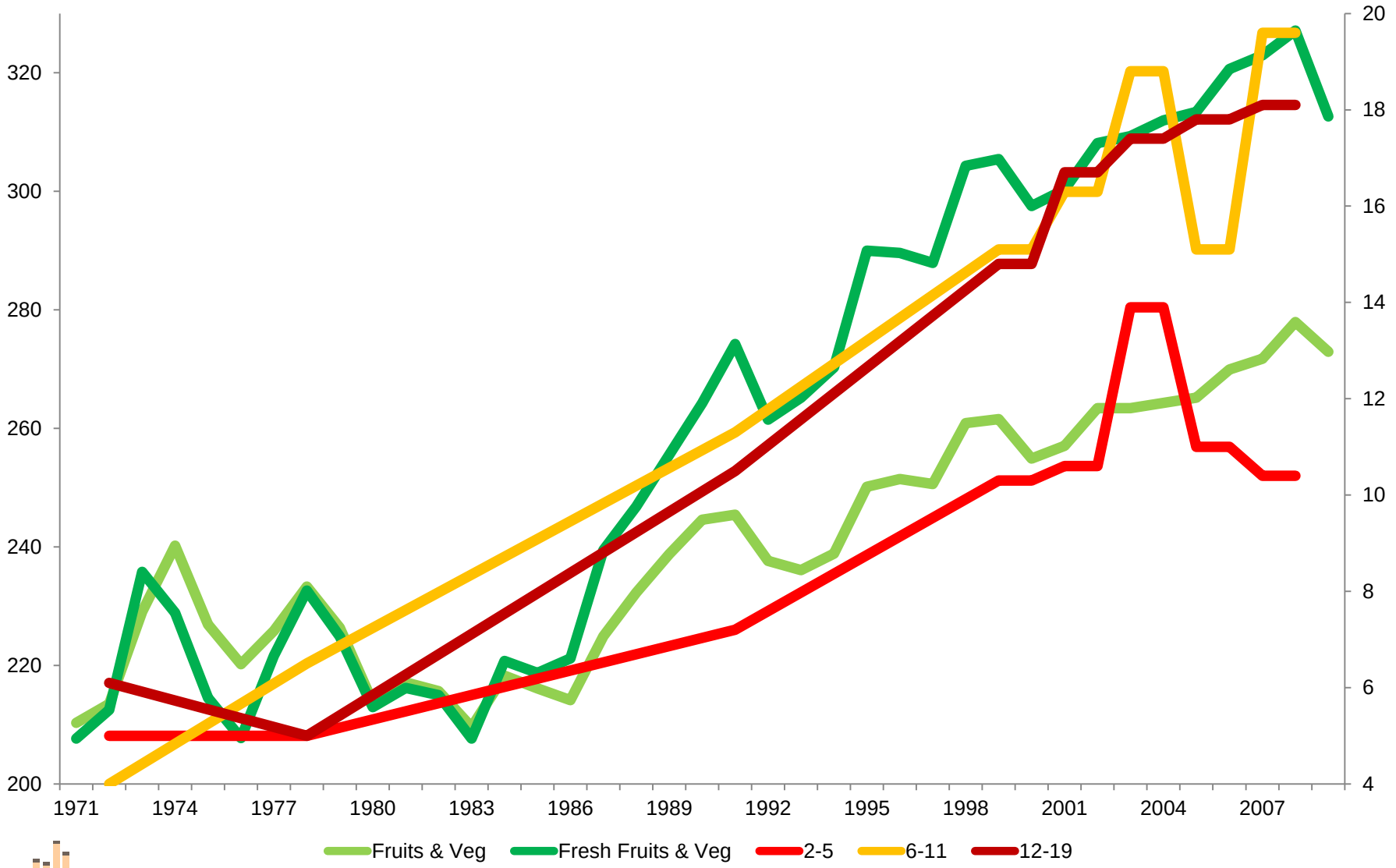
United States, 1961-2009, Inflation Adjusted



Source: BLS; NHES-I 1960-62; NHANES, 1971-74, 1976-80, 1988-94, 1999-2000, 2001-02, 2003-04, 2005-06 , 2007-08

Selected Food Price & Youth Weight Trends

United States, 1971-2009, Inflation Adjusted



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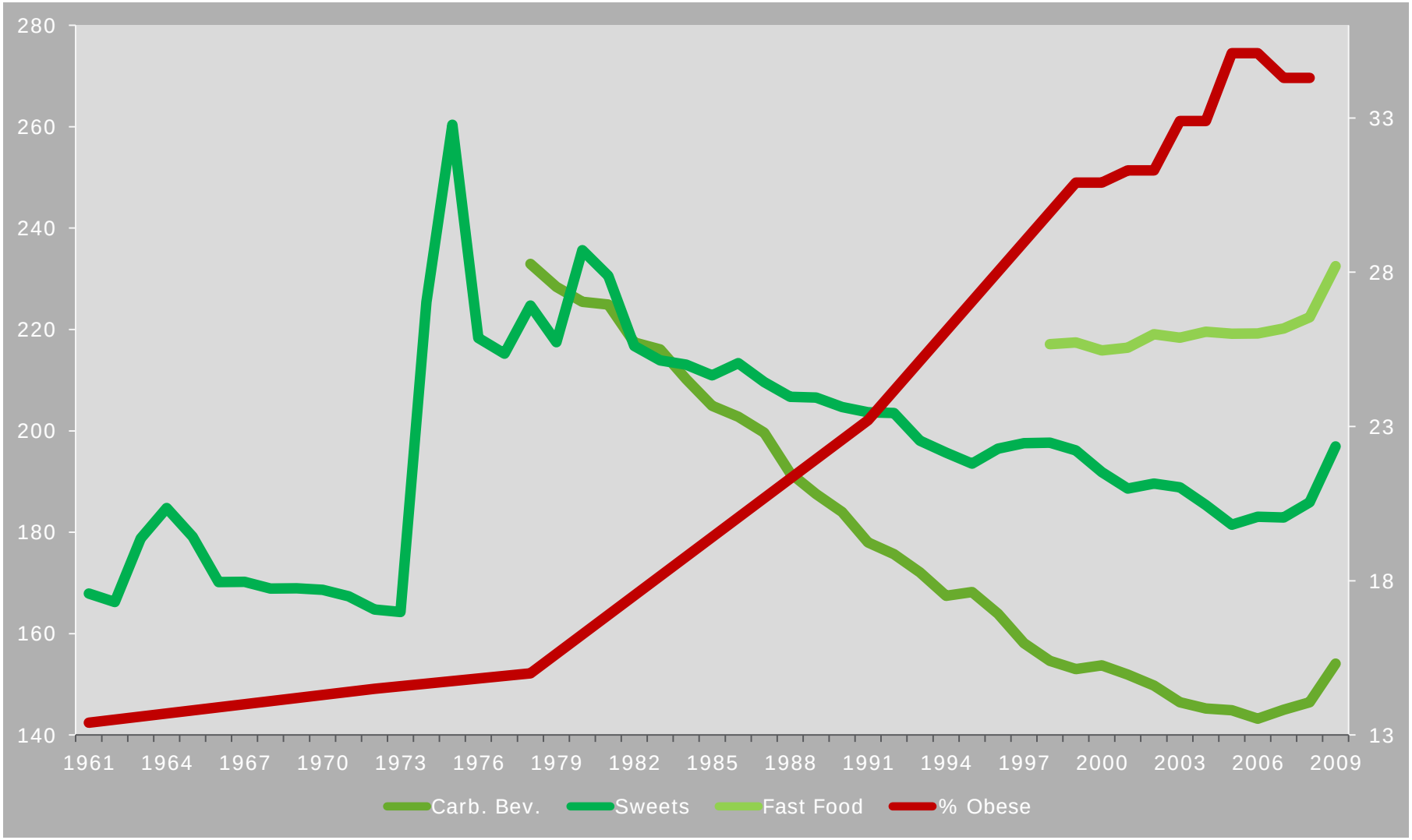

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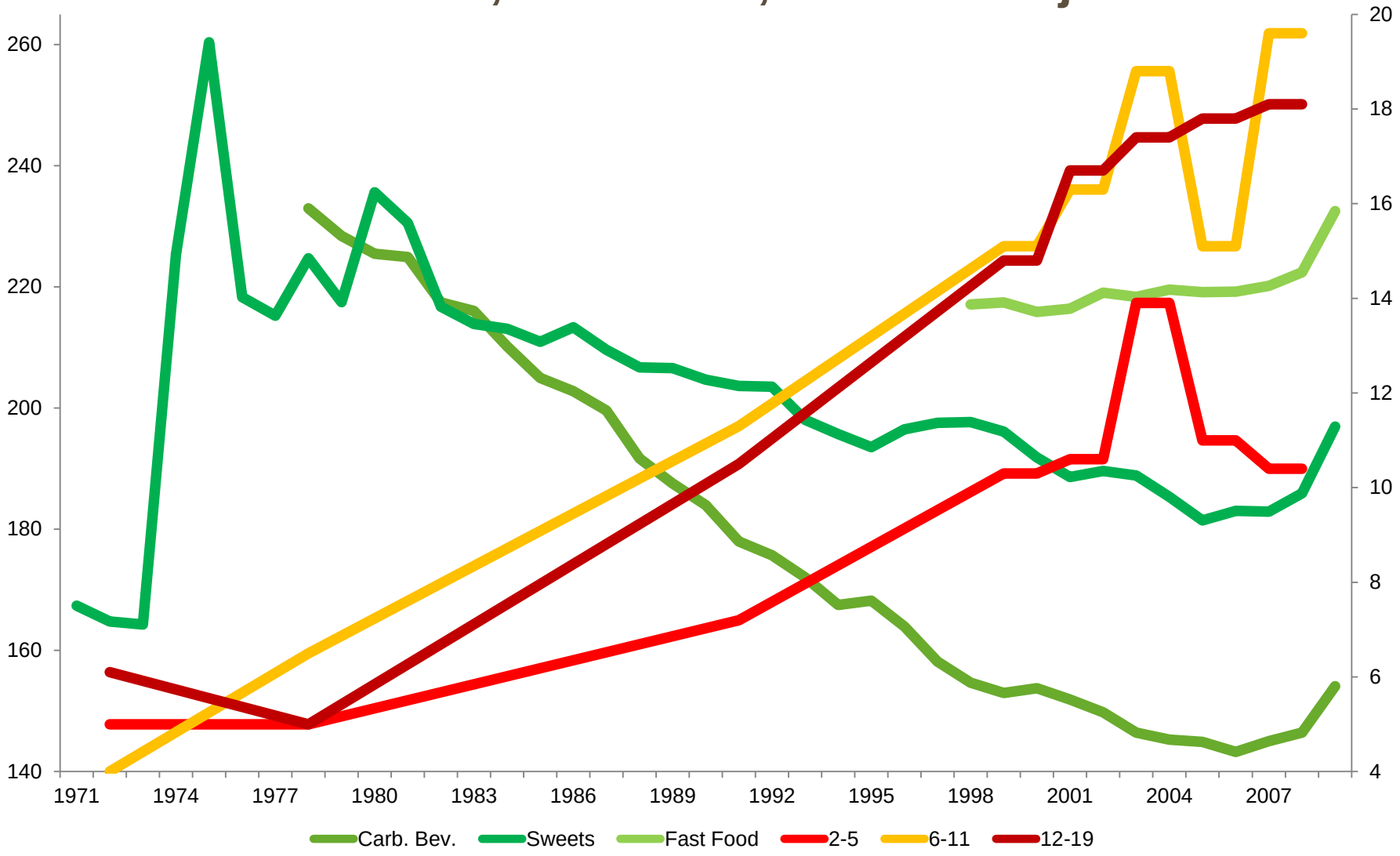


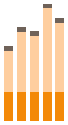
Source: BLS; NHES-I 1960-62; NHANES, 1971-74, 1976-80, 1988-94, 1999-2000, 2001-02, 2003-04, 2005-06 , 2007-08

Prices and Weight Outcomes

While mixed, the weight of the evidence increasingly indicates that changes in relative prices for healthier and less healthy foods will affect weight outcomes, with greater impact on:

- Lower income, less educated populations
- Younger populations
- Populations at greater risk for obesity

Source: Powell, et al., 2013



Prices and Weight Outcomes

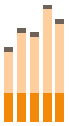
Subsidies alone likely to be counter-productive:

- Increase consumption of subsidized products
- Income effect leads to increased consumption of other products
- Net increase in caloric intake

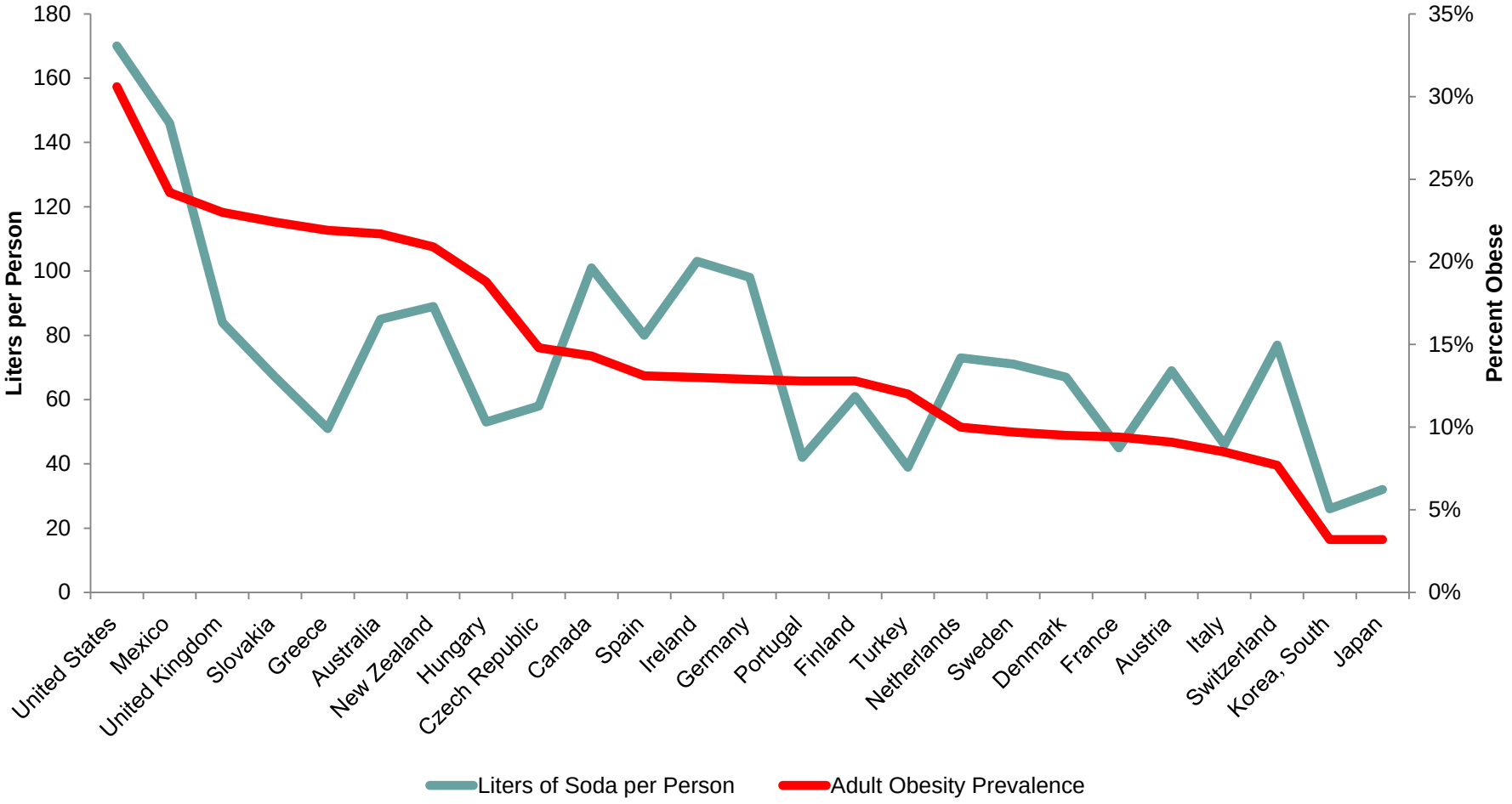
Sugary Beverage Taxes

Rationale for SSB Taxes

- Link to obesity
  - Several meta-analyses conclude that increased SSB consumption causes increased weight, obesity
  - Increased calories from SSBs not offset by reductions in calories from other sources
- Other health consequences
  - Type 2 diabetes, lower bone density, dental problems, headaches, anxiety and sleep disorders

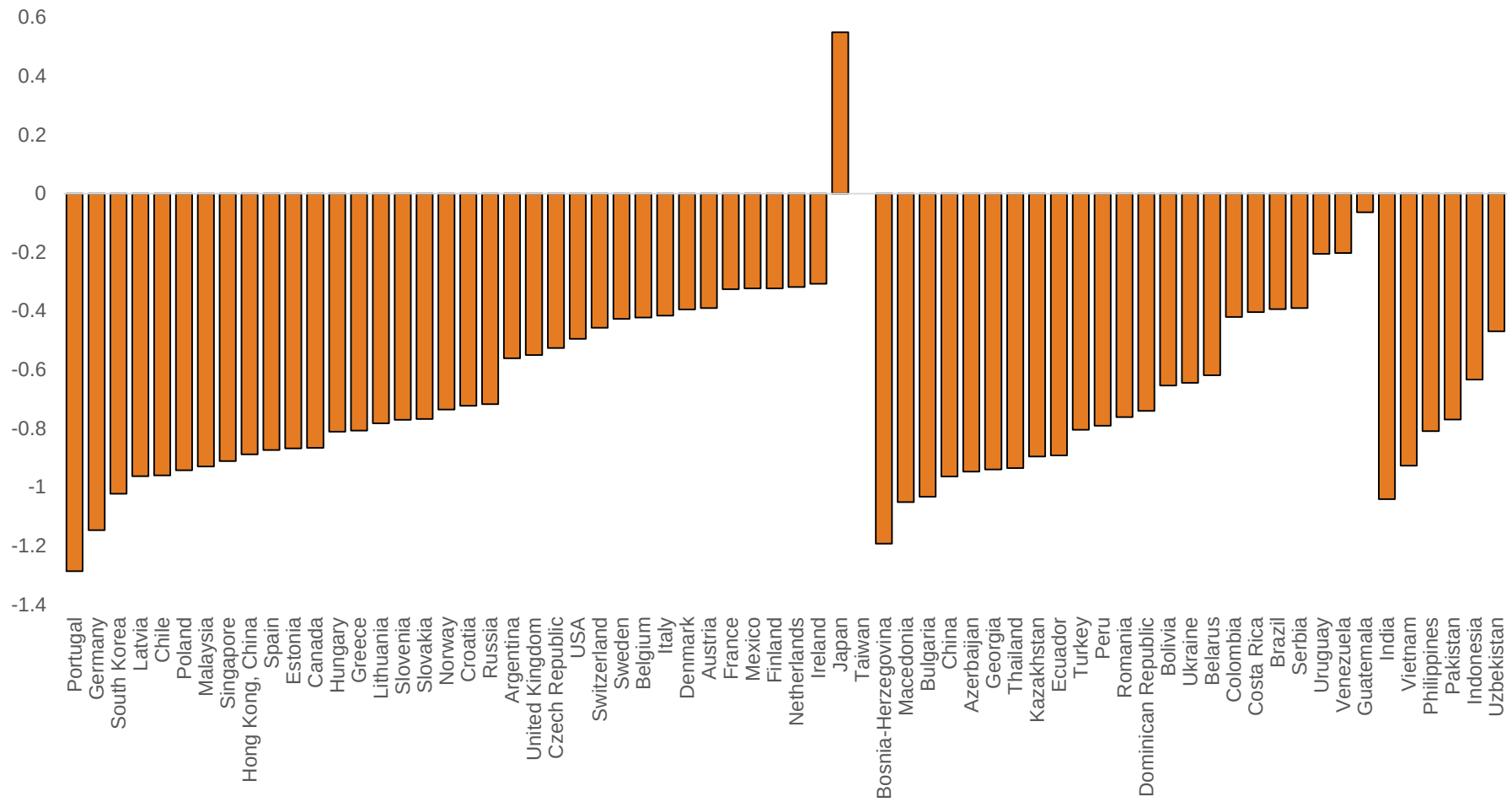


Soda Consumption & Obesity
Selected Countries



Source: Soda consumption from Euromonitor, 2011; Obesity prevalence from OECD Health Data, 2005

Change in Soft Drink Affordability 2000-2013, Selected Countries



Source: Euromonitor, 2015, and author's calculations

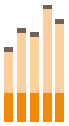
Soda Taxes in the U.S.

Mixed evidence for impact of U.S. soft drink taxes on obesity:

- Small state sales taxes
- Do not differentiate sugary vs. low/no calorie beverages
  - often taxes on healthier options
- Are not comprehensive

- Estimates suggest that tax needs to raise price by at least 20% to have an impact on weight outcomes

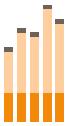
Source: Powell, et al., 2013



Soda Taxes in Mexico

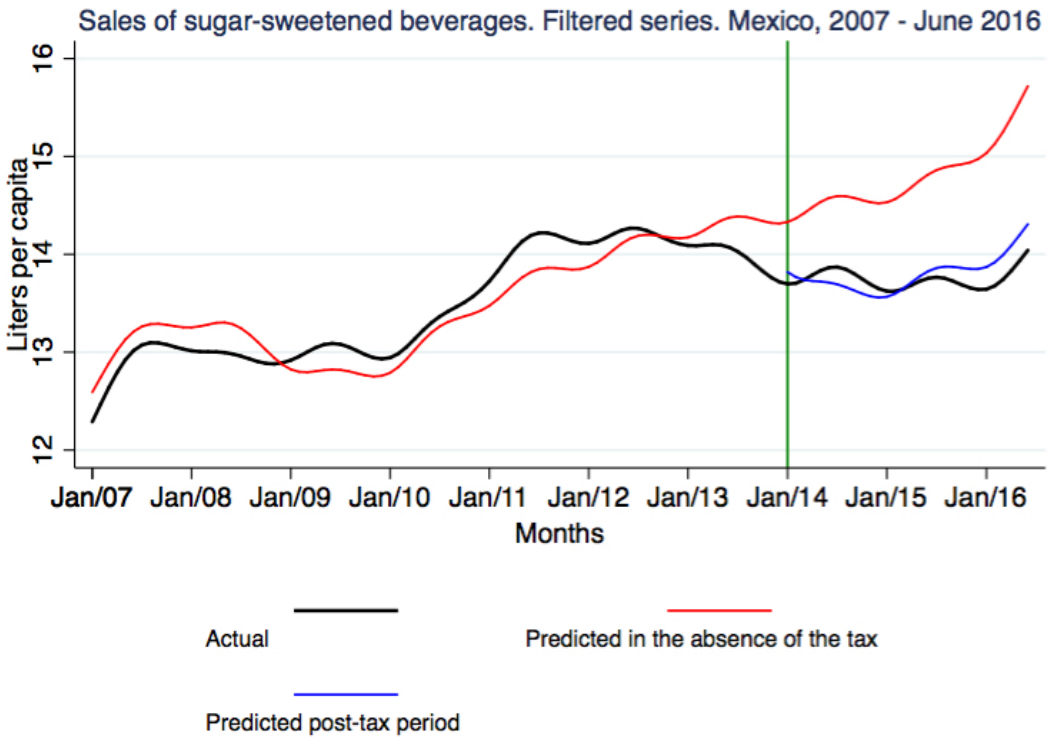
Evidence from Mexico's peso per liter SSB tax;

- Increased prices for SSBs relative to non-taxed beverages
  - about 10% price increase
  - pass through varies by type, size, location
- Significant reduction in SSB sales, consumption
  - growing over time
- Significant increase in bottled water consumption
- Greater impact on heavier consumers, low-income population



Sources: Colchero, et al., 2015; Colchero, et al., 2016; Colchero, et al., 2015; Ng, et al., under review

Impact of Tax on Sales
Mexico, 2007-2016



OLS- Adjusted for seasonality, the global indicator of the economic activity

Impact on SSB sales consistent with reductions in purchases:

- **6% drop in 2014**
- **8% drop in 2015**
- **11% drop in first half of 2016**

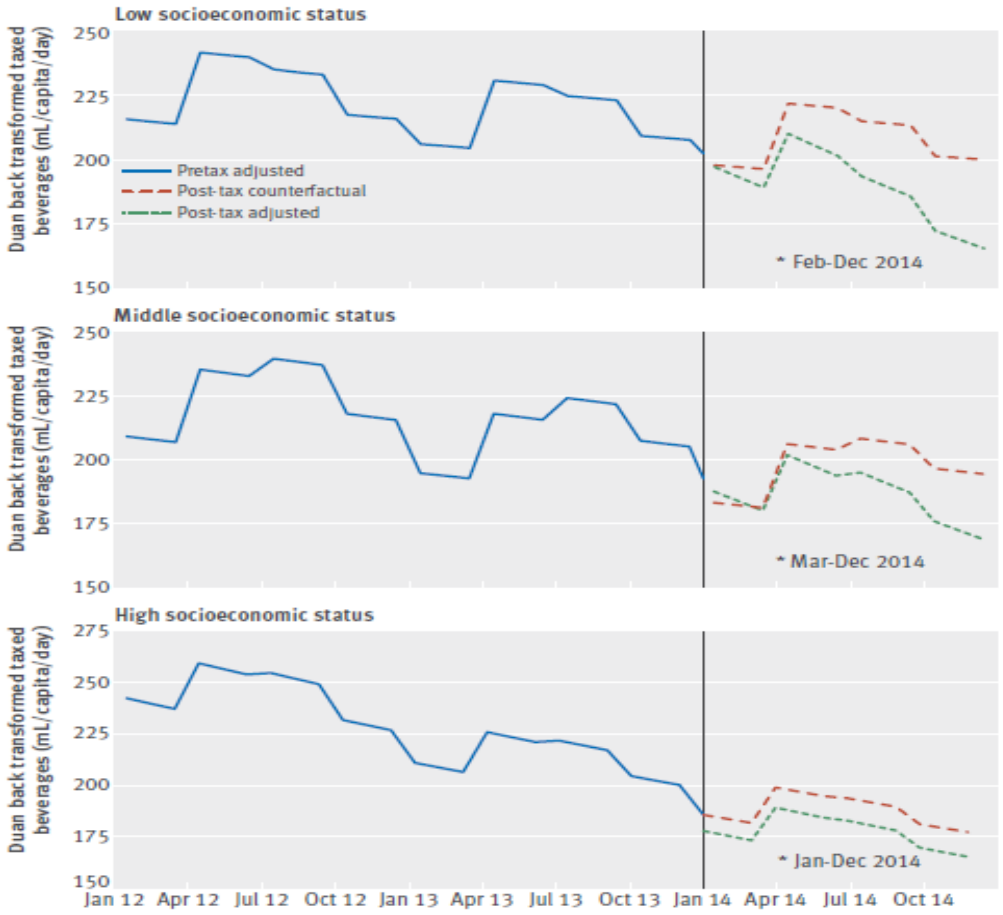
5.2% increases in bottled water sales

Colchero MA, Guerrero Lopez C, Molina M, Rivera J . Beverage sales in Mexico before and after implementation of a sugar sweetened beverages tax. 2016. PLoS ONE. 11(9).

Changes in sales of sugar-sweetened beverages in Mexico before (2007-2013) and after the tax (2014-2016): https://www.insp.mx/epppo/blog/4278-changes-sales-beverages.html

Impact of Tax on Purchases
Year One (2014)

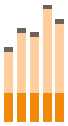
- Purchases of taxed beverages reduced in all SES groups
- Reductions in purchases **greatest among lowest SES households**
  - **9% decline** in 2014



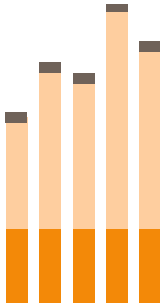
Colchero MA, Popkin BM, Rivera JA, Ng SW. Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: observational study . BMJ 2015;352

Impact of Tax on Purchases
Year One (2014)

- **Greatest impact on heaviest consumers**
  - **Highest purchasers:**
    - 31% of households, purchased average of 157 liters of SSB/capita/yr
      - ***10% reduction in purchases following tax***
  - **Middle purchasers:**
    - 40% of households, purchased average of 60 liters of SSB/capita/yr
      - ***8% reduction of taxed beverages post-tax***
  - **Light and non purchasers:**
    - Remaining households; small impact on light purchasers



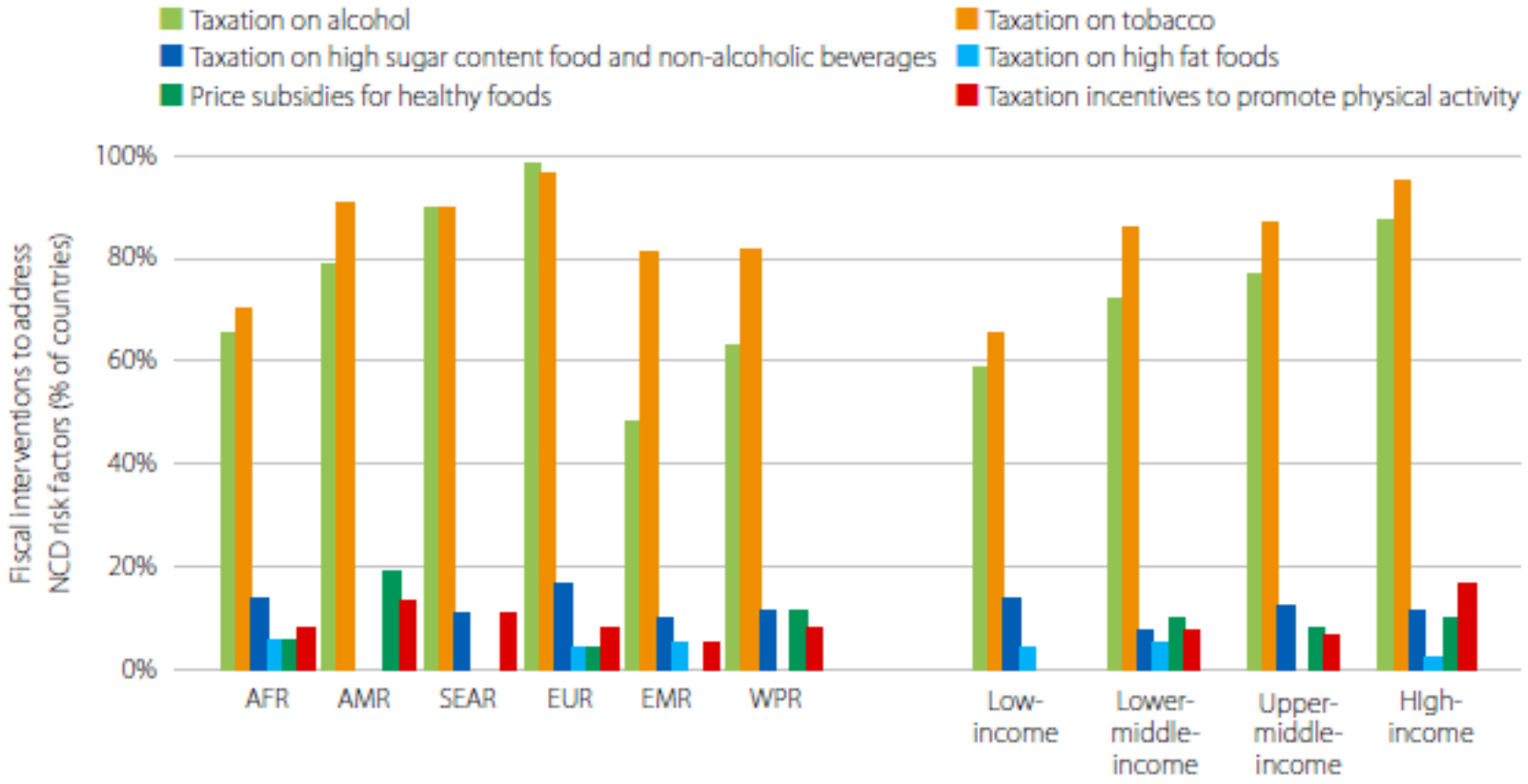
Ng SW, Rivera J, Popkin B, Colchero MA. Did high purchasers respond differently to the excise tax on sugar-sweetened beverages in Mexico?



Oppositional Arguments

Fiscal Policy & NCDs

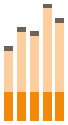
Fig. 1.9 Fiscal interventions to address NCD risk factors, 2013, by WHO region and by World Bank income group.

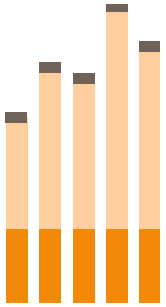


AFR=African Region, AMR=Region of the Americas, SEAR=South-East Asia Region, EUR=European Region, EMR=Eastern Mediterranean Region, WPR=Western Pacific Region

Common Oppositional Arguments

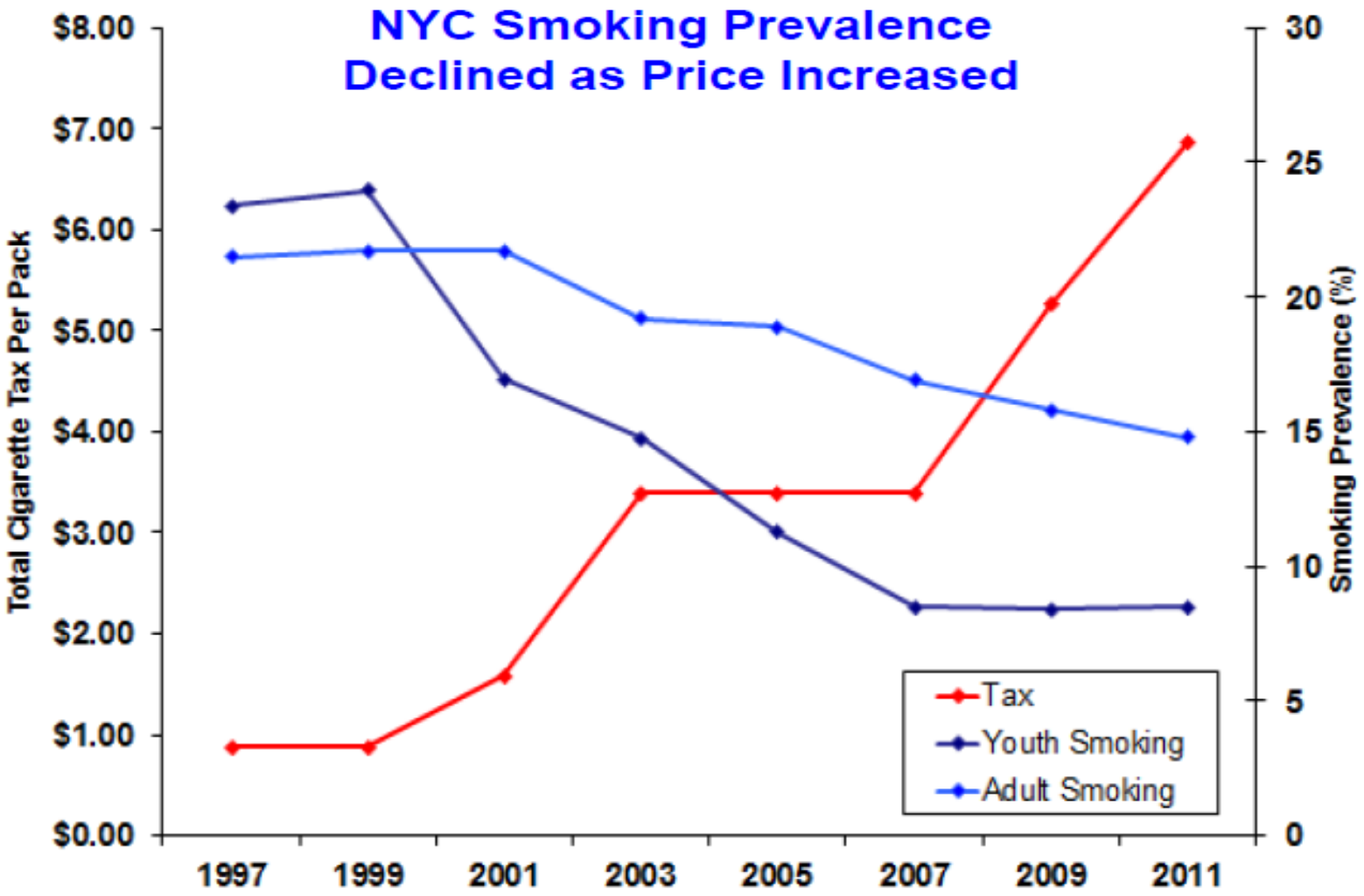
- Industries and allies use several common arguments in opposition to tax increases:
  - Won't have the intended impact in terms of reducing use and consequences
  - Will lead to extensive tax avoidance and tax evasion
  - Will harm poor and working class consumers
  - Will lead to massive job losses





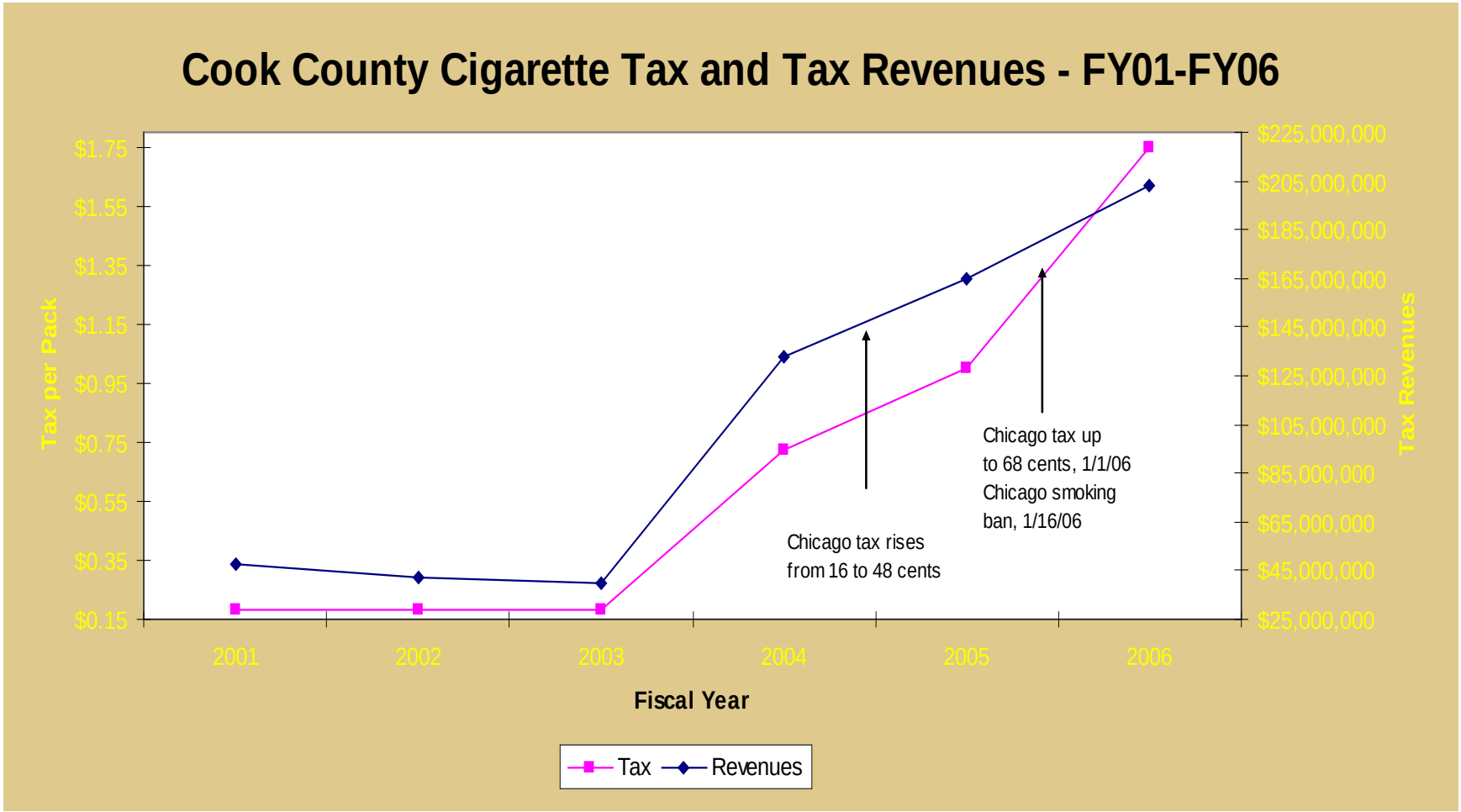
Tax Avoidance & Evasion

Tax Avoidance & Evasion Do NOT Eliminate Health Impact of Higher Taxes

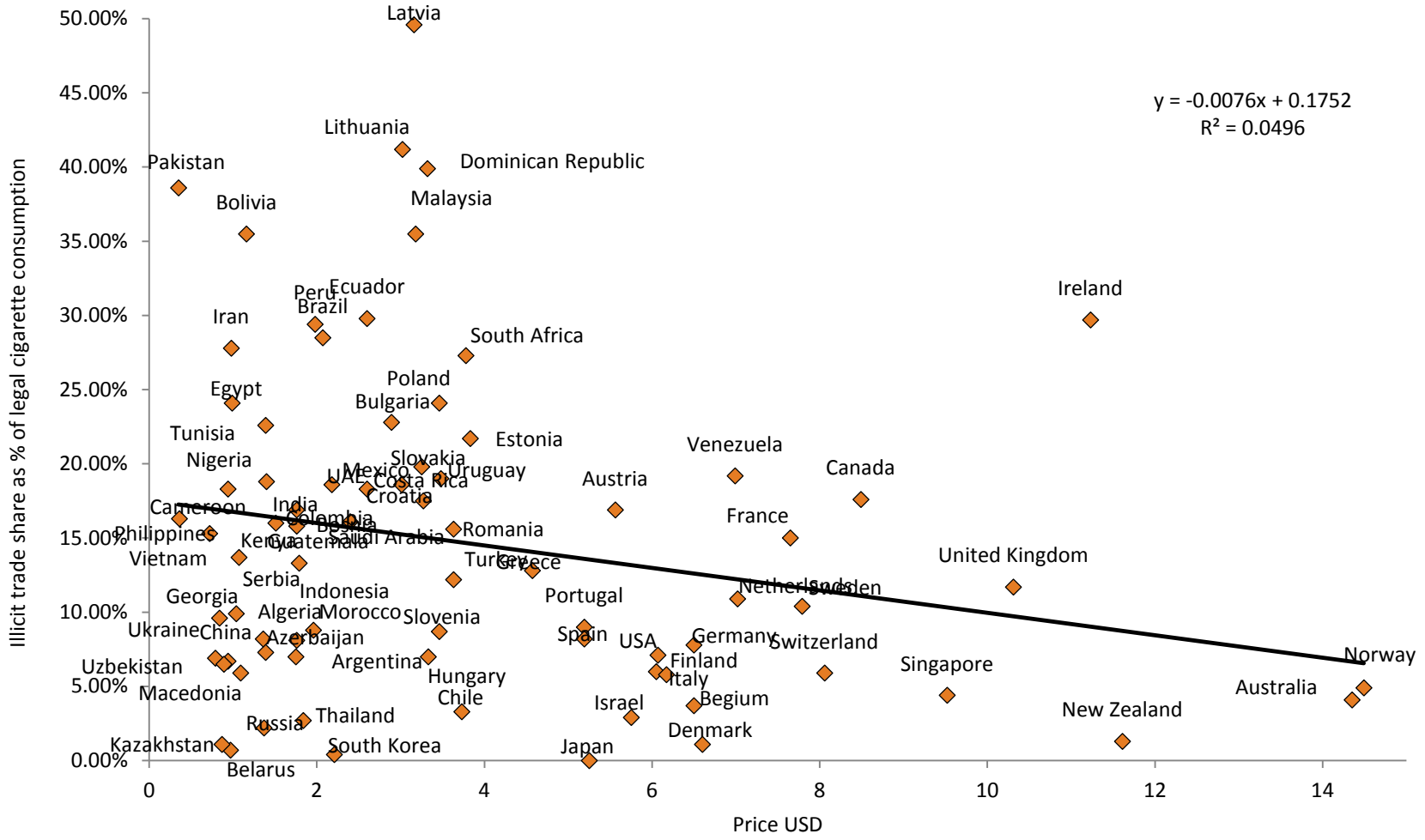


Source: Schroth, 2014

Tax Avoidance & Evasion Do NOT Eliminate Revenue Impact of Higher Taxes



Illicit Cigarette Market Share & Cigarette Prices, 2012

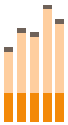


Sources: Euromonitor, WHO

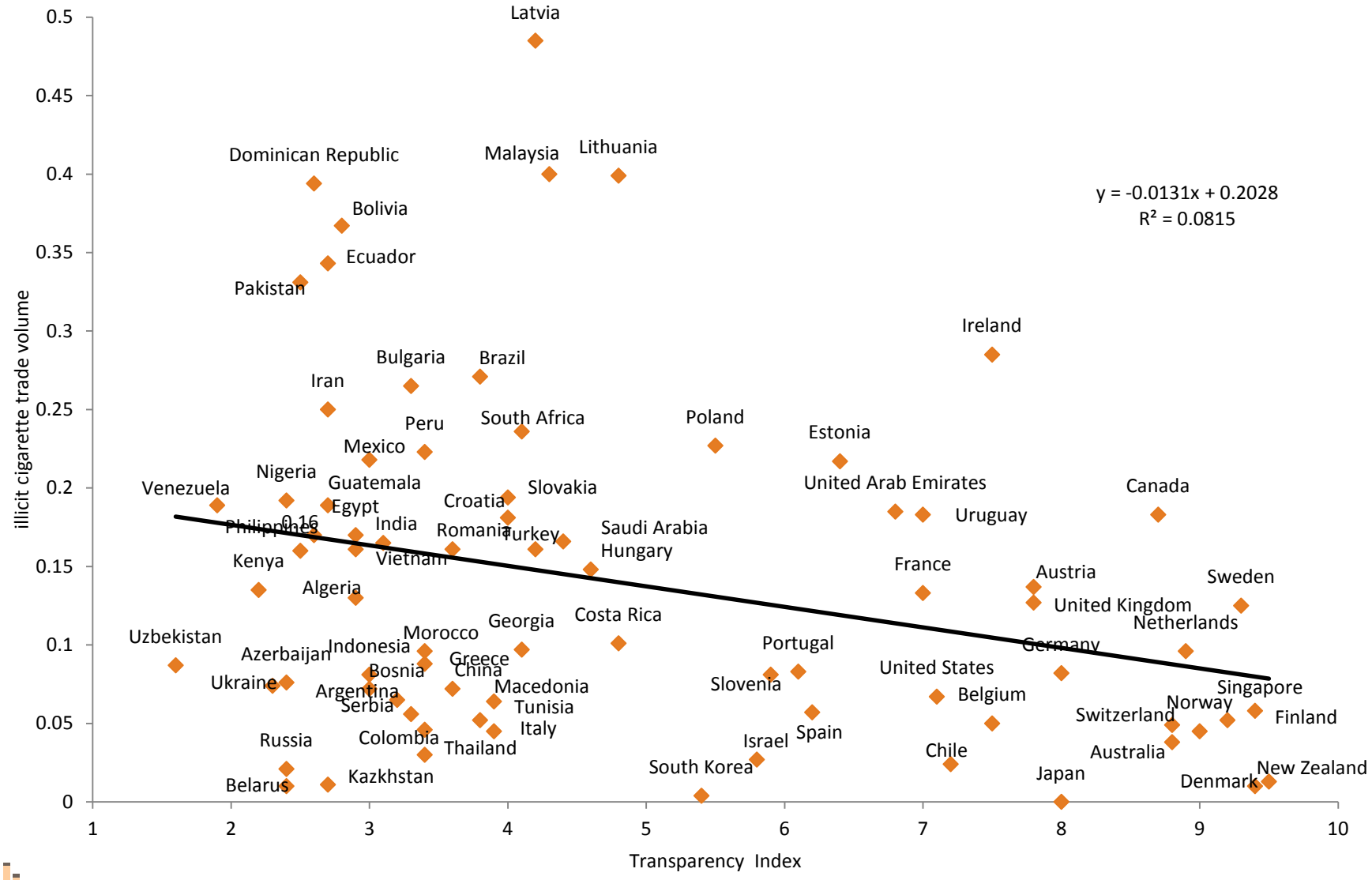
Drivers of Illicit Tobacco

- Corruption
- Weak tax administration
- Poor enforcement
- Presence of informal distribution networks
- Presence of criminal networks
- Access to cheaper sources

Sources: NRC/IOM 2015; NCI/WHO 2016

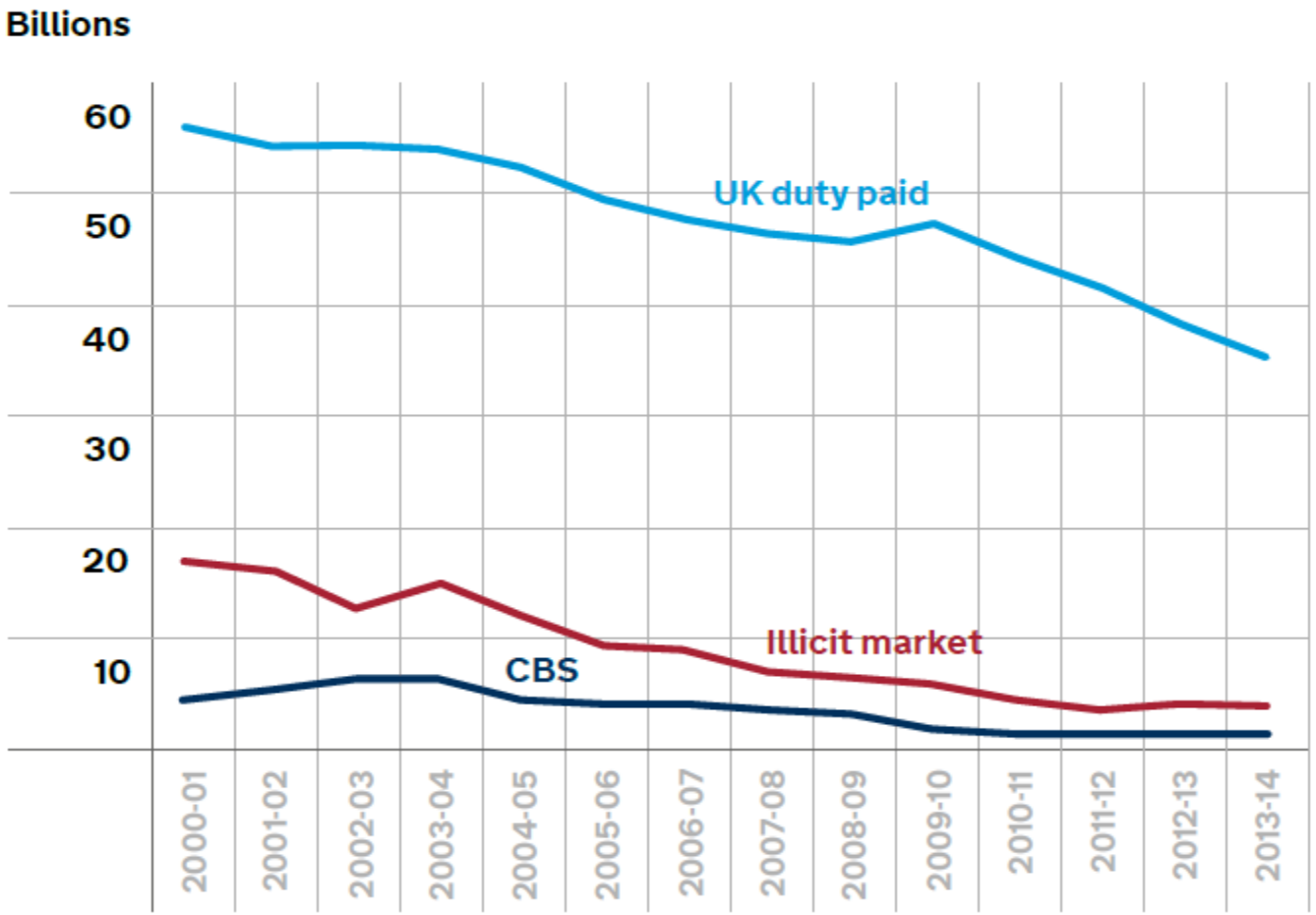


Smuggling and Corruption, 2011



Sources: Euromonitor, Transparency International

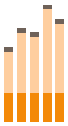
Figure 12 – Estimated Volumes of Cigarettes Consumed in the U.K. – Duty paid, illicit, and cross-border shopping, 2000-01 – 2013-14



Source: HM Revenue & Customs, 2014

Combating Illicit Tobacco Trade

- Illicit trade protocol to the WHO FCTC
  - Adopted November 2012; currently in process of being signed/ratified; provisions calling for:
  - Strong tax administration
    - Prominent, high-tech tax stamps and other pack markings
    - Licensing of manufacturers, exporters, distributors, retailers
    - Export bonds
    - Unique identification codes on packages
  - Better enforcement
    - Increased resources
    - Focus on large scale smuggling
  - Swift, severe penalties
  - Multilateral/intersectoral cooperation

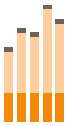


Beverage Tax Avoidance & Evasion

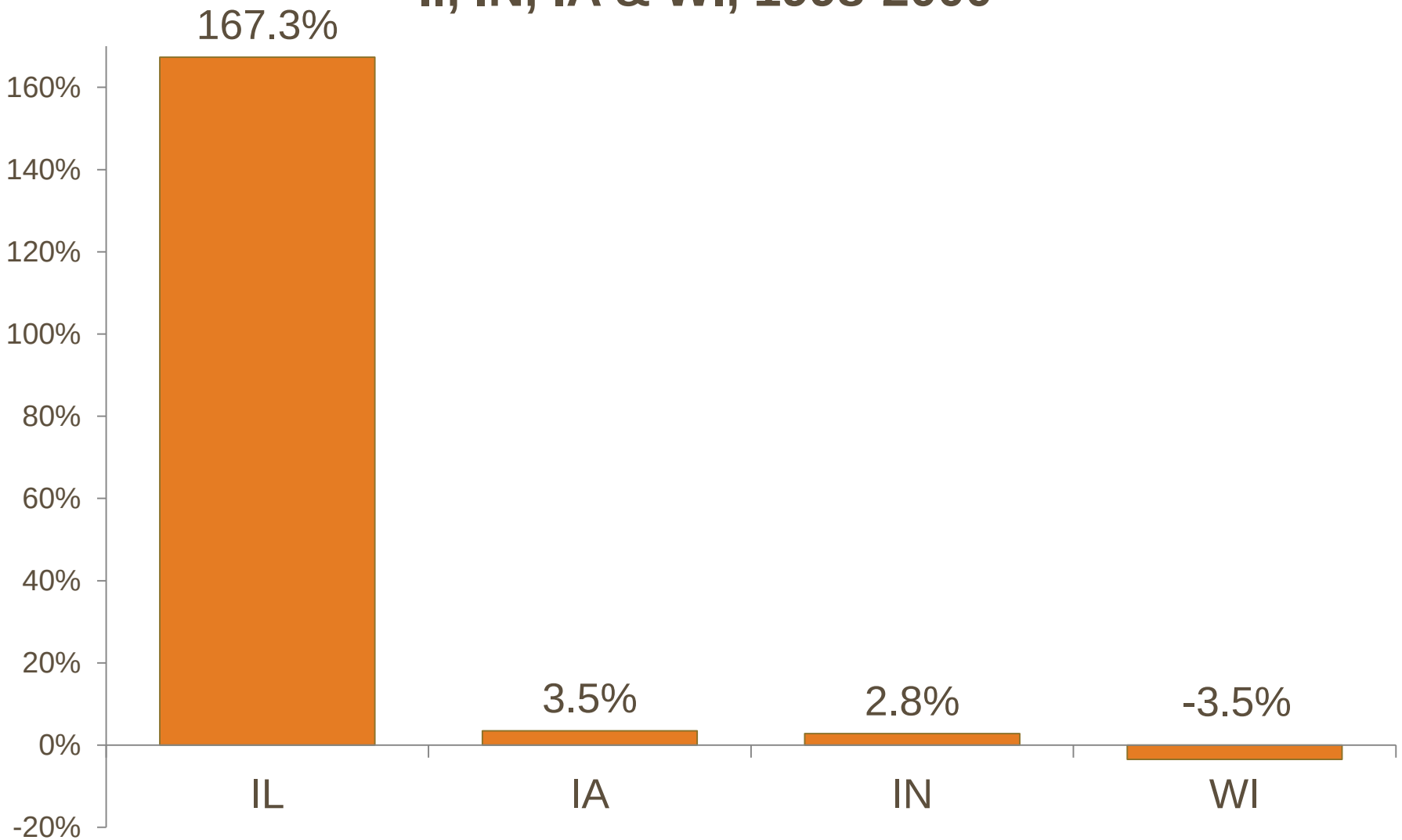
Little evidence of significant tax avoidance & evasion

- low taxes relative to prices
- costly to avoid/evade taxes

- Illinois – recent experiences with beer taxes
  - IL – raised tax from 7 cents/gallon to 18.5 cents/gallon, August 1999; again to 23.1 cents/gallon September 2009
  - Iowa – 19 cents/gallon throughout
  - Indiana - 11.5 cents/gallon throughout
  - Wisconsin – 6.45 cents/gallon throughout

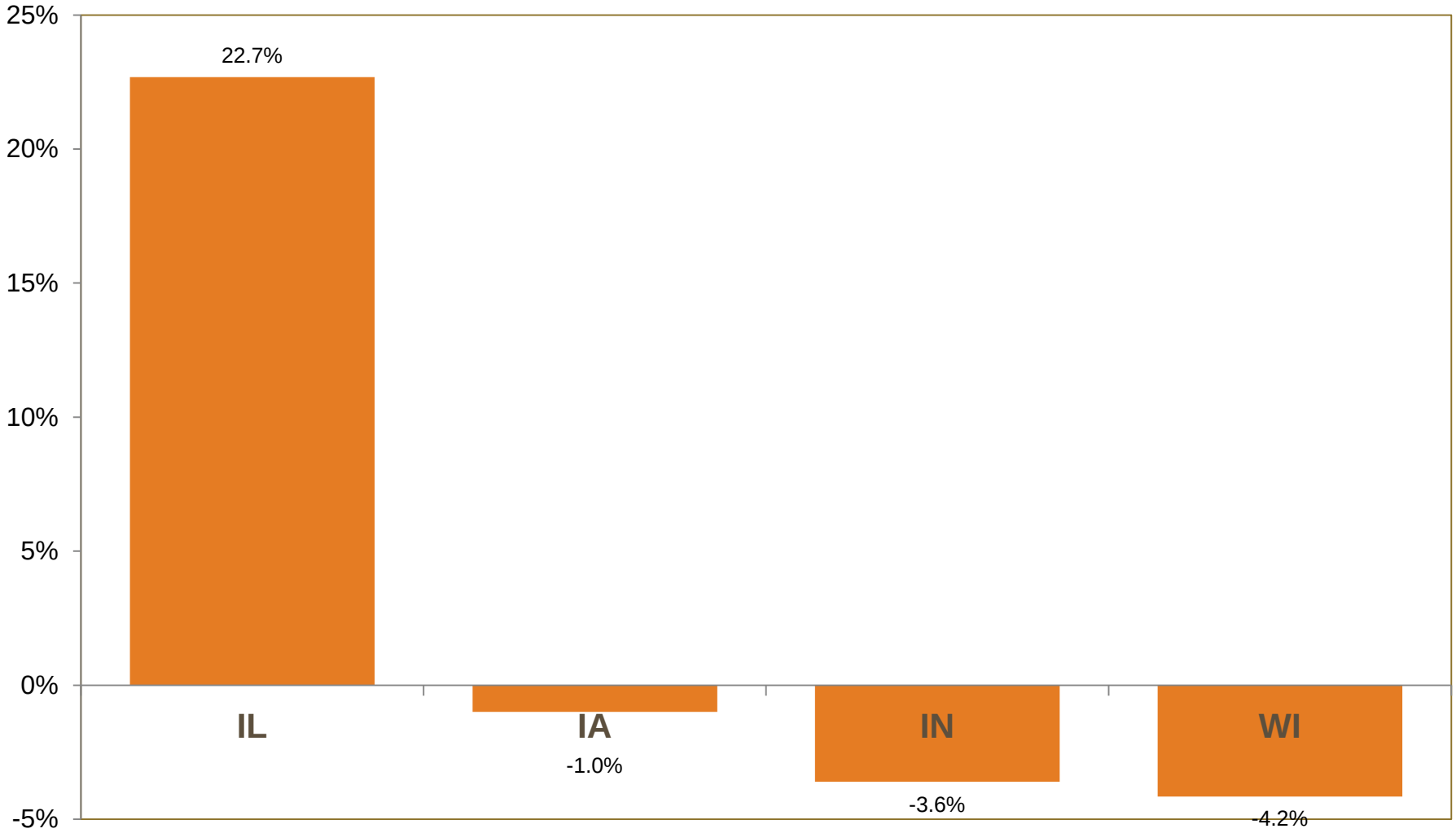


Percent Change in State Beer Taxes Revenues, Il, IN, IA & WI, 1998-2000

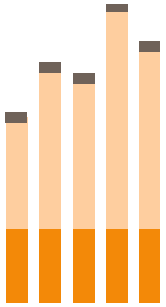


Source: *Brewers' Almanac,* 2013, and author's calculations

Percent Change in Beer Taxes Revenues
IL, IA, IN, WI 2008-2010

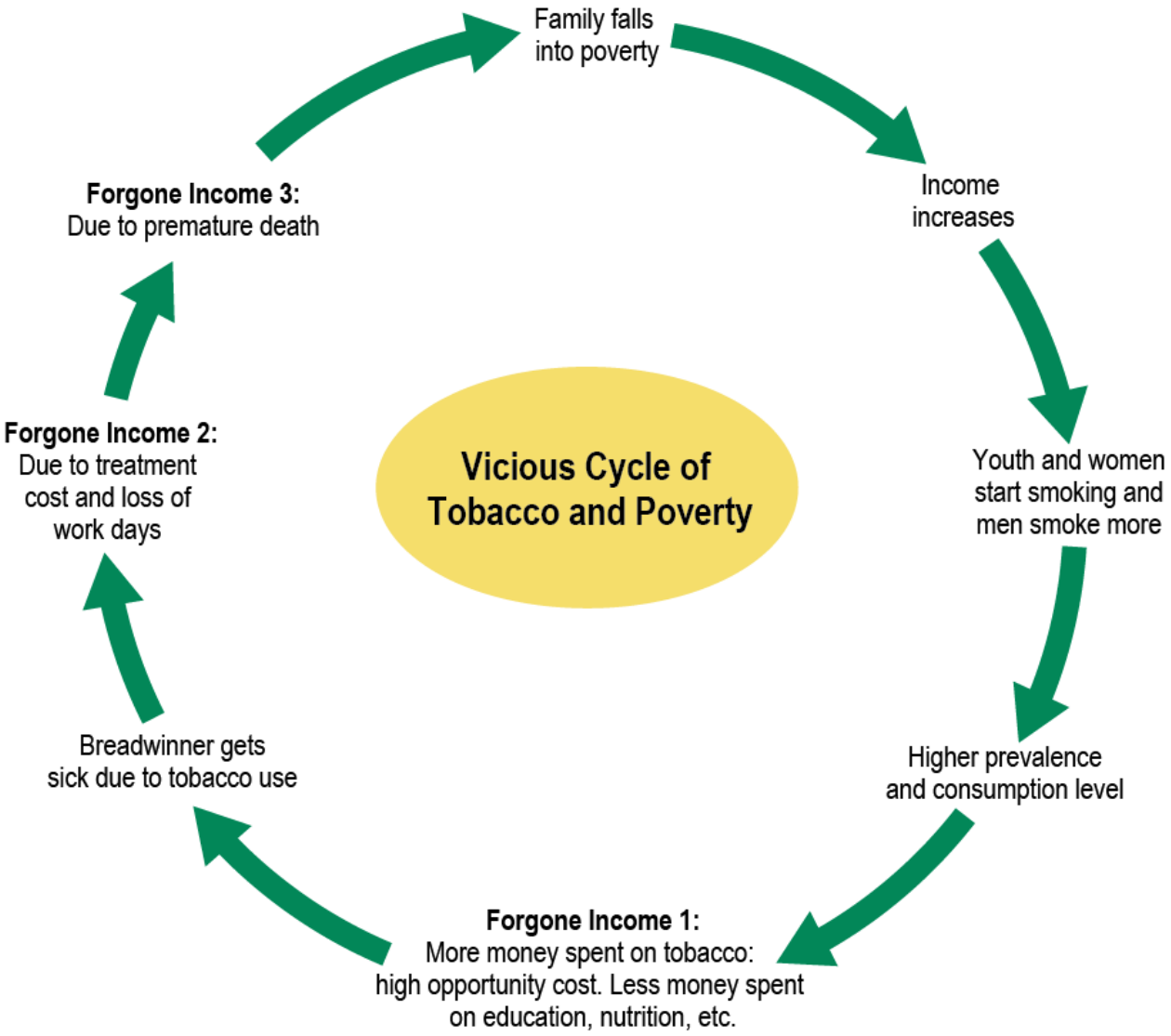


Source: *Brewers' Almanac,* 2013, and author's calculations



Impact on the Poor

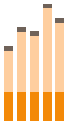
Tobacco & Poverty



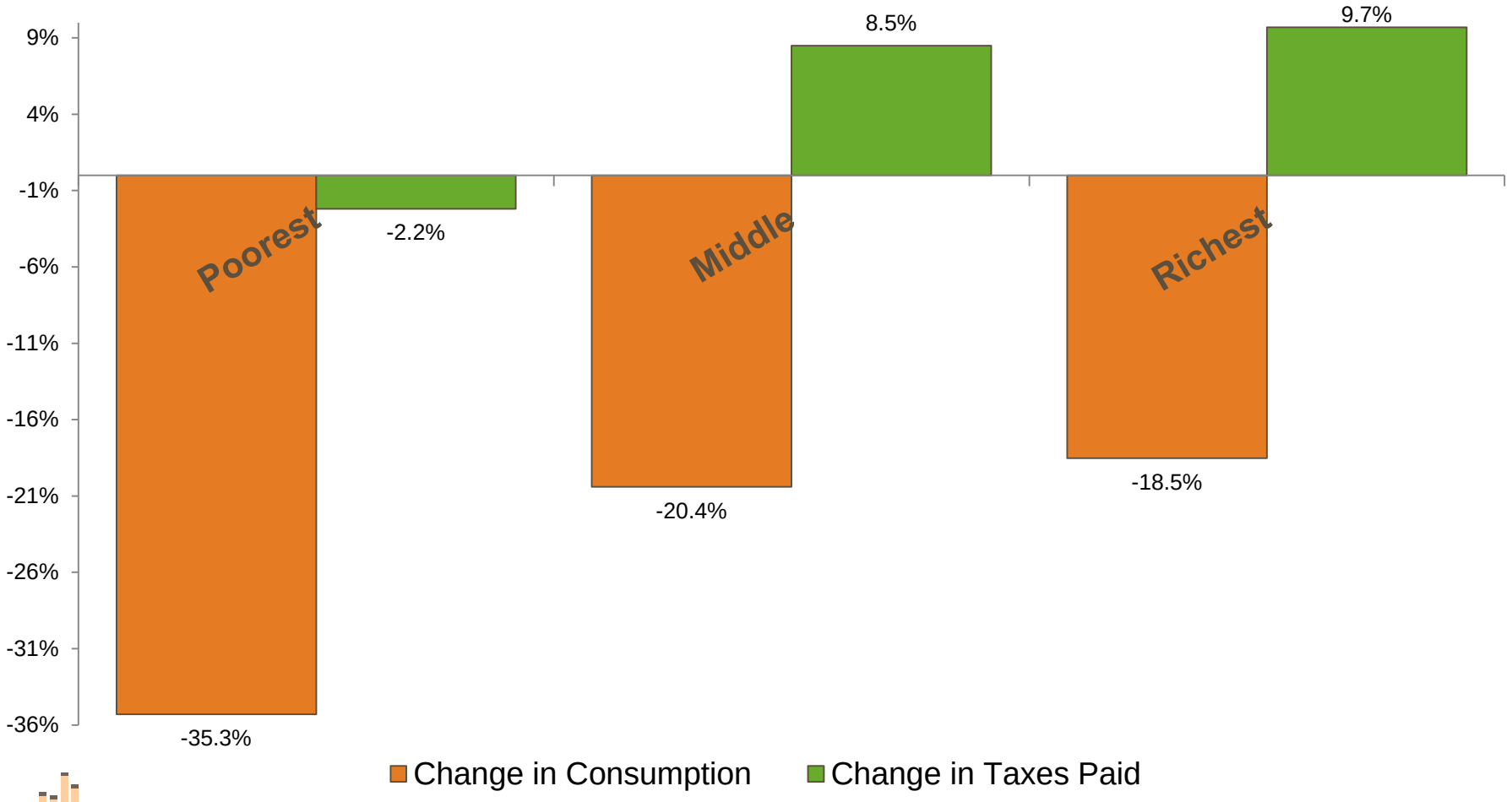
Source: NCI & WHO 2016

Impact on the Poor

- **Concerns about the regressivity of higher alcohol & tobacco taxes, food/beverage taxes**
  - Most excise taxes are regressive, but tax increases can be progressive
    - Greater price sensitivity of poor – relatively large reductions in use among lowest income populations, small reductions among higher income populations
    - Health benefits that result from tax increase are progressive



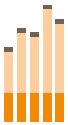
Who Pays& Who Benefits Turkey, 25% Tax Increase



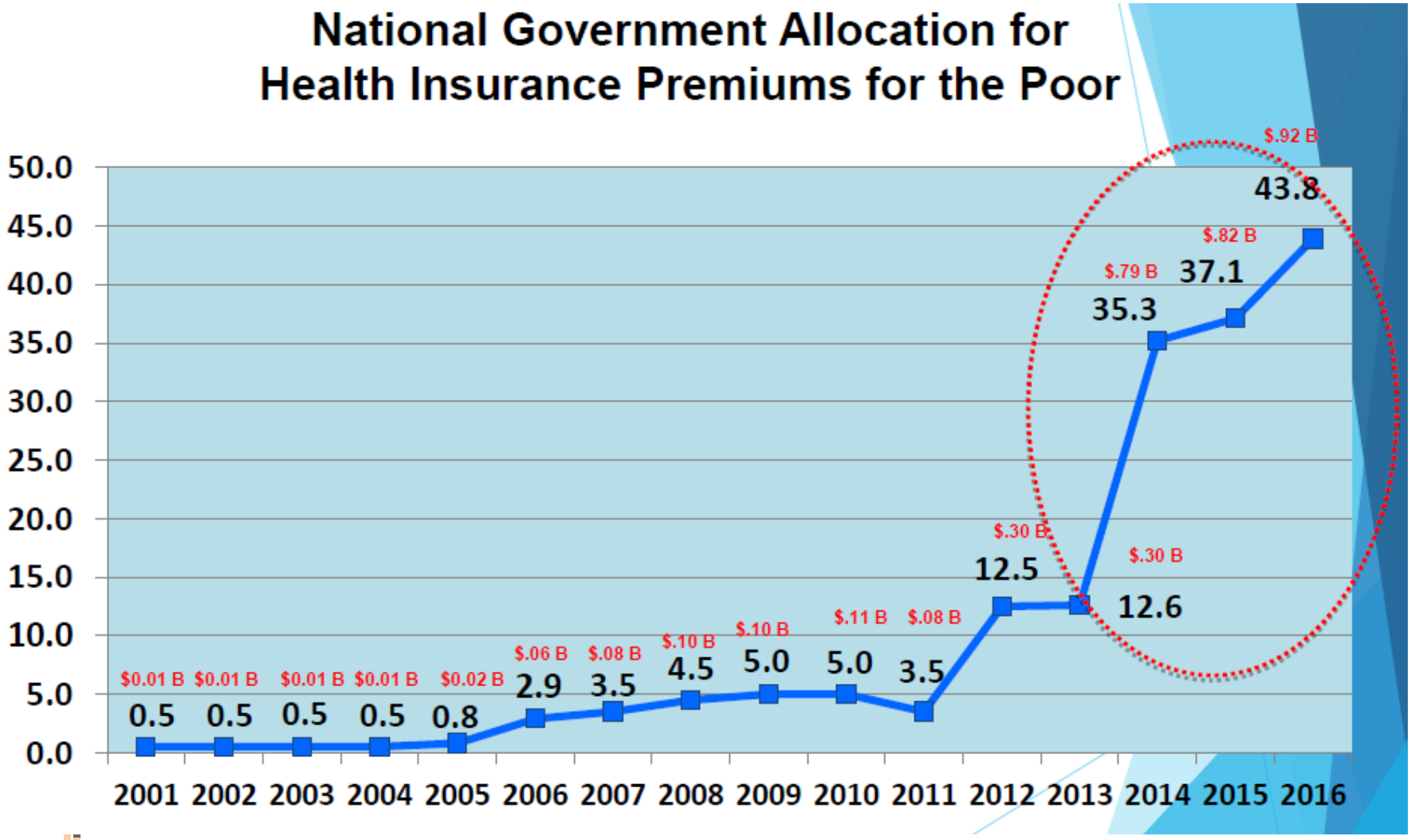
Source: Adapted from Önder & Yürekli, 2014

Impact on the Poor

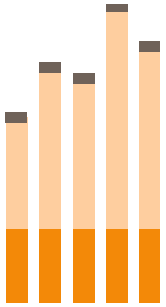
- Need to consider overall fiscal system
  - Key issue with taxes is what's done with the revenues generated by the tax
  - Greater public support for tax increases when revenues are used for prevention & control programs and/or other health programs
  - Net financial impact on low income households can be positive when taxes are used to support programs targeting the poor
  - Concerns about regressivity offset by use of revenues for programs directed to poor



Philippines 'Sin Tax' Reform



Source: Paul, 2016

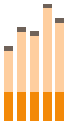


Impact on the Economy

Excise Taxes and Jobs

Industries argue that production and consumption of their products makes a significant economic contribution

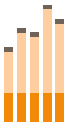
- employment in farming, manufacturing, distribution, retailing, and related sectors
- multiplier effects as income earned in these jobs is spent on other goods & services



Excise Taxes and Jobs

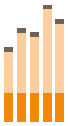
Industry-sponsored studies tell only part of story:

- Focus on the gross impact:
  - New tax or tax increase will lead to decreased consumption of taxed product
  - Results in loss of some jobs dependent on production of taxed product
- Ignore the net impact:
  - Money not spent on taxed product will be spent on other goods and services
  - New/increased tax revenues spent by government
    - ***Offsetting job gains in other sectors***



Tobacco Taxes and Jobs

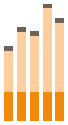
- Many published studies assess impact of reductions in tobacco use from tax increases and/or other tobacco control measures:
  - Variety of high, middle, and low income countries
  - Use alternative methodologies
- Generally find that employment losses in tobacco sector more than offset by gains in other sectors



Tobacco Taxes and Jobs

Concerns about job losses in tobacco sector have been addressed using new tax revenues:

- Turkey, Philippines among countries that have allocated tobacco tax revenues to helping tobacco farmers and/or those employed in tobacco manufacturing make transition to other livelihoods
  - Crop substitution programs, retraining programs



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Employment changes associated with the introduction of taxes on sugar-sweetened beverages and nonessential energy-dense food in Mexico

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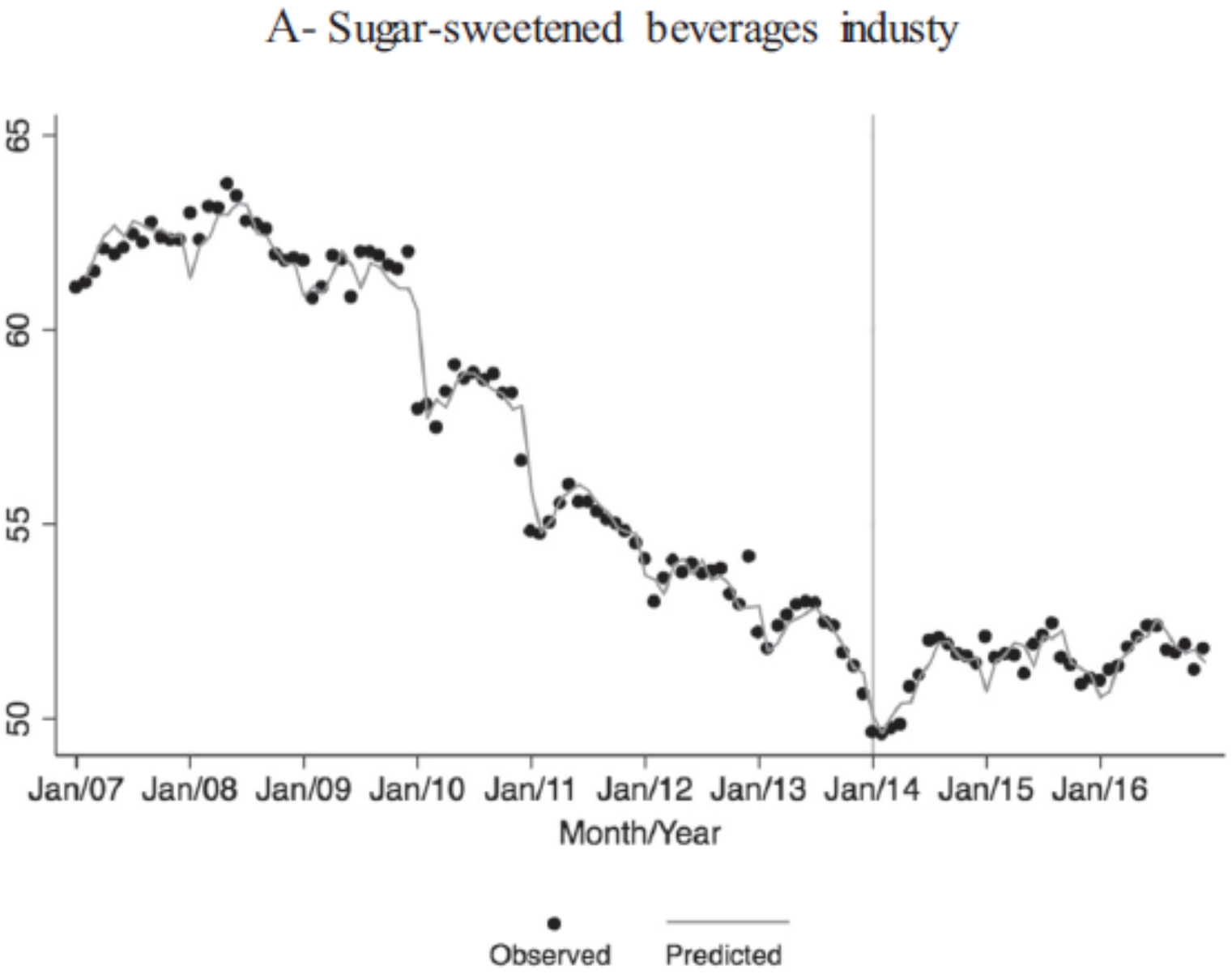
ARTICLE INFO

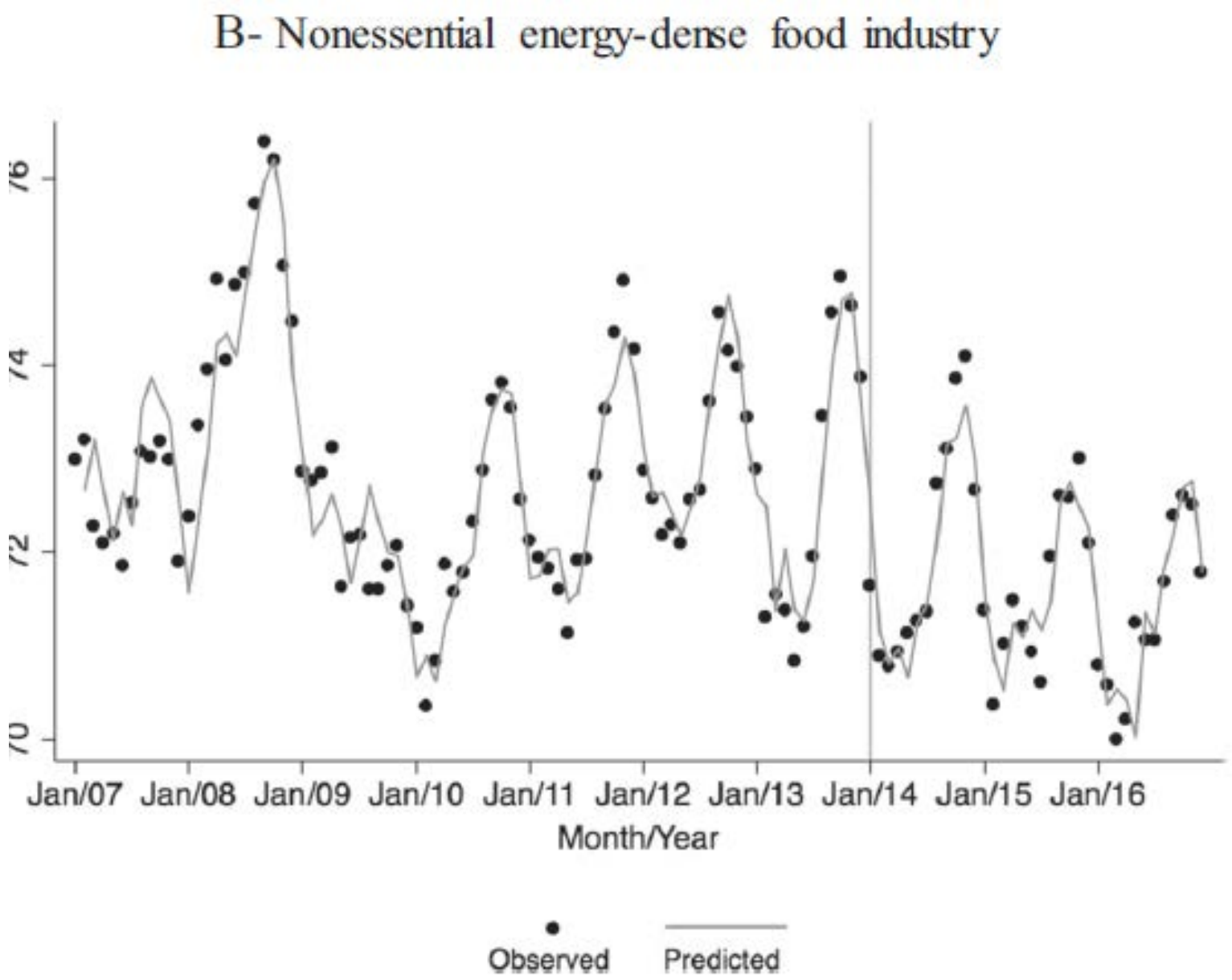
Keywords:
Employment
Taxes
Mexico
Evaluation
Policy
Obesity

ABSTRACT

We assessed changes in employment in the manufacturing industry, the commercial sector and national unemployment rates, associated with the fiscal policies implemented in 2014 in Mexico: a 1 peso per liter excise tax to sugar-sweetened beverages (SSB) and an 8% tax on nonessential energy-dense food. We used data from three nationally representative surveys. Controlling for contextual variables, we used interrupted time series analyses to model changes in number of employees in the SSB and nonessential energy-dense food industry, in commercial establishments selling beverages and food and changes in national unemployment rates. Our results show that there were no significant changes in employment associated with the taxes in the manufacturing industries (for beverages and nonessential energy-dense food). We found a very small increasing trend in the post-tax period for employment in commercial stores and a decreasing trend in the unemployment rate. However, these changes are negligible and unlikely to be caused by the implementation of the taxes. In conclusion, there were no employment reductions associated with the fiscal policies implemented in Mexico in 2014 on SSB and nonessential energy-dense food.



Thousands of employees, Mexico, 2007-2016; Guerrero-Lopez, et al., 2017



Thousands of employees, Mexico, 2007-2016; Guerrero-Lopez, et al., 2017

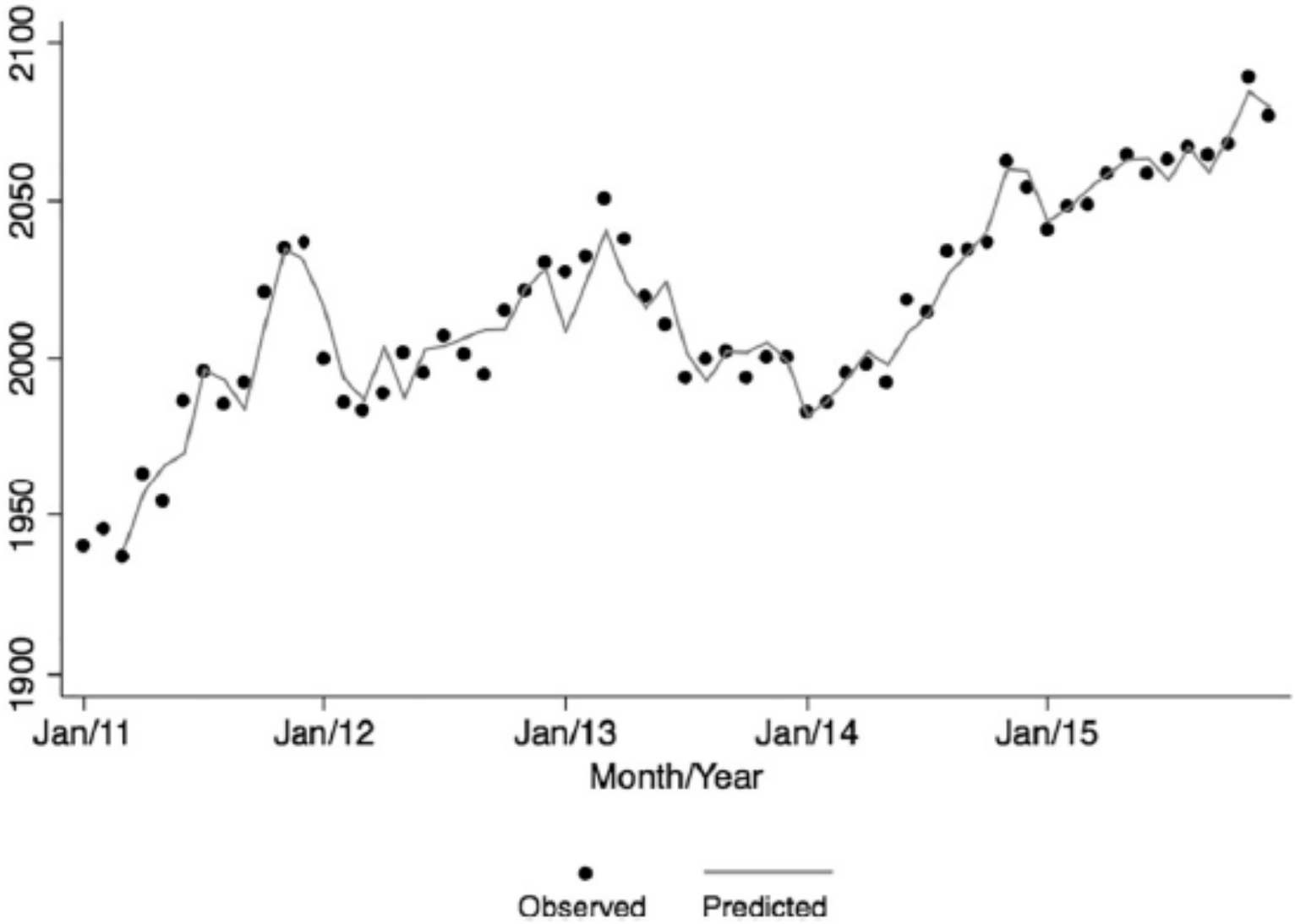


Fig. 2. Thousands of employees in commercial establishments. Mexico, EMEC, 2011–2015.

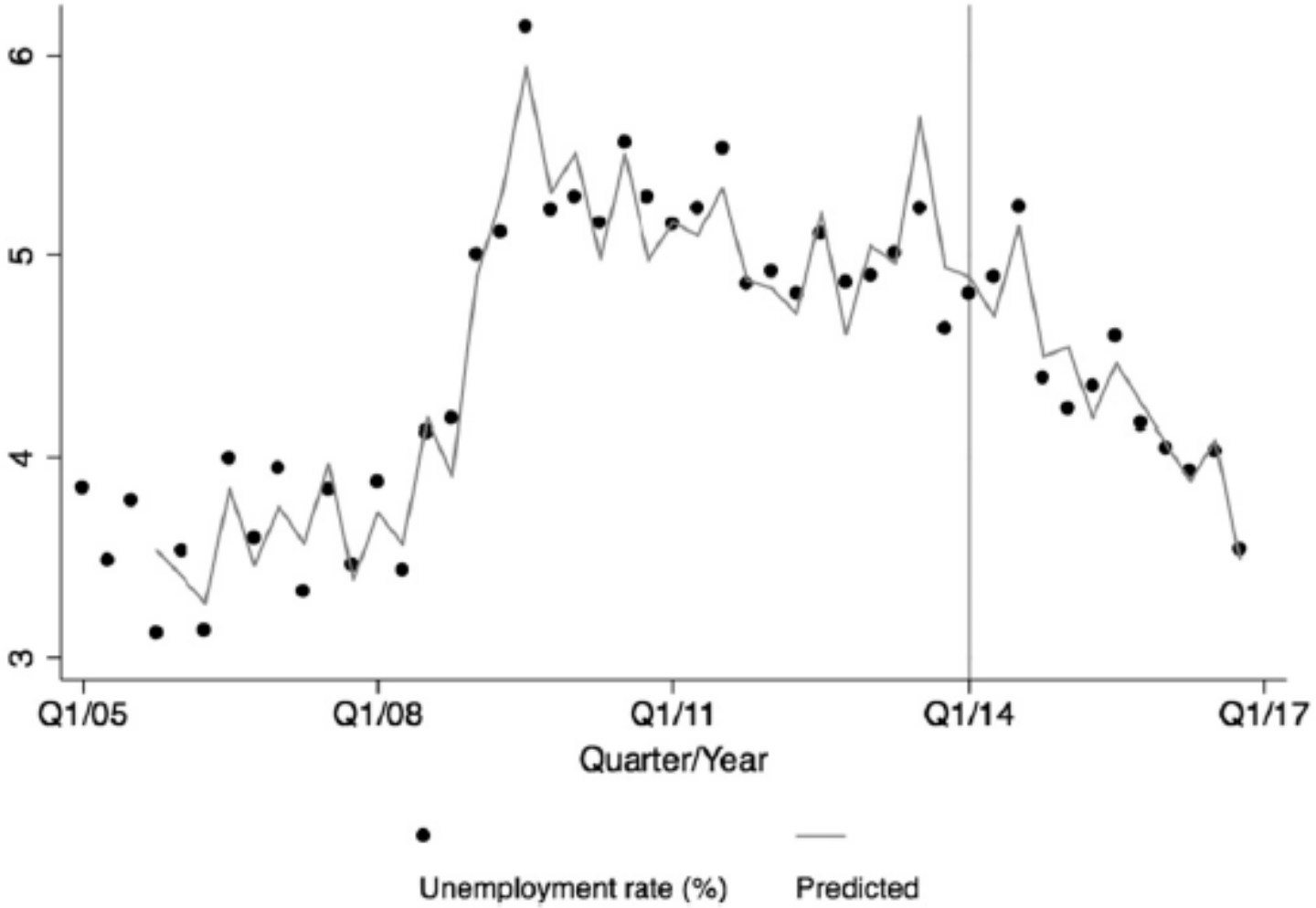


Fig. 3. National unemployment rate. Mexico, ENOE 2005–2016.

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Employment impacts of alcohol taxes☆

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ARTICLE INFO

Keywords:
Alcohol taxes
Excise taxes
Sales taxes
Employment

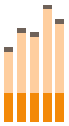
ABSTRACT

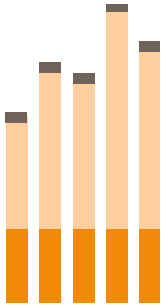
There is strong scientific evidence supporting the effectiveness of increasing alcohol taxes for reducing excessive alcohol consumption and related problems. Opponents have argued that alcohol tax increases lead to job losses. However, there has been no comprehensive economic analysis of the impact of alcohol taxes on employment. To fill this gap, a regional macroeconomic simulation model was used to assess the net impact of two hypothetical alcohol tax increases (a 5-cent per drink excise tax increase and a 5% sales tax increase on beer, wine, and distilled spirits, respectively) on employment in Arkansas, Florida, Massachusetts, New Mexico, and Wisconsin. The model accounted for changes in alcohol demand, average state income, and substitution effects. The employment impact of spending the new tax revenue on general expenditures versus health care was also assessed. Simulation results showed that a 5-cent per drink additional excise tax on alcoholic beverages with new tax revenues allocated to general expenditures increased net employment in Arkansas (802 jobs); Florida (4583 jobs); Massachusetts (978 jobs); New Mexico (653 jobs); and Wisconsin (1167 jobs). A 5% additional sales tax also increased employment in Arkansas (789 jobs; Florida (4493 jobs); Massachusetts (898 jobs); New Mexico (621 jobs); and Wisconsin (991 jobs). Using new alcohol tax revenues to fund health care services resulted in slightly lower net increases in state employment. The overall economic impact of alcohol tax increases cannot be fully assessed without accounting for the job gains resulting from additional tax revenues.

Table 3
Simulated impacts of alcohol tax increases on employment (number of jobs) by government revenue allocation in Arkansas, Florida, Massachusetts, New Mexico, and Wisconsin.

		5-Cent excise tax	5% sales tax
Arkansas	Gross	−323	−408
	Net (general revenue)	802	789
	Net (health care sector[a])	67	11
Florida	Gross	−3281	−4042
	Net (general revenue)	4583	4493
	Net (health care sector)	1048	687
Massachusetts	Gross	−1009	−1248
	Net (general revenue)	978	898
	Net (health care sector)	250	121
New Mexico	Gross	−334	−390
	Net (general revenue)	653	621
	Net (health care sector)	139	98
Wisconsin	Gross	−1078	−1315
	Net (general revenue)	1167	991
	Net (health care sector)	1064	887

[a] Health care sectors consist of health practitioners; outpatient, laboratory, and other ambulatory care services; home health care services; hospitals; and nursing and residential care facilities.

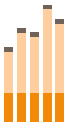


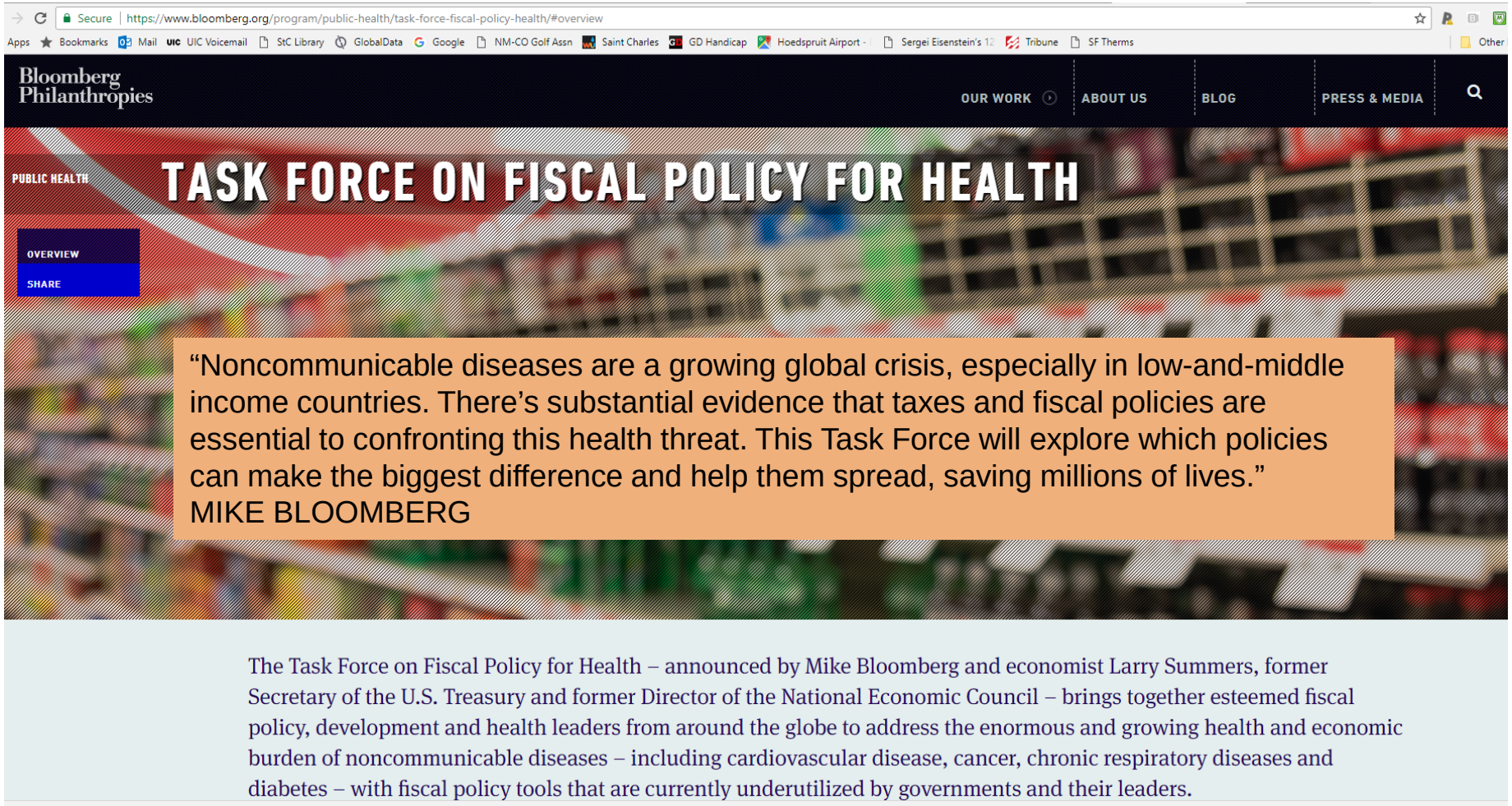


Summary

Conclusions

- Higher tobacco and alcohol taxes, and new sugary beverage taxes will significantly reduce consumption
- Reduced consumption will lead to fewer cases of cancer, cardiovascular disease, diabetes, and other non-communicable diseases
- Counterarguments about negative economic impact false or greatly overstated
- Taxes generally considered one of the “best buys” in NCD prevention





"We have strong evidence from around the world that raising taxes on products like tobacco, sugar sweetened beverages and alcohol is highly effective at reducing harmful consumption and saving lives. I'm grateful for the commitment of this impressive group of leaders, whose expertise and experience will help the Task Force bring attention to the enormous potential of fiscal policies for health."
LARRY SUMMERS

THANK YOU!

For more information:

Bridging the Gap
http://www.bridgingthegapresearch.org

Tobacconomics
http://www.tobacconomics.org

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