

tobacconomics

Economic Research Informing Tobacco Control Policy

New Research on Tobacco Taxation and Implications for Smokefree New Zealand

Frank J. Chaloupka, University of Illinois at Chicago

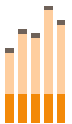
ASPIRE2025, University of Otago, Wellington, New Zealand

9 October, 2015

Overview

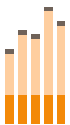
- Tobacco tax structure & tobacco use
- Price elasticity of cigarette demand
- Other tobacco products
- E-cigarette demand
- ANDS taxation
- Implications for Smokefree New Zealand

Mix of global and US-focused research



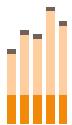
Many collaborators

- Jidong Huang
- Ce Shang
- Jamie Chriqui
- Xin Xu
- John Tauras
- Michael Pesko
- David Merriman
- Camille Gourdet
- Hillary DeLong
- Geoffrey Fong
- Ken Warner
- David Sweanor
- And many many more.....



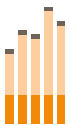
And many funders

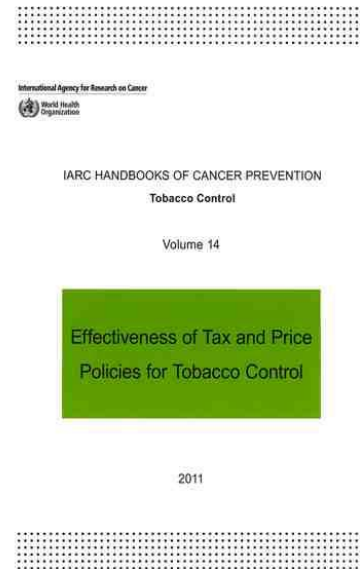
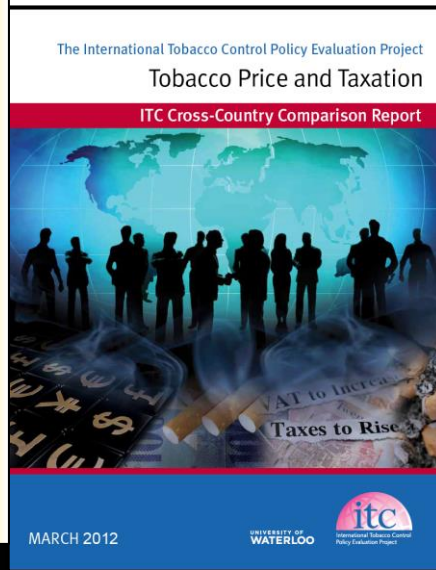
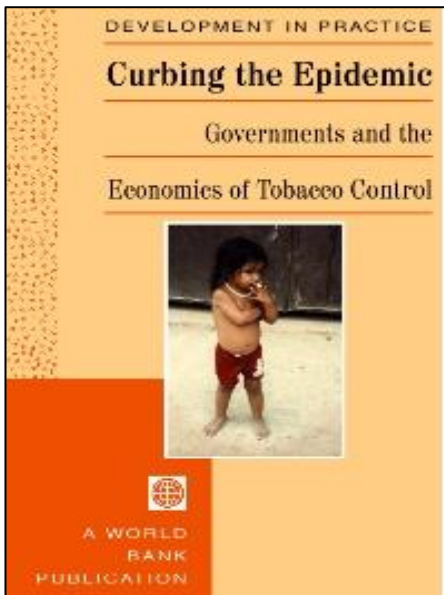
- National Cancer Institute, as part of NCI's State and Community Tobacco Control Research Program
- Centers for Disease Control and Prevention
- National Cancer Institute, as part of support for the International Tobacco Control Policy Evaluation Study (ITC)
- Canadian Institutes for Health Research
- World Health Organization
- Bloomberg Philanthropies
- Bill and Melinda Gates Foundation
- And others.....



*"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.**"*

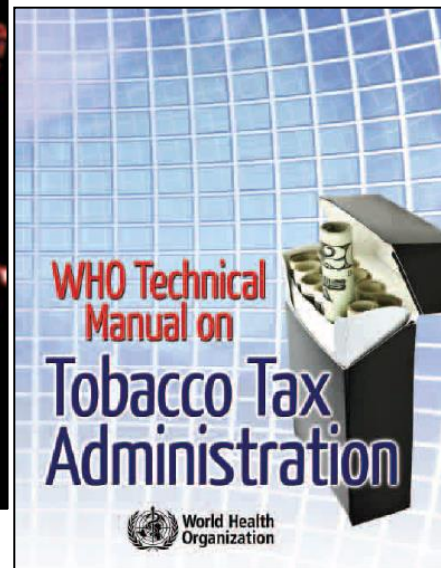
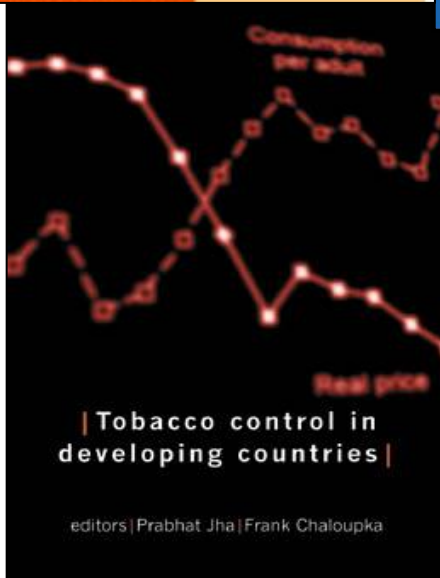
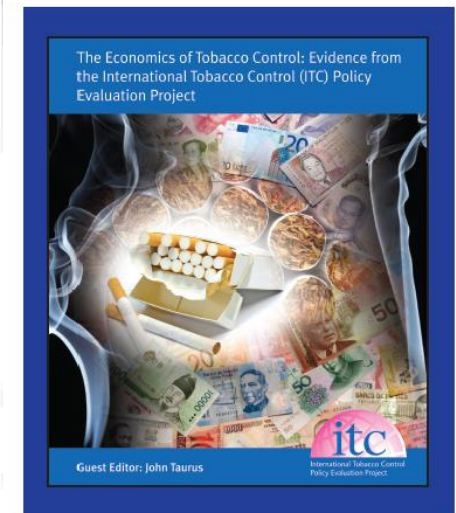
Adam Smith, *An Inquiry into the Nature and Causes of The Wealth of Nations*, 1776



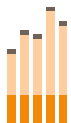
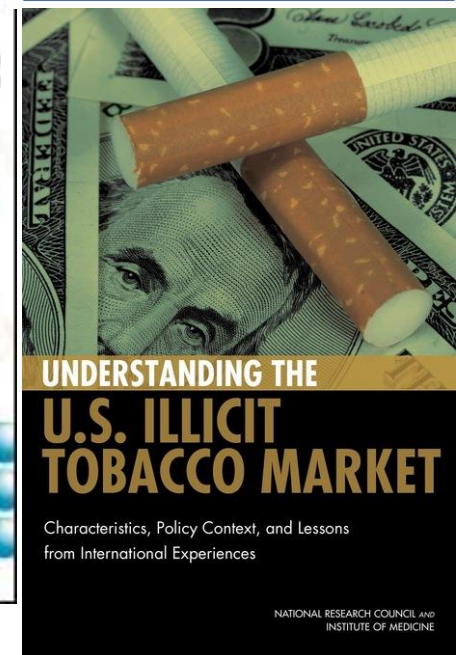


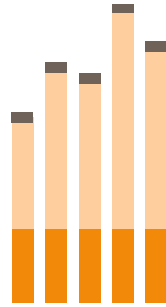
March 2014 Volume 23 Supplement 1

TOBACCO CONTROL



tobaccocontrol.bmj.com **BMJ**

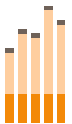




Tax Structure

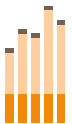
WHO's Best Practices in Tobacco Taxation

- Simpler is better
 - Complex tax structures more difficult to administer
 - Greater opportunities for tax evasion and tax avoidance under complex tax structures
 - Where existing structure is more complex, simplify over time with goal of achieving single uniform tax



WHO's Best Practices in Tobacco Taxation

- Rely more on specific tobacco excises as the share of total excises in prices increases
 - Greater public health impact of specific excises given reduced opportunities for switching down in response to tax/price increases
 - Sends clear message that all brands are equally harmful
 - Where existing tax is ad valorem, adopt a specific tax and increase reliance on specific tax over time



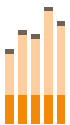
FCTC Article 6 Guidelines

Section 3 – Tobacco taxation systems – Recommendation:

“Parties should implement the simplest and most efficient system that meets their public health and fiscal needs, and taking into account their national circumstances. **Parties should consider implementing specific or mixed excise systems with a minimum specific tax floor**, as these systems have considerable advantages over purely ad valorem systems.”

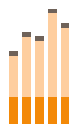
“Parties should establish coherent long-term policies on their tobacco taxation structure and monitor on a regular basis including targets for their tax rates, in order to achieve their public health and fiscal objectives within a certain period of time.”

“Tax rates should be monitored, increased or adjusted on a regular basis, potentially annually, taking into account inflation and income growth developments in order to reduce consumption of tobacco products.”



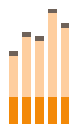
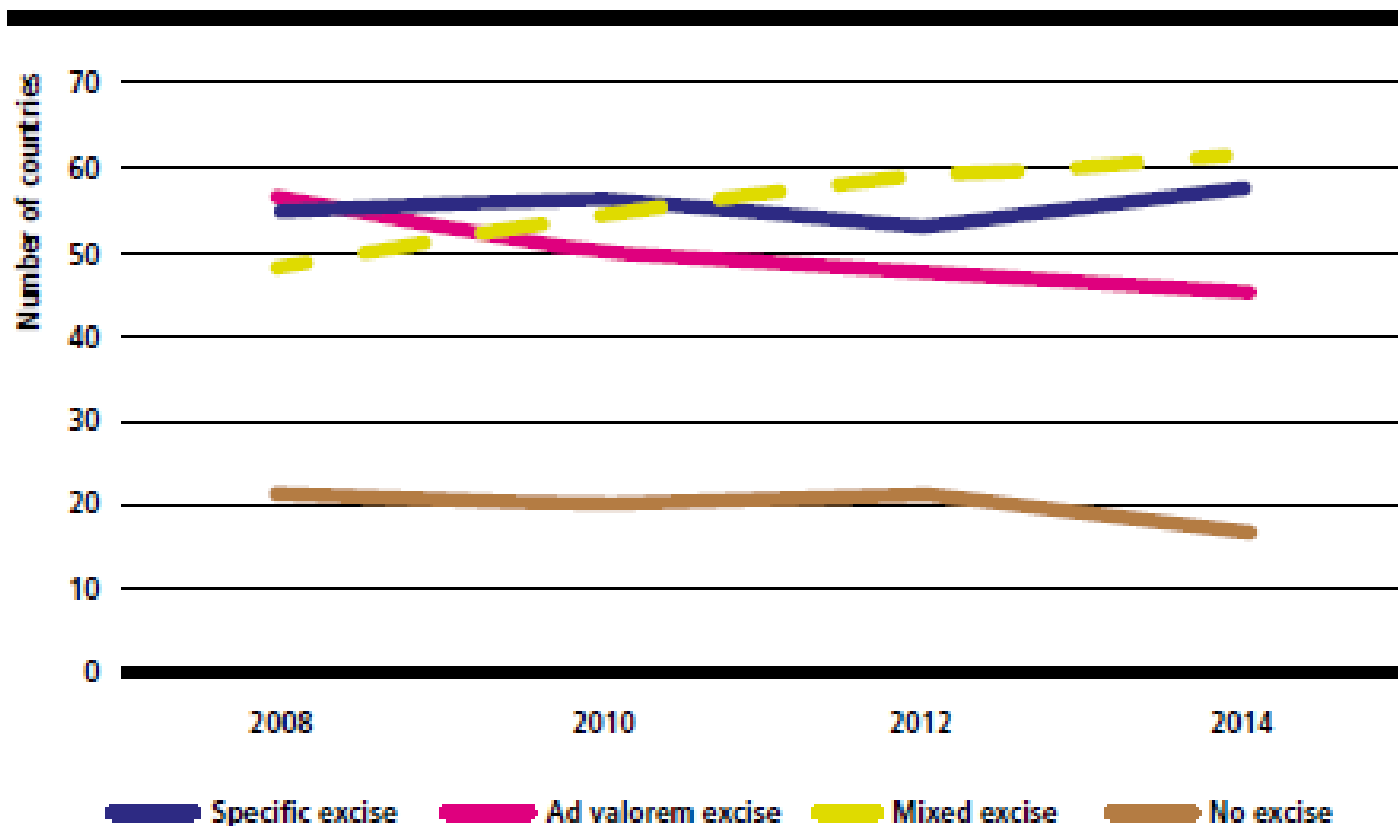
Excise Systems for Cigarettes 2014

	Number of countries
Total covered	186
Specific excise only	61
Ad valorem excise only	46
Mixture of both excises	61
No Excise	18



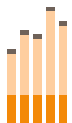
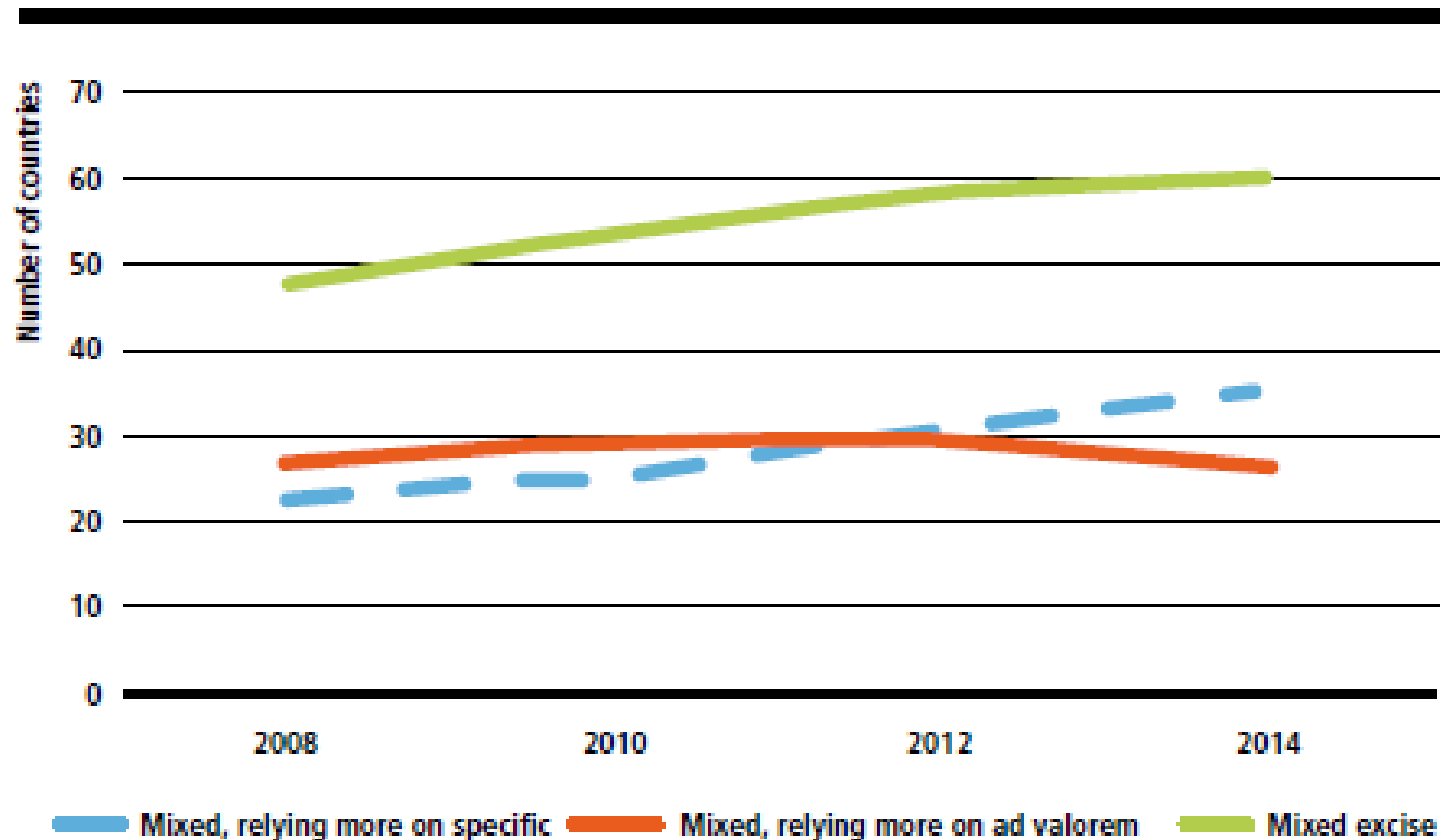
Excise Systems for Cigarettes

CHANGES IN EXCISE TAX STRUCTURES, 2008–2014



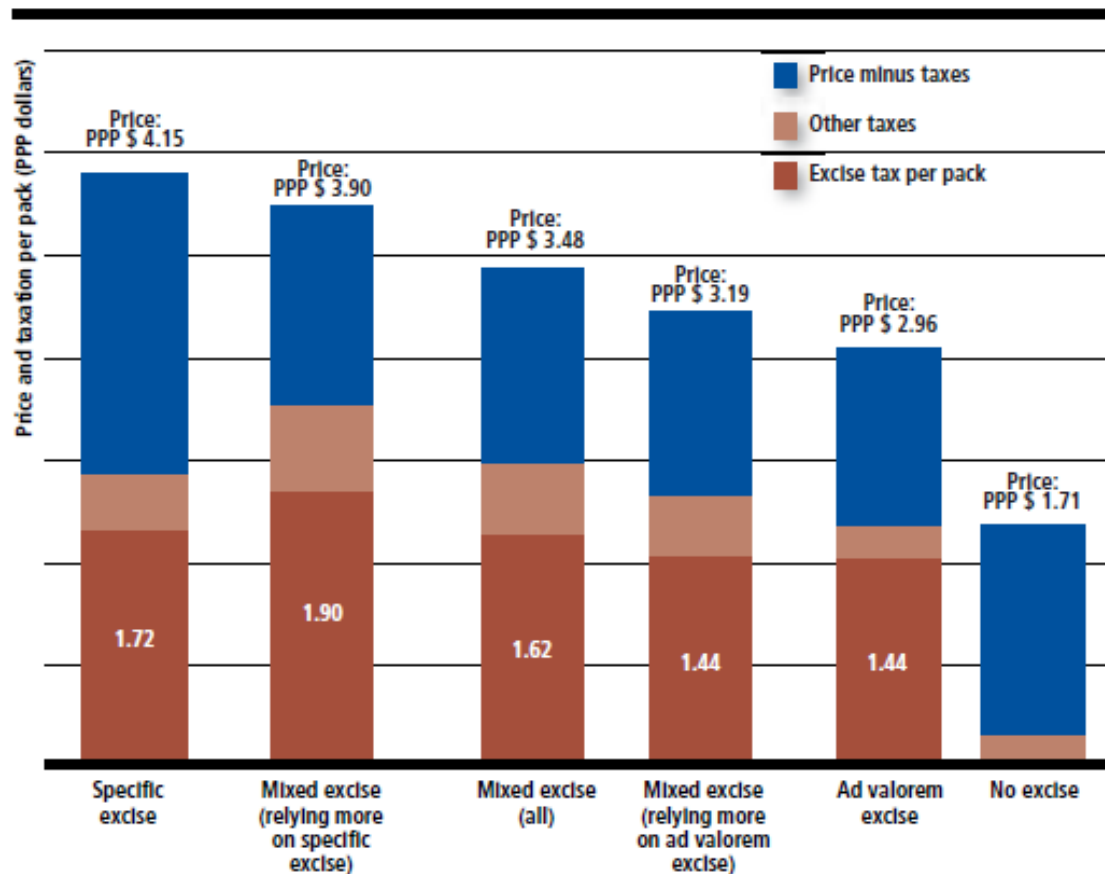
Excise Systems for Cigarettes

GREATER RELIANCE ON SPECIFIC EXCISE WITHIN MIXED TAX SYSTEMS, 2008–2014

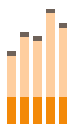


Average price and excise tax by tax structure, 2014

WEIGHTED AVERAGE PRICES AND TAXES PER PACK BY TAX STRUCTURE

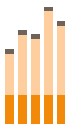


Note: Averages are weighted by WHO estimates of number of current cigarette smokers in each country. Prices are expressed in Purchasing Power Parity (PPP) adjusted dollars or international dollars to account for differences in the purchasing power across countries. Based on 53 high-income, 98 middle-income and 29 low-income countries with data on price of most sold brand, excise and other taxes, and PPP conversion factors.



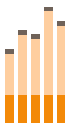
Tiered Tax Systems

- 37 of 168 countries with cigarette excise tax employ a tiered tax system
- Differential taxes based on:
 - Prices
 - Product characteristics
 - Filter vs. non-filter
 - Length
 - Type of product
 - Type of tobacco
 - Packaging
 - Weight
 - Producer characteristics



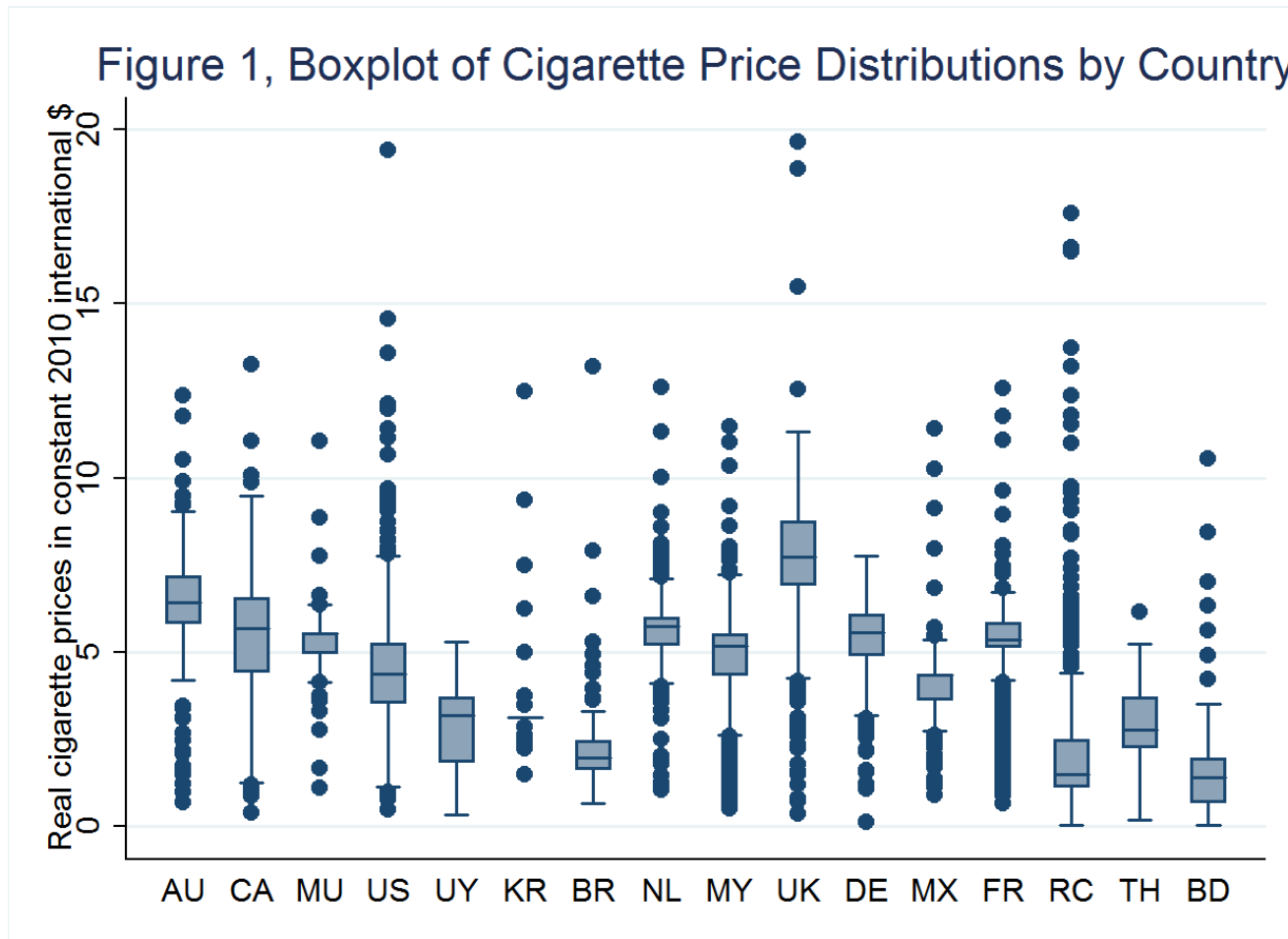
Tax Structure & Prices: Descriptive Evidence from the ITC Countries

- Most recent wave of ITC data from 16 countries.
- Distributions of self-reported prices:
 - E.g., Interquartile range (IQR)-to-Median ratio, max-min range to mean ratio
- Tax Structure measures:
 - Tiered ad valorem: Bangladesh
 - Tiered mixed: China, Brazil (2012-)
 - Tiered specific: India, Brazil (Prior to 2012)
 - Ad valorem: Mexico (prior to 2009), Thailand
 - Mixed: UK, Germany, France, Netherlands, Malaysia, Mexico
 - Specific: US, Australia, Canada, Uruguay, Mauritius,

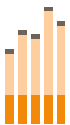


Source: Shang, et al., 2014

Tax Structure & Prices: Descriptive Evidence from the ITC Countries

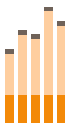


Source: Shang, et al., 2014



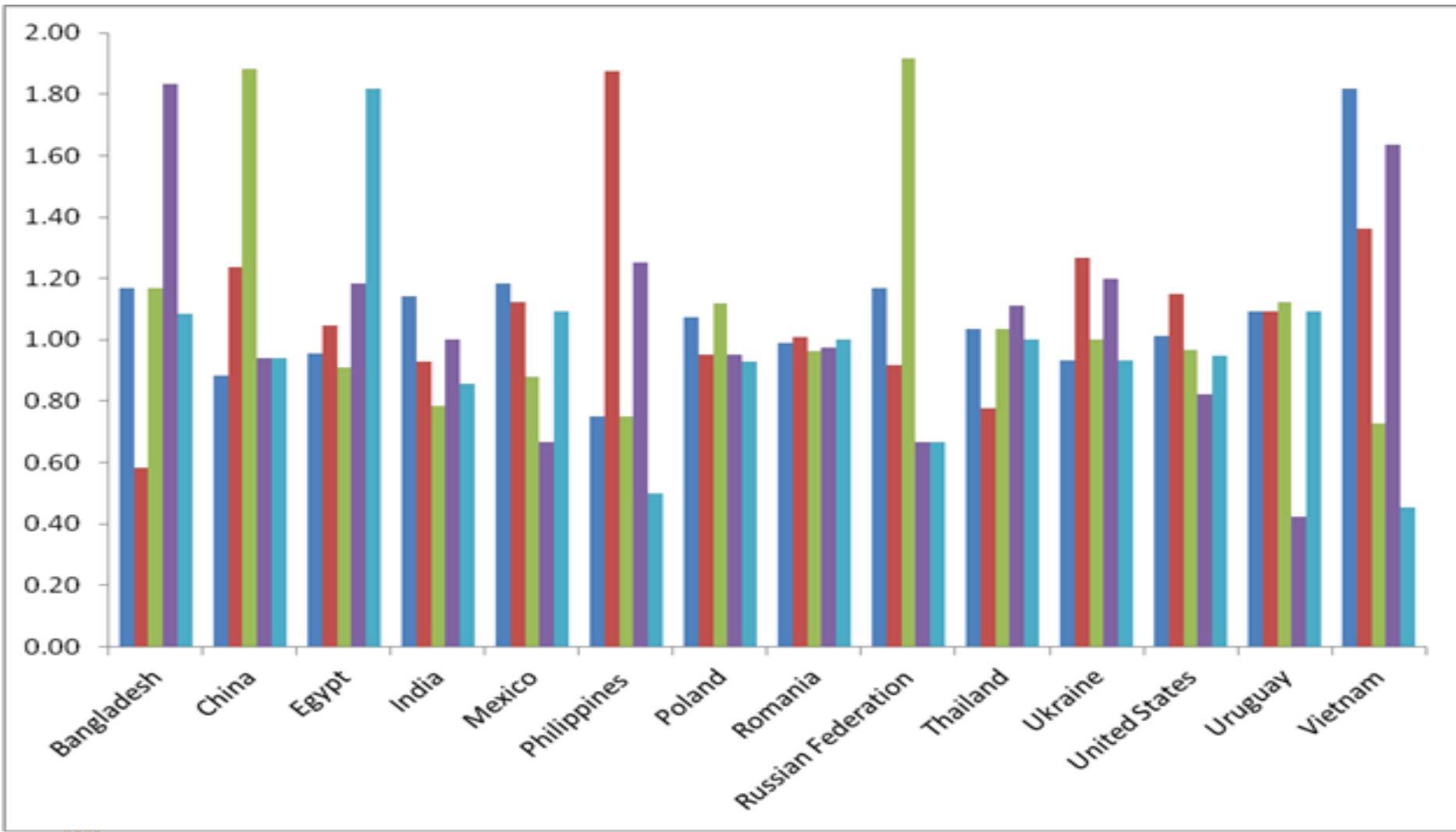
Tax Structure & Prices: Descriptive Evidence from the ITC Countries

- Findings:
 - Compared to countries with specific tax structures, countries with other tax systems tend to have price distributions with greater variability
 - Countries with tiered tax structures have greater variability around the median price
 - Countries with tiered tax structures have price distributions more heavily skewed towards lower prices
 - Countries with mixed systems that rely more heavily on ad valorem than on specific component have greater variability around the median price



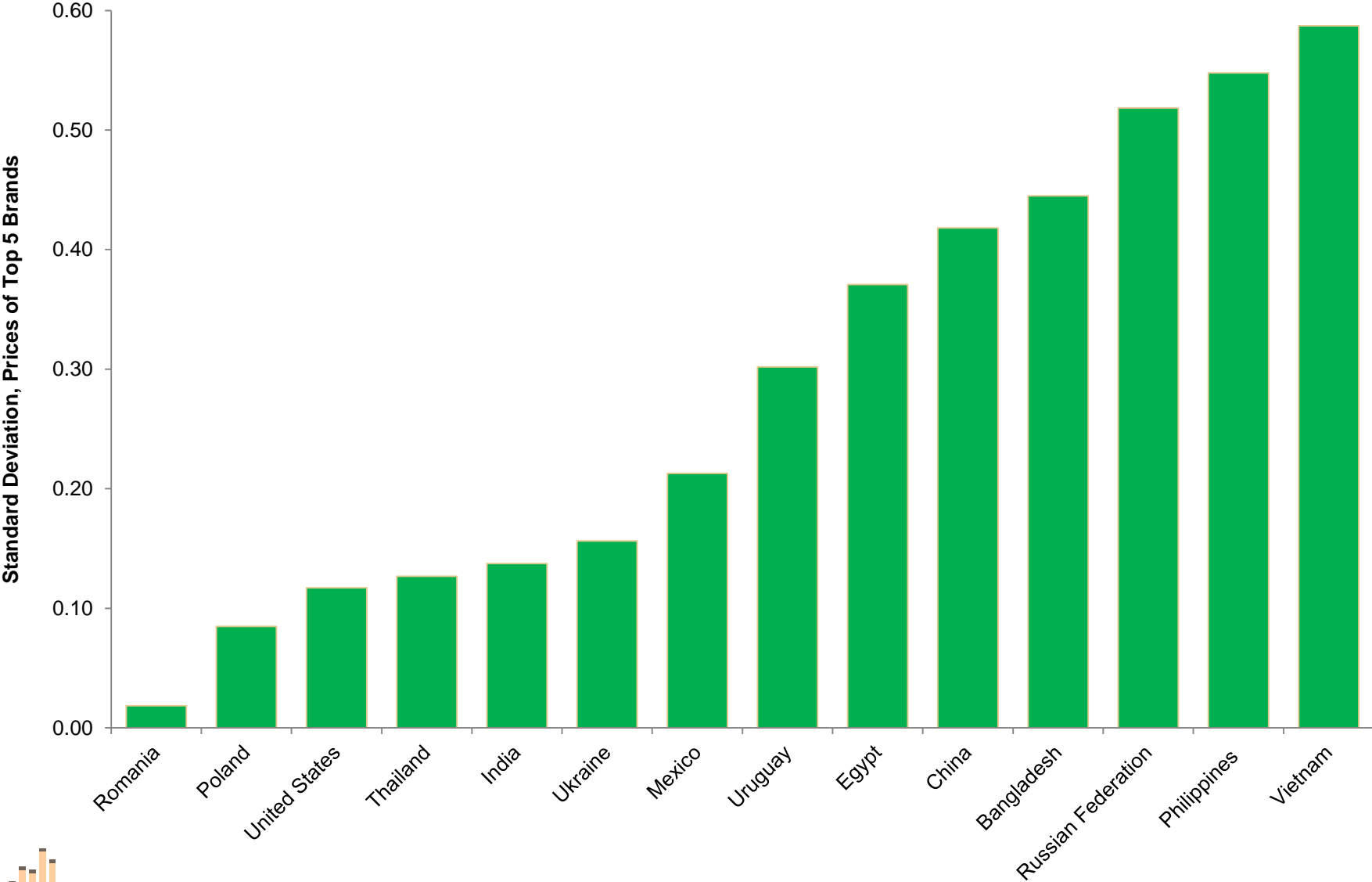
Source: Shang, et al., 2014

Similar Evidence from GATS & NATS



Source: Chaloupka, et al., 2014

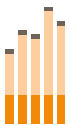
Similar Evidence from GATS & NATS



Source: Chaloupka, et al., 2014

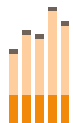
Tax Structure & Prices: Empirical Evidence from the ITC Countries

- Data
 - ITC data from 17 countries, 2004-2013.
 - Price variability constructed using self-reported prices:
 - Ratio of price gap between higher and lower prices to the median price, e.g. interquartile range (IQR)-to-median ratio.
 - Tax Structure measures:
 - Percentage of specific component among total taxes and a dichotomous indicator for tiered structure
 - Dichotomous measures for specific tiered, ad valorem specific, ad valorem tiered, mixed specific, and mixed tiered structure.
 - Controls: year fixed effects, EU dummy, sub-national tax dummy (US, UK, India).



Tax Structure & Prices: Empirical Evidence from the ITC Countries

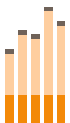
Country	Tax Base	Tax Rates
US	Specific	Uniform
Canada		
Uruguay		
Australia		
Mauritius		
Republic of Korea		
India		
Thailand	Ad Valorem	Uniform
Bangladesh		Tiered
China	Mixed (specific + ad valorem)	Uniform
Malaysia		
EU		
Mexico	Switched from ad valorem to mixed in 2009	Tiered
Brazil	Switched from specific to mixed in 2012	



Source: Shang, et al., 2015

Tax Structure & Prices: Empirical Evidence from the ITC Countries

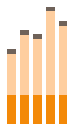
- Findings
 - Complicated tax structures that depart from a uniform specific structure are associated with greater price variability.
 - A 10% increase in the specific component of total excises is associated with a 2.8-4.3% lower price variability.
 - A tiered structure is associated with a 61-147% higher price variability.
 - Countries that impose a specific uniform tax structure, that increase their reliance on specific excise taxes, and/or switch from tiered to uniform tax rates, will reduce price variability.



Source: Shang, et al., 2015

Tax Structure & Cigarette Smoking: Evidence from the ITC Countries

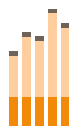
- Data:
 - ITC 17 countries, 2004-2013
 - Aggregate self-reported cigarette consumption
 - Control for:
 - Economic conditions (real GDP per capita)
 - Tobacco control policy environment (2010 “MPOWER” tobacco control composite scores by WHO)
 - Year fixed effects



Source: Shang, et al., in progress

Tax Structure & Cigarette Smoking: Evidence from the ITC Countries

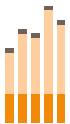
- Findings:
 - A tiered tax structure is associated with greater cigarette consumption.
 - A 10% increase in the share of the specific component among total excise taxes is associated with 6% lower cigarette consumption.

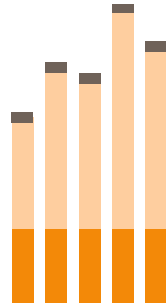


Source: Shang, et al., in progress

Tax Structure - Summary

- Growing evidence on the importance of *how* cigarettes are taxed
 - Uniform tax structures have greater impact on prices, price variation, and smoking behavior
 - Specific excise taxes have greater impact on prices, price variation, and smoking behavior

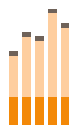
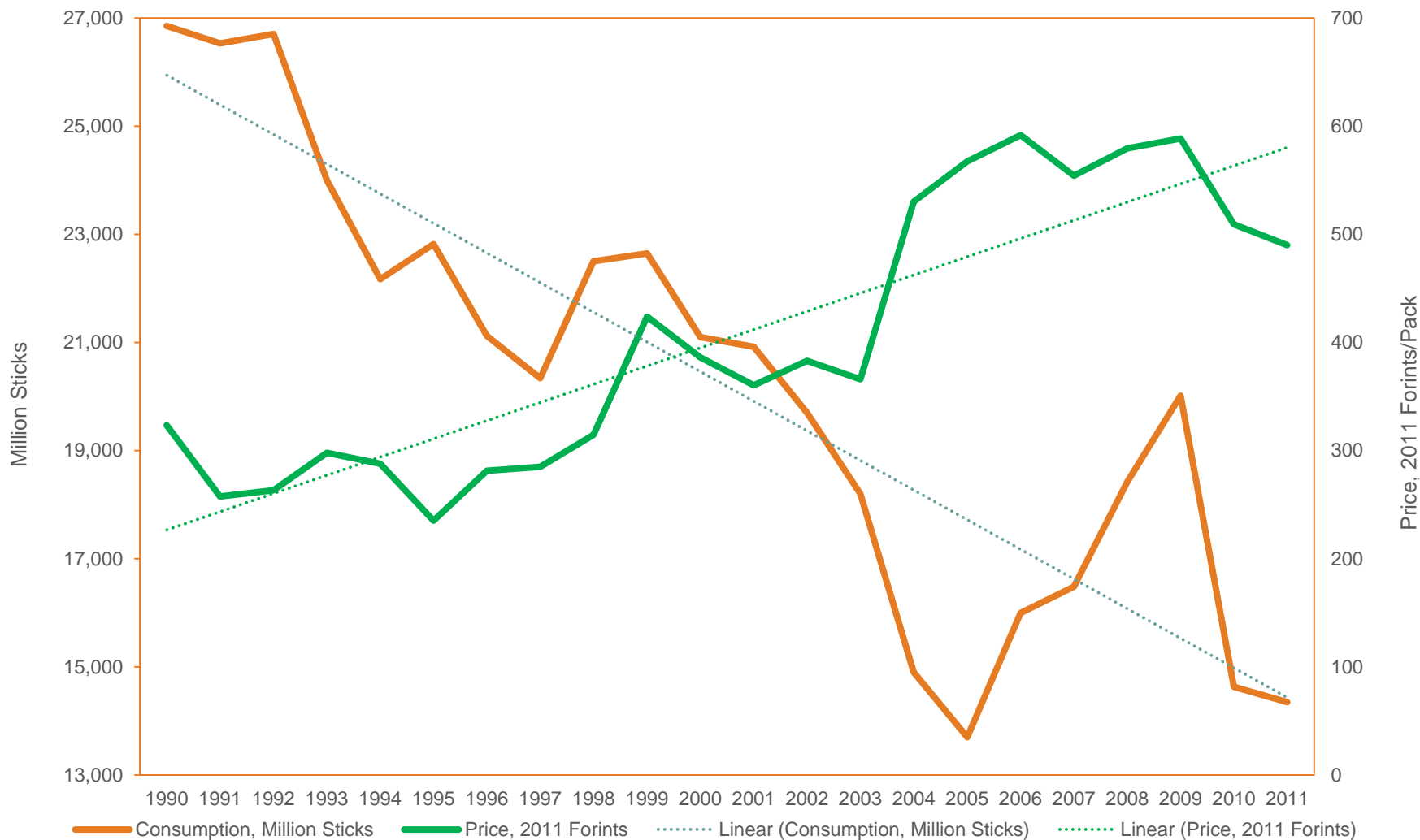




Price Elasticity of Cigarette Demand

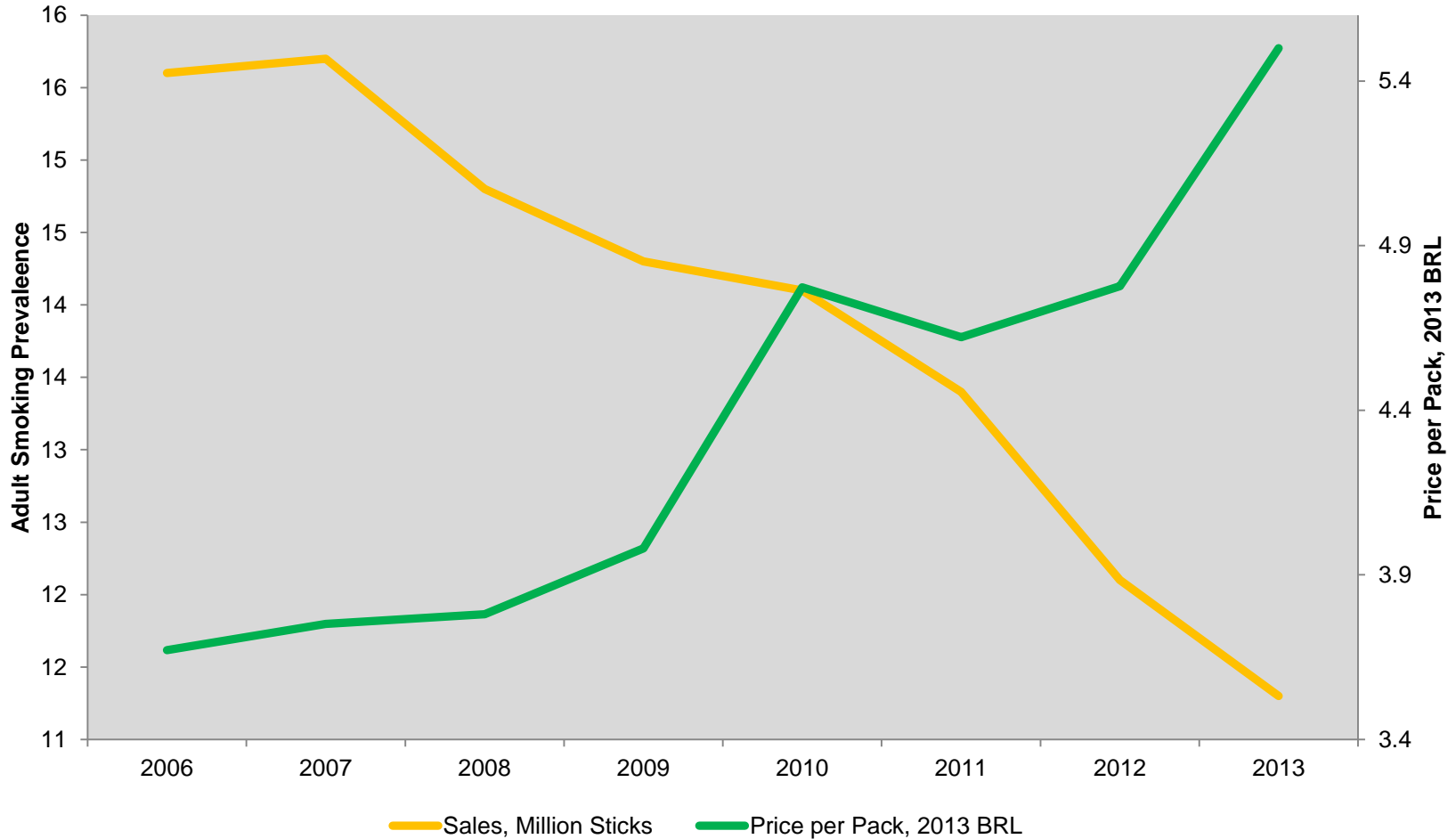
Cigarette Price & Consumption

Hungary, 1990-2011, Inflation Adjusted

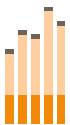


Adult Prevalence & Price, Brazil

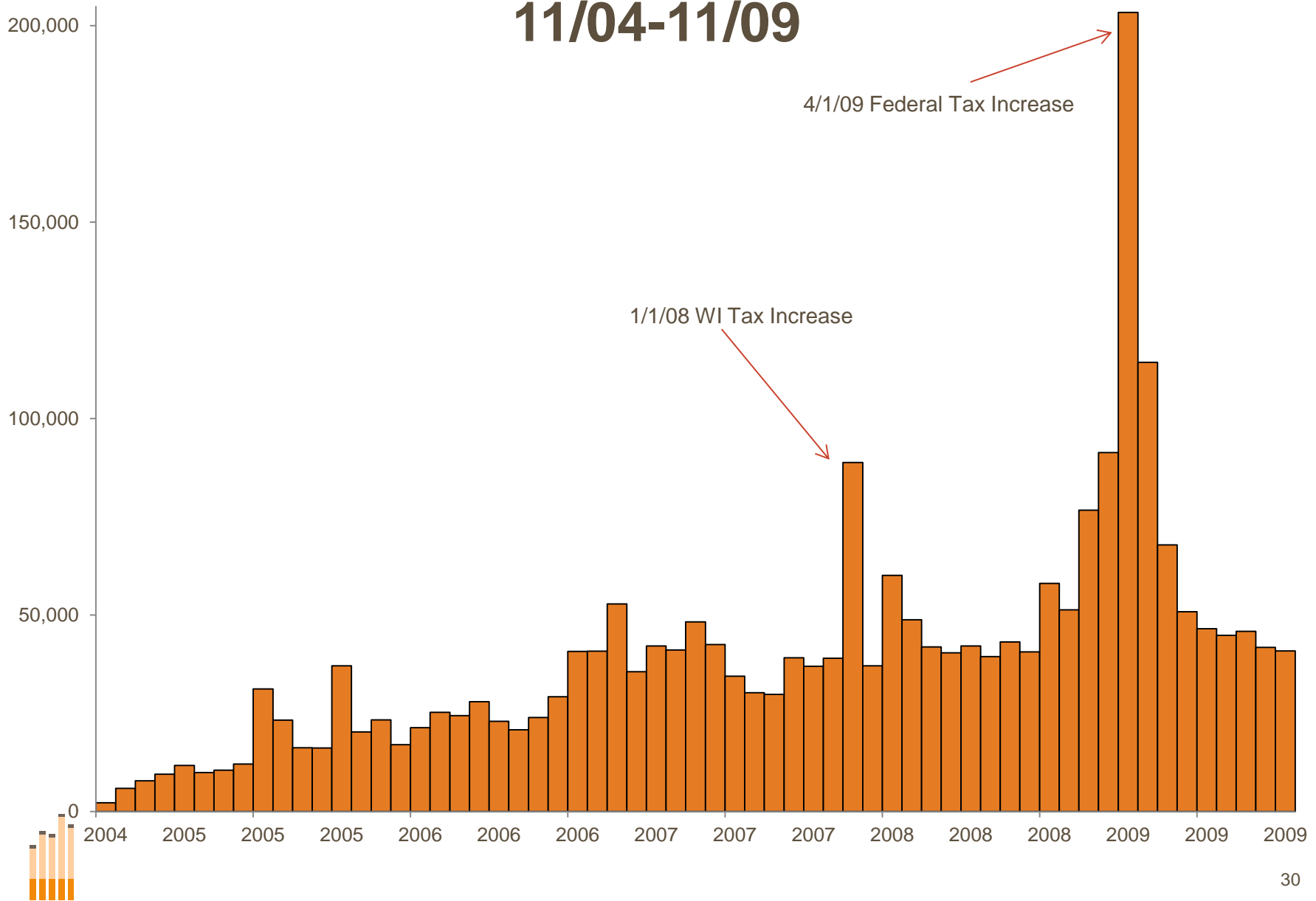
Adult Smoking Prevalence and Cigarette Price Brazil, Inflation Adjusted, 2006-2013



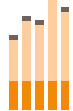
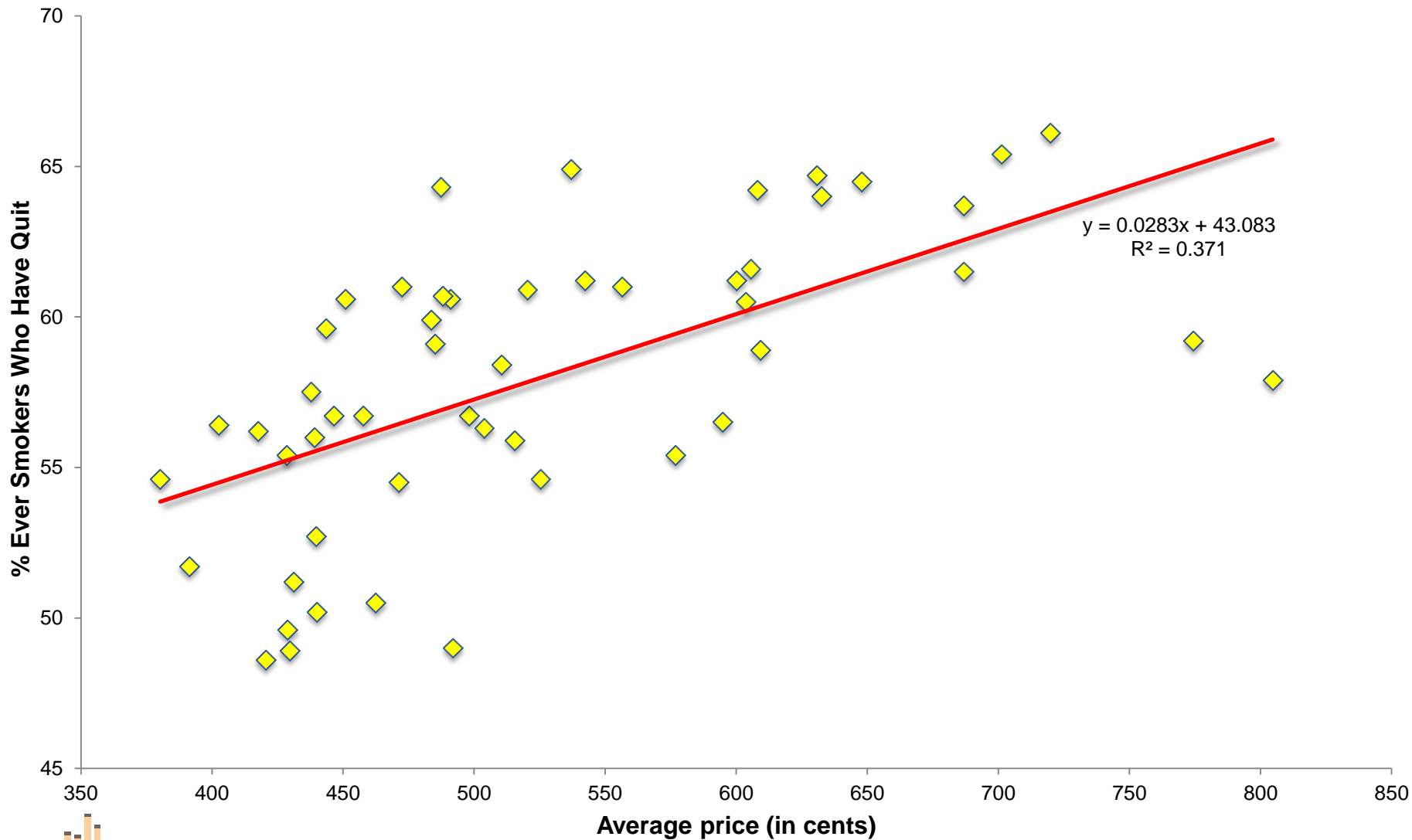
Sources: Ministry of Health, Brazil; EIU; World Bank



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

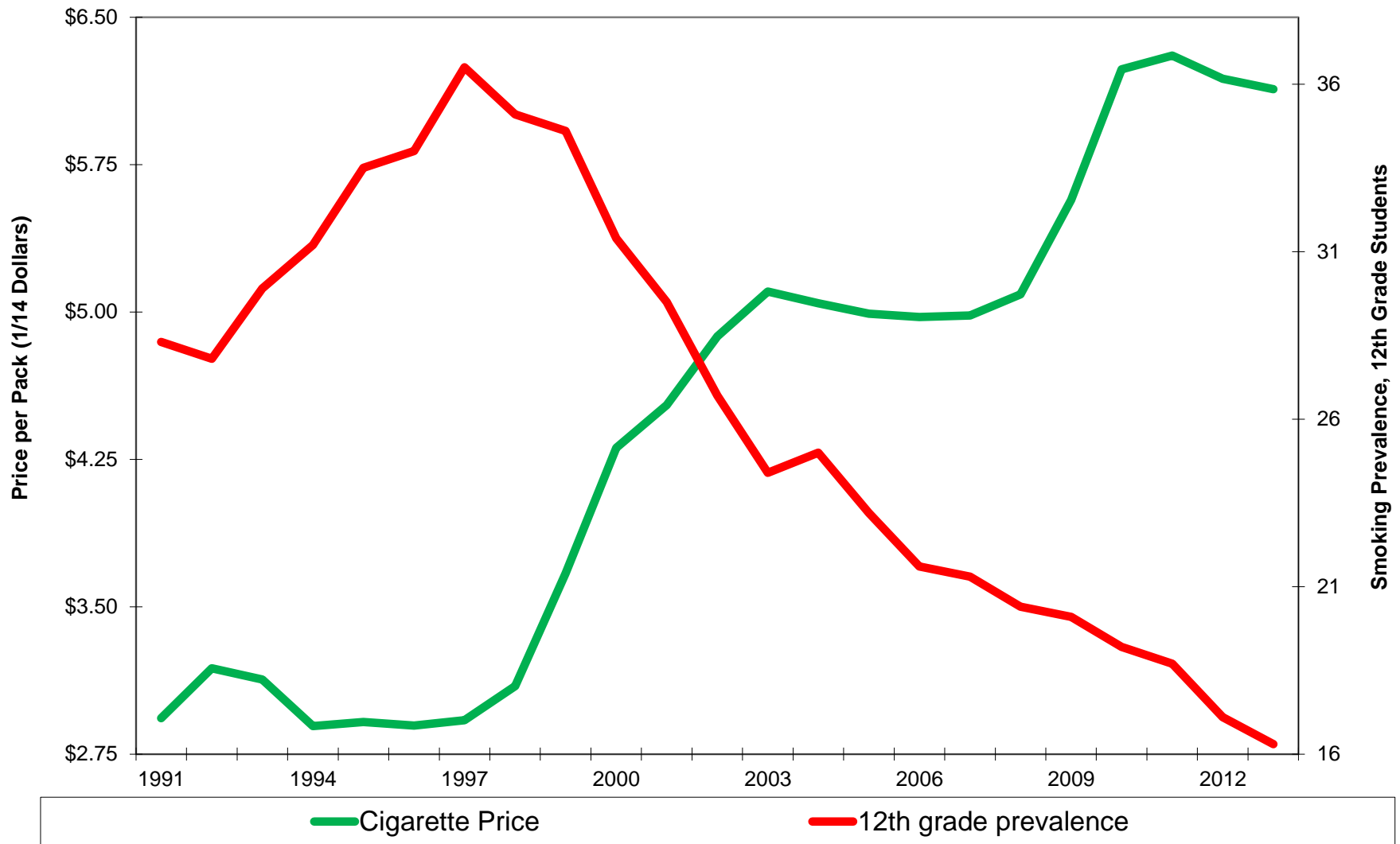


Cigarette Prices and Cessation US States & DC, 2009

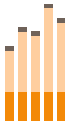


Source: BRFSS, *Tax Burden on Tobacco*, 2010, and author's calculations

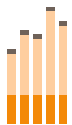
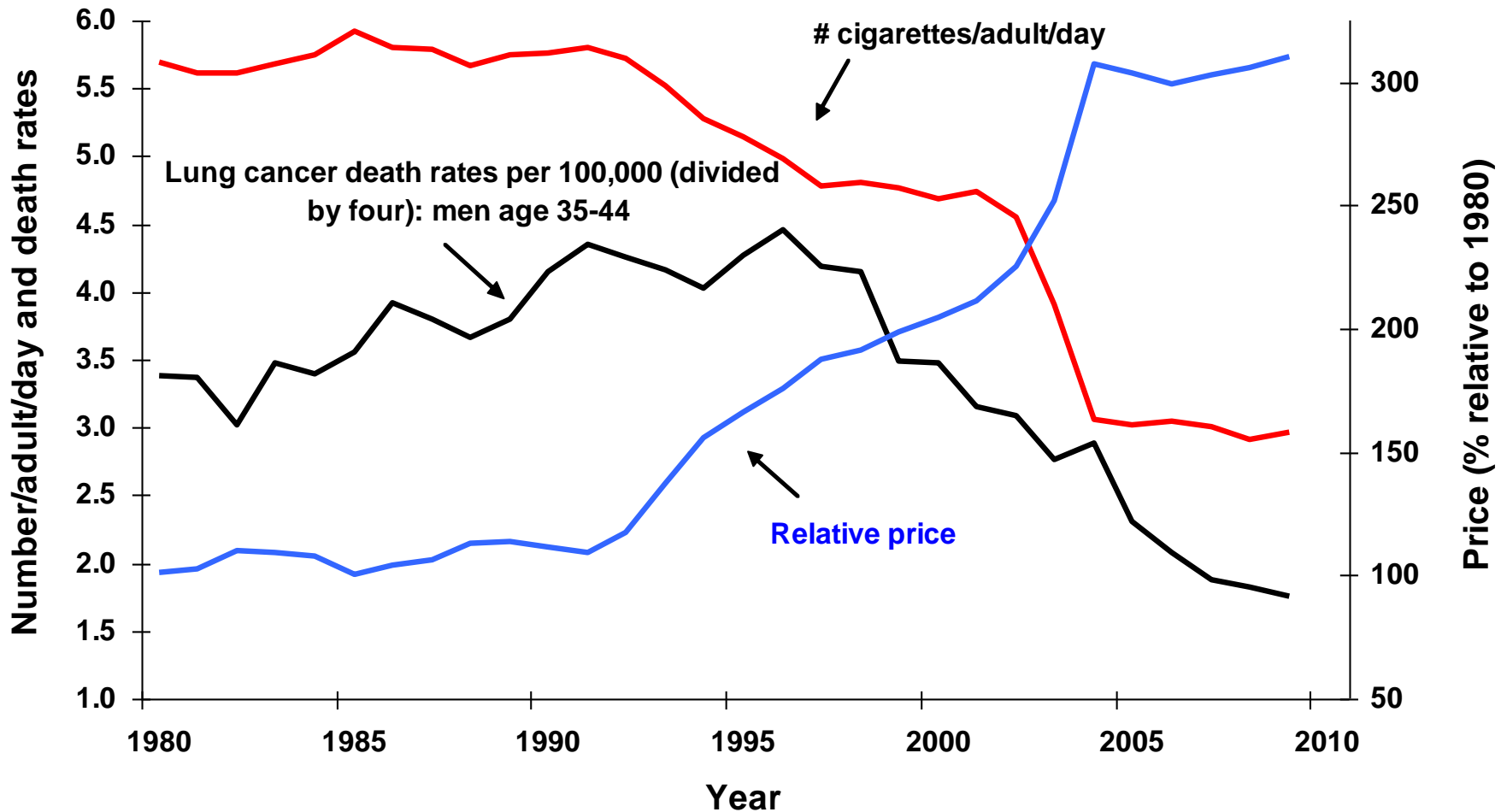
Cigarette Price & Youth Smoking Prevalence High School Seniors, United States, 1991-2013



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

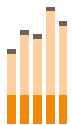


Price, Consumption & Lung Cancer, France



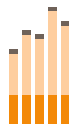
What We Know

- Increases in taxes that increase cigarette prices:
 - Decrease overall cigarette smoking
 - Reduce adult prevalence by inducing cessation induces current smokers to quit,
 - Deter re-initiation
 - Prevent youth uptake
 - Reduce consumption among continuing users
 - Lead to other changes in tobacco use behaviors
 - Brand/product choices, purchasing behaviors, tax avoidance, etc.

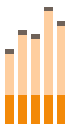
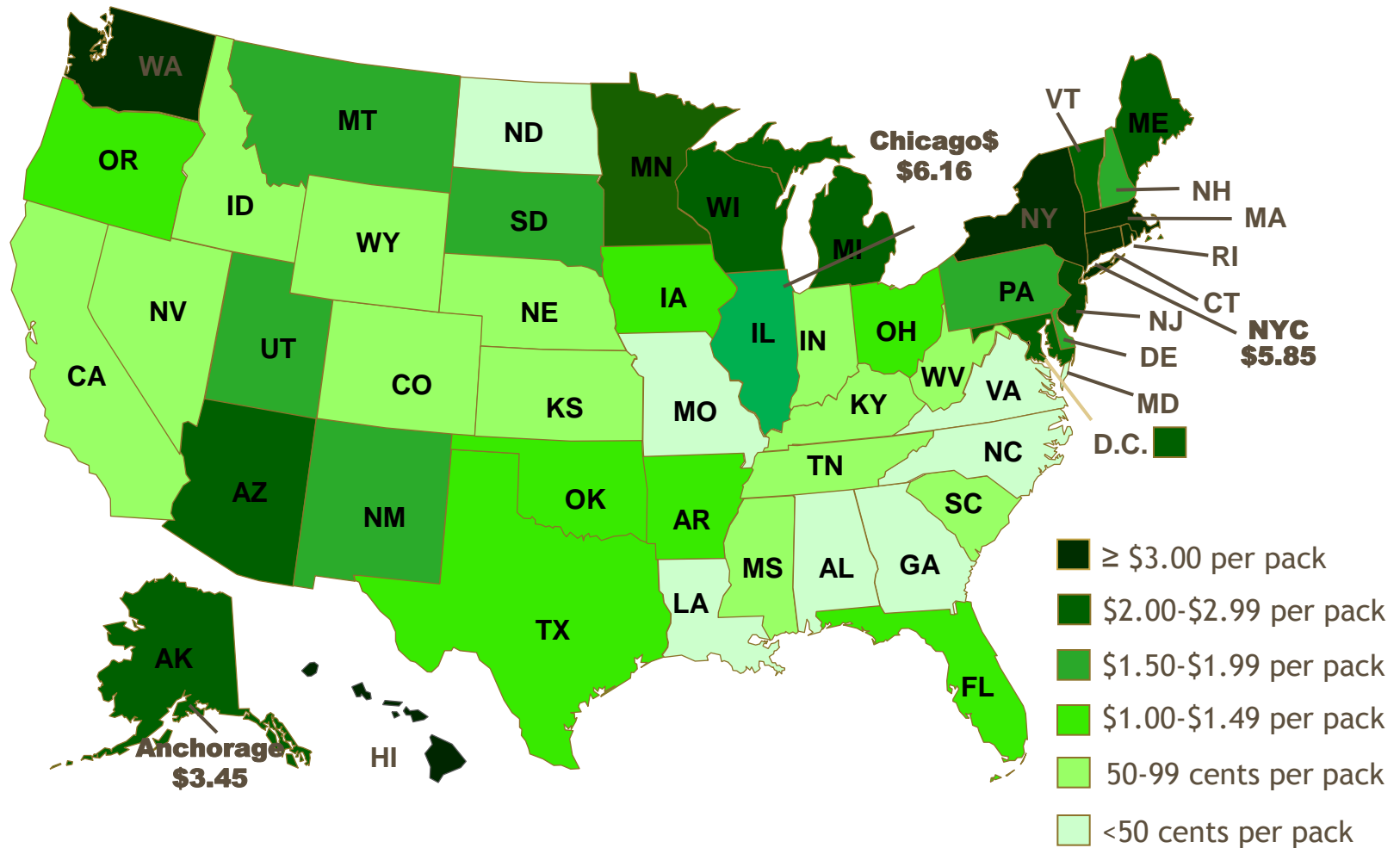


What We Need to Know

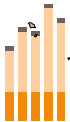
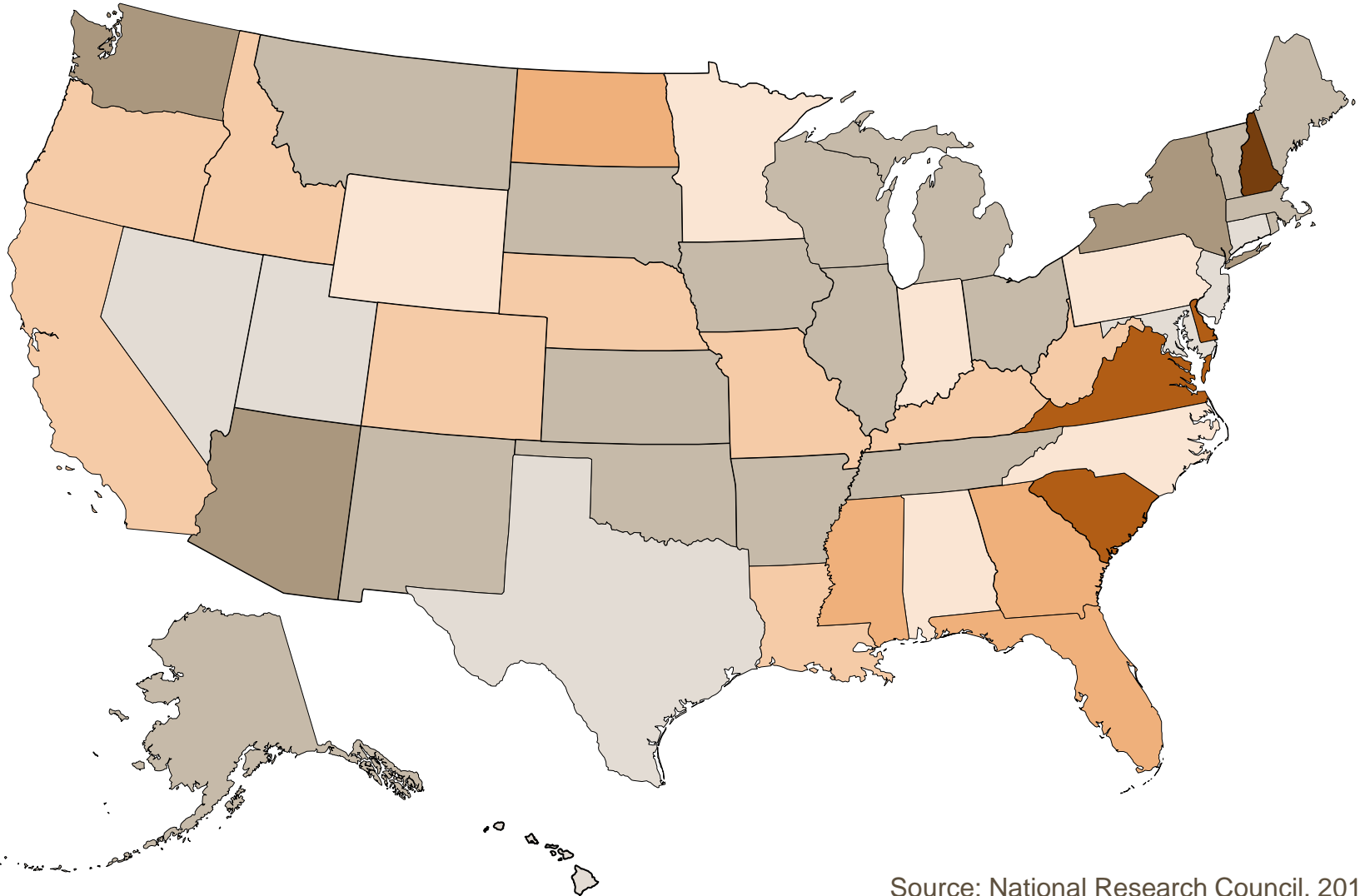
- How the effect of price increases changes as prices increase (potential nonlinear impact)
- Whether the impact of a price increase differs by the size of price increases (asymmetric impact)
- How opportunities for tax avoidance and evasion affect price elasticity estimates



State Cigarette Excise Tax Rates – February 2015



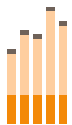
Estimated State Cigarette 'Importing' and 'Exporting', 2010-11



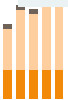
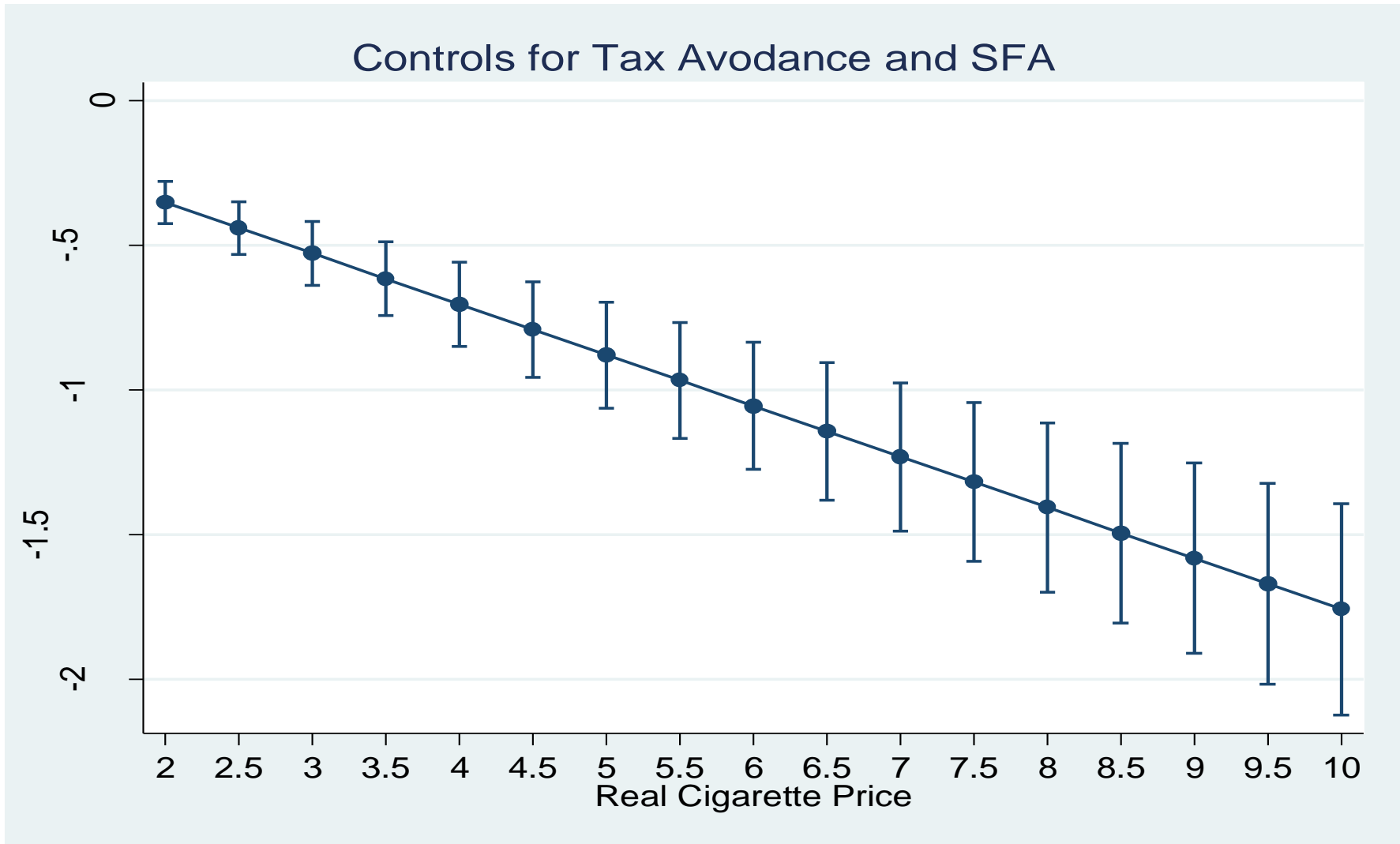
Source: National Research Council, 2015

Nonlinearities in Price Elasticity

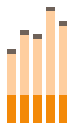
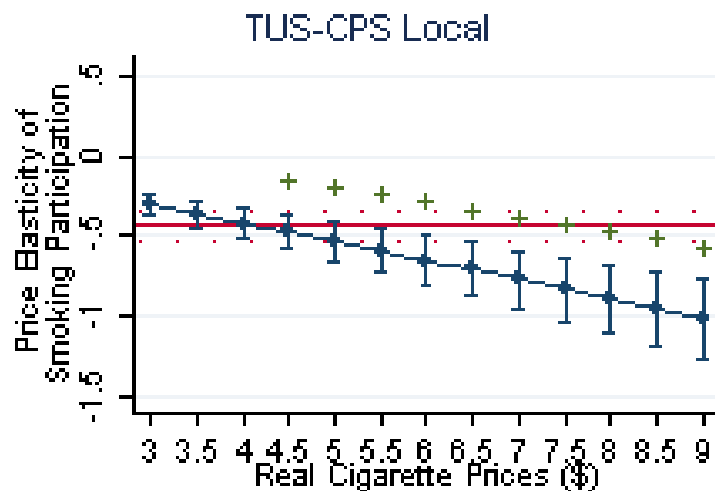
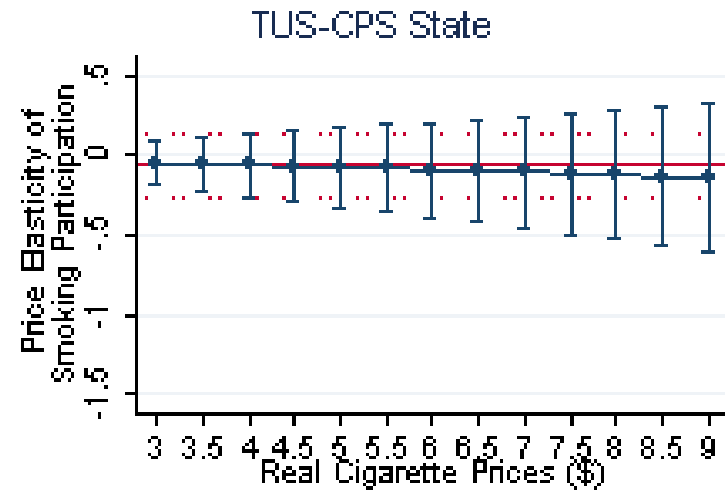
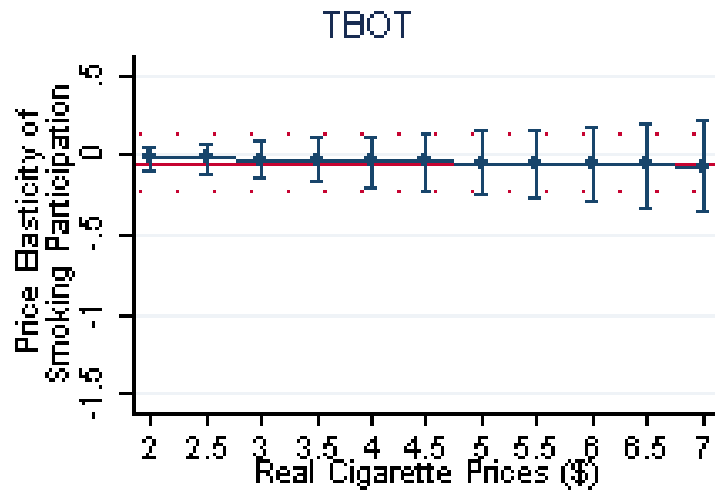
- Two sets of analyses in progress:
 - Aggregate analysis of state level tax-paid cigarette sales
 - Individual level analysis of cigarette smoking prevalence and consumption using data from multiple waves of the Tobacco Use Supplement to the Current Population Survey
 - Also emphasize how opportunities for tax avoidance and evasion can affect estimates of price elasticity
- All analyses control for other tobacco control policies and variety of other factors that influence cigarette demand



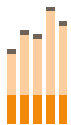
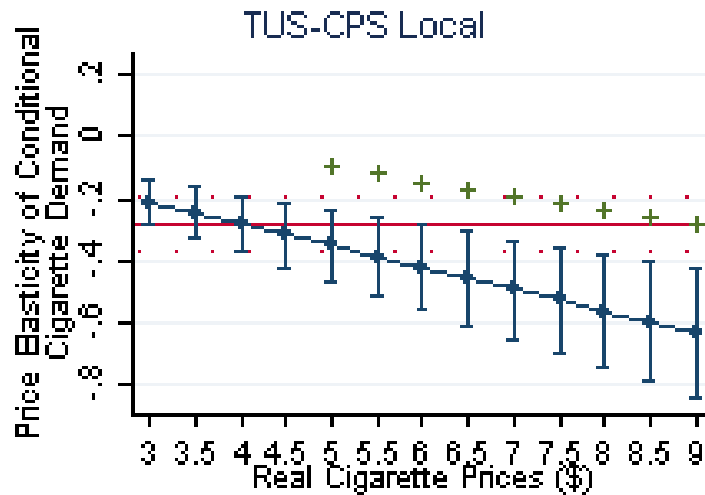
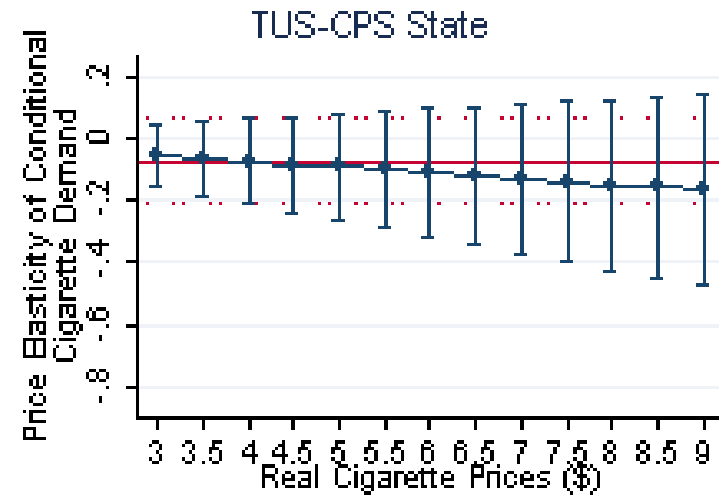
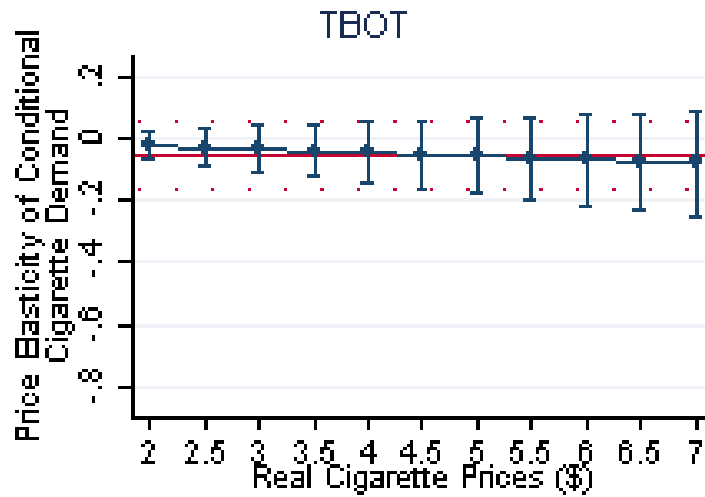
Results – Aggregate Data



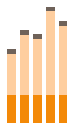
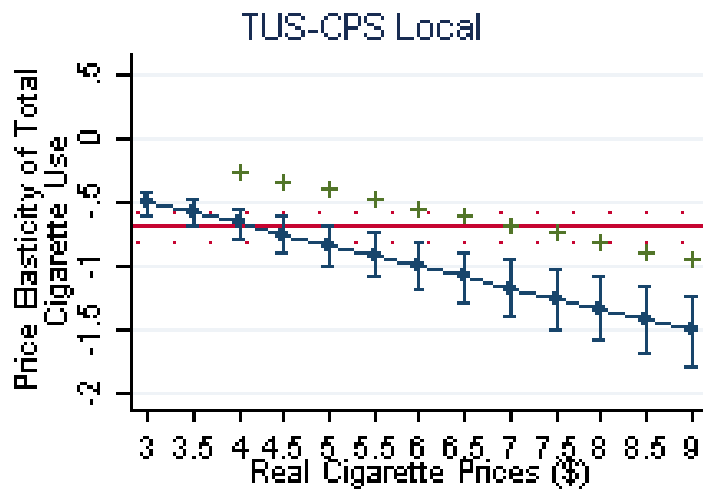
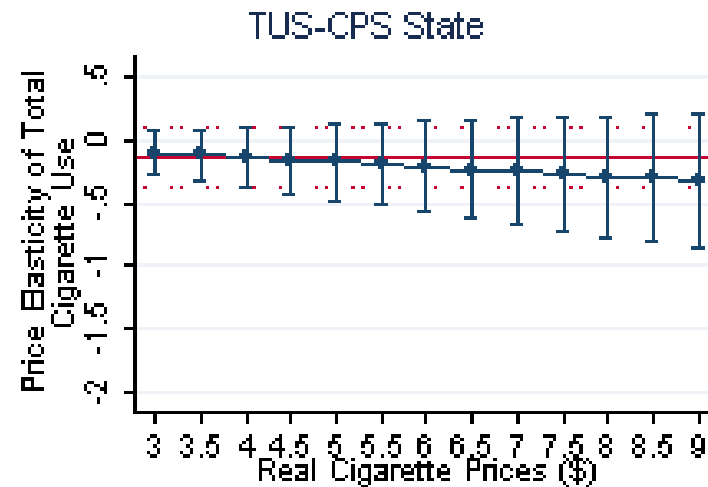
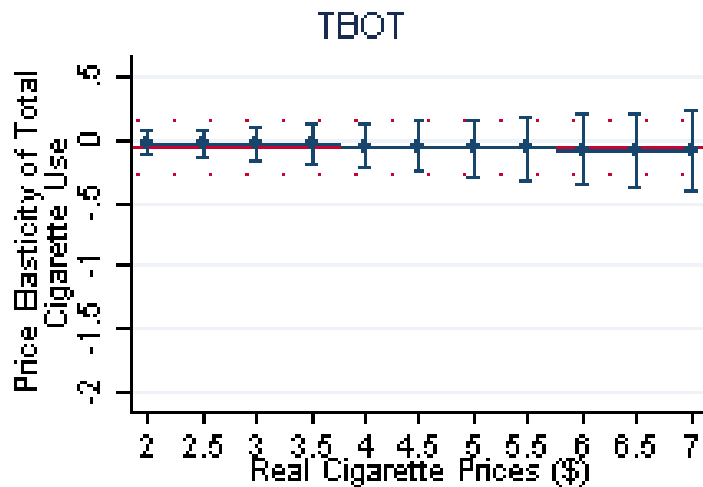
Price Elasticities - Prevalence



Price Elasticities - Consumption

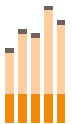


Total Price Elasticities



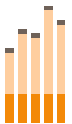
Nonlinearities in Price Elasticity

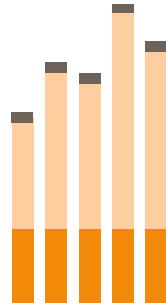
- Conclusions:
 - Price elasticity increases as price increases
 - 10% increase in price will result in larger reductions in smoking when price is higher
 - But marginal effect of price falls as price rises
 - Same price increase (e.g. \$1.00 per pack) will have smaller impact as price rises



Asymmetric Responses to Price

- Analyses in early stages:
 - Same aggregate and individual-level data
 - Early results suggest that large price increases have disproportionately larger impact than series of small increases
 - Shock value?
 - More difficult for industry to offset?

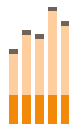




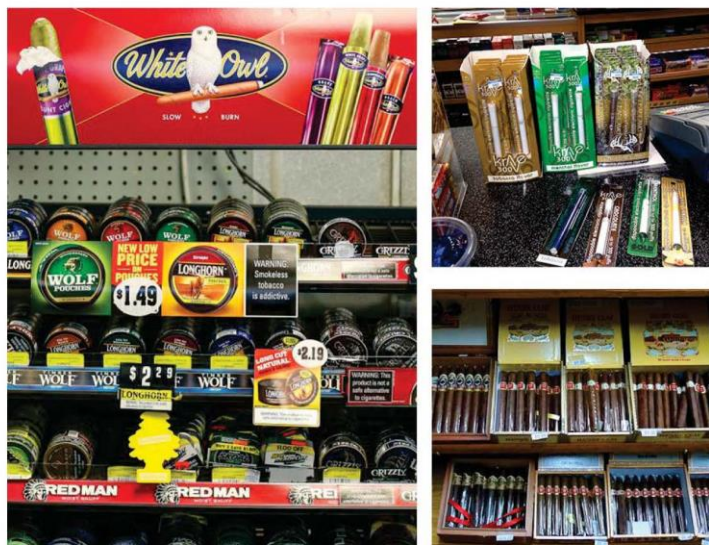
Other Tobacco Product Taxation

What We Need to Know

- How do governments tax other tobacco products (OTPs)?
- How different OTP tax structures affect the retail prices for these products?
- How do OTP taxes/prices affect prevalence, consumption, sales, initiation, and cessation (own price elasticities)?
- How do differences in taxes/prices across products affect use of different products (cross price elasticities)?



OTP Chartbook



Tobacco Product Taxation:

*An Analysis of State Tax Schemes Nationwide,
Selected Years, 2005-2014*

Camille K. Gourdet, JD, MA | Jamie F. Chriqui, PhD, MHS | Julien Leider, MS
Hillary DeLong, J.D. | Colin Goodman, J.D. | Frank J. Chaloupka, PhD.

August 2015

tobacconomics
Economic Research Informing Tobacco Control Policy

INSTITUTE FOR
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AND POLICY
UIC

Section 1: Introduction

Purpose of the Chartbook

Data Sources and Limitations

Organization of the Report

Section 2: Policy Areas Covered

OTP Selection and Definitions

Tax Structures

Section 3: Nat'l Overview of State

OTP Rates and Structures

Section 4: Individual State Profiles

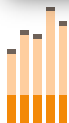
How to Read the State Profile

Pages

Section 5: Conclusions

Section 6: References

Appendix



OTP State Data Profile Page Sample

California



Table 1: Other Tobacco Product Taxation

OTP Taxed? No Yes

If yes, which products are taxed as of January 1, 2014?

Yes Blank No -- Not Applicable/Addressed

Product	Taxed?	Type of Tax		How Defined?	How Taxed?	Rate Change Since 2005?
		Ad Valorem	Specific			
Cigars	✓	✓		With OTPs	With OTPs	↓
Cigarillos	✓	✓		With OTPs	With OTPs	↓
Little Cigars	✓		✓	With OTPs	Cigarette	Tax Type Changed
Pipe Tobacco	✓	✓		With OTPs	With OTPs	↓
Roll-Your-Own Tobacco	✓	✓		With OTPs	With OTPs	↓
Dry Snuff	✓	✓		With OTPs	With OTPs	↓
Moist Snuff	✓	✓		With OTPs	With OTPs	↓
Snus	✓	✓		With OTPs	With OTPs	↓
Smokeless Tobacco Generally	✓	✓		With OTPs	With OTPs	↓
Dissolvables	✓	✓		With OTPs	With OTPs	↓
E-cigarettes	No	--	--	--	--	Not applicable

↓ Rate Decreased ↑ Rate Increased ↔ No Change

Table 2: Summary of Cigarette and OTP Tax Rates, Selected Years, 2005-2014

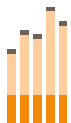
Product	2005	2008	2011	2014
Cigarettes	\$0.87/20 §	\$0.87/20 §	\$0.87/20 §	\$0.87/20 §
Cigars	46.76% WC Δ	46.76% WC Δ	33.02% WC Δ	29.82% WC Δ
Cigarillos	46.76% WC Δ	46.76% WC Δ	33.02% WC Δ	29.82% WC Δ
Little Cigars	46.76% WC Δ	\$0.87/20 §	\$0.87/20 §	\$0.87/20 §
Pipe Tobacco	46.76% WC Δ	45.13% WC Δ	33.02% WC Δ	29.82% WC Δ
Roll-Your-Own Tobacco	46.76% WC Δ	45.13% WC Δ	33.02% WC Δ	29.82% WC Δ
Dry Snuff	46.76% WC Δ	45.13% WC Δ	33.02% WC Δ	29.82% WC Δ
Moist Snuff	46.76% WC Δ	45.13% WC Δ	33.02% WC Δ	29.82% WC Δ
Snus	46.76% WC Δ	45.13% WC Δ	33.02% WC Δ	29.82% WC Δ
Smokeless Tobacco Generally	48.89% WC Δ	45.13% WC Δ	33.02% WC Δ	29.82% WC Δ
Dissolvables	48.89% WC Δ	45.13% WC Δ	33.02% WC Δ	29.82% WC Δ
E-cigarettes	--	--	--	--

Δ Ad Valorem; § Specific; -- Not taxed; WC=Wholesale Cost.

WC

Wholesale Cost

"... the cost of tobacco products to the distributor prior to any discounts or trade allowances." (CAL. REV. & TAX CODE § 30017)



OTP Fact Sheets

State Dry Snuff Taxation Laws, Selected Years 2005-2014

W/ OTP (With other tobacco products); S&A (Stand-alone definition/ taxation); CP (Cost Price); FLP (Factory List Price); MIP (Manufacturer's Invoice Price); or (some) FPL (Fate Sales Price); WC (Wholesale)

Taxed (Y/N)	How Defined (S&A)	How Taxed (CP)
AL	✓	✓
AK	✓	✓
AZ	✓	✓
CA	✓	✓
CO	✓	✓
CT	✓	✓
DC	✓	✓
DE	✓	✓
FL	✓	✓
GA	✓	✓
HI	✓	✓
IL	✓	✓
IN	✓	✓
IA	✓	✓
KS	✓	✓
KY	✓	✓
LA	✓	✓
ME	✓	✓
MD	✓	✓
MA	✓	✓
MI	✓	✓
MN	✓	✓
MS	✓	✓
MO	✓	✓
MT	✓	✓

State Dry Snuff Taxation Laws, Selected Years 2005-2014

W/ OTP (With other tobacco products); S&A (Stand-alone definition/ taxation); CP (Cost Price); FLP (Factory List Price); MIP (Manufacturer's Invoice Price); MIP (Manufacturer's List Price); MIP (Manufacturer's Price); MSP (Manufacturer's Sales Price); PV (Product Value); P (Purchase Price); TSP (Taxable Sales Price); or (some) FPL (Fate Sales Price); WC (Wholesale)



State Dry Snuff Taxation Laws, Selected Years 2005-2014

Introduction

Dry snuff is ground or pulverized non-combustible tobacco that is meant to be inhaled through the nose. It is sold in small tins or containers, and is available in a variety of flavors.

This fact sheet documents the variability in dry snuff tobacco taxation across the 50 states and the District of Columbia, as of January 1 for selected years between 2005 and 2014. Data on state dry snuff tax rates were compiled through primary legal research into each state's statutory and administrative codes, using the commercial legal research services, LexisNexis and Westlaw. The data were verified through secondary sources, and in some cases through telephone or email consultation with given state Department of Revenue officials.

A companion [chartbook](#) and complete data files listing the dry snuff tax rates from January 1, 2005 through January 1, 2014 in all 50 states and Washington, D.C. is available through the [Tobaccoeconomics](#) website.

Suggested Citation: Caville Gombert, Justin F. Chiriga, John Leshler, and Frank A. Chalupka. *State Dry Snuff Taxation Laws, Selected Years 2005-2014*. Fact Sheet. Chicago, IL: Tobaccoeconomics Program, Institute for Health Research and Policy, School of Public Health, University of Illinois at Chicago, 2015. Available: [http://www.tobaccoeconomics.org](#)

Funding for this study was provided under the National Cancer Institute's State and Community Tobacco Control Initiative (grant number 5U49CA18448).

Photo Credits: [http://www.gettyimages.com](#); Mark Mahaffey via [www.istockphoto.com](#); [www.istockphoto.com](#); [www.istockphoto.com](#)

State Cigarillo Taxation Laws, Selected Years 2005-2014

W/ OTP (With other tobacco products); S&A (Stand-alone definition/ taxation); CP (Cost Price); DP (Distributor's Price); or (some) MIP (Manufacturer's Invoice Price); MIP (Manufacturer's List Price); MIP (Manufacturer's Price); MSP (Manufacturer's Sales Price); PV (Product Value); P (Purchase Price); TSP (Taxable Sales Price); or (some) FPL (Fate Sales Price); WC (Wholesale)

Taxed (Y/N)	How Defined (S&A)	How Taxed (CP)
ME	✓	✓
NE	✓	✓
NH	✓	✓
NJ	✓	✓
NM	✓	✓
NY	✓	✓
NC	✓	✓
ND	✓	✓
OH	✓	✓
OK	✓	✓
OR	✓	✓
PA	✓	✓
RI	✓	✓
SC	✓	✓
SD	✓	✓
TN	✓	✓
TX	✓	✓
UT	✓	✓
VA	✓	✓
VT	✓	✓
WA	✓	✓
WV	✓	✓
WI	✓	✓
WY	✓	✓

State Cigarillo Taxation Laws, Selected Years 2005-2014

W/ OTP (With other tobacco products); S&A (Stand-alone definition/ taxation); CP (Cost Price); DP (Distributor's Price); or (some) MIP (Manufacturer's Invoice Price); MIP (Manufacturer's List Price); MIP (Manufacturer's Price); MSP (Manufacturer's Sales Price); PV (Product Value); P (Purchase Price); TSP (Taxable Sales Price); or (some) FPL (Fate Sales Price); WC (Wholesale)



State Cigarillo Taxation Laws, Selected Years 2005-2014

Introduction

A cigarillo is a short (usually 3 to 4 inch) and narrow cigar that usually contains ~3 grams of tobacco and is typically unfiltered. Cigarillos typically weigh more than 3 pounds per 1000 and are classified as "large" cigars by the federal tax code. They sometimes contain lower-quality tobacco, and are therefore sold at lower prices than cigars.

This fact sheet documents the variability in cigarillo taxation across the 50 states and the District of Columbia, as of January 1 for selected years between 2005 and 2014. Data on state cigarillo tax rates were compiled through primary legal research into each state's statutory and administrative codes, using the commercial legal research services, LexisNexis and Westlaw. The data were verified through secondary sources, and in some cases through telephone or email consultation with given state Department of Revenue officials.

A companion [chartbook](#) and complete data files listing the cigarillo tax rates from January 1, 2005 through January 1, 2014 in all 50 states and Washington, D.C. is available through the [Tobaccoeconomics](#) website.

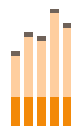
Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion. *Cigars Fact Sheet*. [http://www.cdc.gov/tobacco/secondary_prevention/docs/cigars.pdf](#). Updated 2013. Accessed August 15, 2015.

Copyrighted Content: Tobaccoeconomics.org; Cigarillos and Little Cigars. [http://www.tobaccoeconomics.org](#). Updated August 15, 2015.

Suggested Citation: Caville Gombert, Justin F. Chiriga, John Leshler, and Frank A. Chalupka. *State Cigarillo Taxation Laws, Selected Years 2005-2014*. Fact Sheet. Chicago, IL: Tobaccoeconomics Program, Institute for Health Research and Policy, School of Public Health, University of Illinois at Chicago, 2015. Available: [http://www.tobaccoeconomics.org](#)

Funding for this study was provided under the National Cancer Institute's State and Community Tobacco Control Initiative (grant number 5U49CA18448).

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OTP State Profiles Sheets

New York



Table 1: Other Tobacco Product Taxation

OTP Taxed? No Yes

If yes, which products are taxed as of January 1, 2014? Yes No Not Applicable/Addressed

Product	Taxed?	Type of Tax		How Defined?	How Taxed?	Rate Change Since 2005?
		Ad Valorem	Specific			
Cigars	✓	✓	✓	With OTPs	With OTPs	↑
Cigarillos	✓	✓	✓	With OTPs	With OTPs	↓
Little Cigars	✓	✓	✓	With OTPs	Cigarettes	Tax Type Changed
Pipe Tobacco	✓	✓	✓	With OTPs	With OTPs	↑
Roll-Your-Own Tobacco	✓	✓	✓	With OTPs	With OTPs	↓
Dry Snuff	✓	✓	✓	Stand-alone	Tax Type Changed	
Moist Snuff	✓	✓	✓	With OTPs	Stand-alone	Tax Type Changed
Snus	✓	✓	✓	With OTPs	Stand-alone	Tax Type Changed
Smokeless Tobacco Generally	✓	✓	✓	With OTPs	With OTPs	↑
Dissolvables	--	--	--	--	--	Not applicable
E-cigarettes	--	--	--	--	--	Not applicable

◆ Rate Decreased ▲ Rate Increased ⇄ No Change

Table 2: Summary of Cigarette and OTP Tax Rates, Selected Years, 2005-2014

Product	2005	2008	2011	2014
Cigarettes	\$2.75/200's	\$4.30/200's	\$4.30/200's	\$4.30/200's
Cigars	75% WP Δ	75% WP Δ	75% WP Δ	75% WP Δ
Cigarillos	75% WP Δ	75% WP Δ	75% WP Δ	75% WP Δ
Little Cigars	75% WP Δ	\$4.35/200's	\$4.35/200's	\$4.35/200's
Pipe Tobacco	75% WP Δ	75% WP Δ	75% WP Δ	75% WP Δ
Roll-Your-Own Tobacco	75% WP Δ	75% WP Δ	75% WP Δ	75% WP Δ
Dry Snuff	\$2.00/oz	\$2.00/oz	\$2.00/oz	\$2.00/oz
Moist Snuff	75% WP Δ	\$2.00/oz	\$2.00/oz	\$2.00/oz
Snus	75% WP Δ	75% WP Δ	75% WP Δ	75% WP Δ
Smokeless Tobacco Generally	--	--	--	--
Dissolvables	--	--	--	--
E-cigarettes	--	--	--	--

California



Table 1: Other Tobacco Product Taxation

OTP Taxed? No Yes

If yes, which products are taxed as of January 1, 2014? Yes No Not Applicable/Addressed

Product	Taxed?	Type of Tax		How Defined?	How Taxed?	Rate Change Since 2005?
		Ad Valorem	Specific			
Cigars	✓	✓	✓	With OTPs	With OTPs	↓
Cigarillos	✓	✓	✓	With OTPs	With OTPs	↓
Little Cigars	✓	✓	✓	With OTPs	Cigarettes	Tax Type Changed
Pipe Tobacco	✓	✓	✓	With OTPs	With OTPs	↓
Roll-Your-Own Tobacco	✓	✓	✓	With OTPs	With OTPs	↓
Dry Snuff	✓	✓	✓	Stand-alone	Tax Type Changed	
Moist Snuff	✓	✓	✓	With OTPs	Stand-alone	Tax Type Changed
Snus	✓	✓	✓	With OTPs	Stand-alone	Tax Type Changed
Smokeless Tobacco Generally	✓	✓	✓	With OTPs	With OTPs	↑
Dissolvables	✓	✓	✓	With OTPs	With OTPs	↓
E-cigarettes	✓	✓	✓	With OTPs	With OTPs	↓

Table 2: Summary of Cigarette and OTP Tax Rates, Selected Years, 2005-2014

Product	2005	2008	2011	2014
Cigarettes	\$1.425/200's	\$2.025/200's	\$3.025/200's	\$3.025/200's
Cigars	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Cigarillos	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Little Cigars	120-125% TSP Δ	75% TSP Δ	\$3.025/200's	\$3.025/200's
Pipe Tobacco	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Roll-Your-Own Tobacco	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Dry Snuff	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	\$1.08/oz
Moist Snuff	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Snus	120-125% TSP Δ	75% TSP Δ	\$2.205/oz	\$2.205/oz
Smokeless Tobacco Generally	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Dissolvables	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
E-cigarettes	--	--	--	--

Washington



Table 1: Other Tobacco Product Taxation

OTP Taxed? No Yes

If yes, which products are taxed as of January 1, 2014? Yes No Not Applicable/Addressed

Product	Taxed?	Type of Tax		How Defined?	How Taxed?	Rate Change Since 2005?
		Ad Valorem	Specific			
Cigars	✓	✓	✓	With OTPs	With OTPs	↓
Cigarillos	✓	✓	✓	With OTPs	With OTPs	↓
Little Cigars	✓	✓	✓	Stand-alone	Cigarettes	Tax Type Changed
Pipe Tobacco	✓	✓	✓	With OTPs	With OTPs	↓
Roll-Your-Own Tobacco	✓	✓	✓	Cigarette	Cigarettes	Tax Type Changed
Dry Snuff	✓	✓	✓	With OTPs	With OTPs	↓
Moist Snuff	✓	✓	✓	With OTPs	Moist Snuff	Tax Type Changed
Snus	✓	✓	✓	With OTPs	With OTPs	↓
Smokeless Tobacco Generally	✓	✓	✓	With OTPs	With OTPs	↓
Dissolvables	✓	✓	✓	With OTPs	With OTPs	↑
E-cigarettes	No	--	--	--	--	Not applicable

◆ Rate Decreased ▲ Rate Increased ⇄ No Change

Table 2: Summary of Cigarette and OTP Tax Rates, Selected Years, 2005-2014

Product	2005	2008	2011	2014
Cigarettes	\$1.425/200's	\$2.025/200's	\$3.025/200's	\$3.025/200's
Cigars	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Cigarillos	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Little Cigars	120-125% TSP Δ	75% TSP Δ	\$3.025/200's	\$3.025/200's
Pipe Tobacco	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Roll-Your-Own Tobacco	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	\$1.08/oz
Dry Snuff	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Moist Snuff	120-125% TSP Δ	75% TSP Δ	\$2.205/oz	\$2.205/oz
Snus	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Smokeless Tobacco Generally	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
Dissolvables	120-125% TSP Δ	75% TSP Δ	95% TSP Δ	95% TSP Δ
E-cigarettes	--	--	--	--

◆ Rate Decreased ▲ Rate Increased ⇄ No Change

Massachusetts



Table 1: Other Tobacco Product Taxation

OTP Taxed? No Yes

If yes, which products are taxed as of January 1, 2014? Yes No Not Applicable/Addressed

Product	Taxed?	Type of Tax		How Defined?	How Taxed?	Rate Change Since 2005?
		Ad Valorem	Specific			
Cigars	✓	✓	✓	Stand-alone	With OTPs	↑
Cigarillos	✓	✓	✓	Stand-alone	With OTPs	↑
Little Cigars	✓	✓	✓	Cigarettes	Cigarettes	↑
Pipe Tobacco	✓	✓	✓	With OTPs	With OTPs	↑
Roll-Your-Own Tobacco	✓	✓	✓	With OTPs	With OTPs	↑
Dry Snuff	✓	✓	✓	With OTPs	With OTPs	↑
Moist Snuff	✓	✓	✓	With OTPs	Smokeless	↑
Snus	✓	✓	✓	With OTPs	Smokeless	↑
Smokeless Tobacco Generally	✓	✓	✓	With OTPs	Smokeless	↑
Dissolvables	No	--	--	--	--	Not applicable
E-cigarettes	No	--	--	--	--	Not applicable

◆ Rate Decreased ▲ Rate Increased ⇄ No Change

Table 2: Summary of Cigarette and OTP Tax Rates, Selected Years, 2005-2014

Product	2005	2008	2011	2014
Cigarettes	\$1.51/200's	\$1.51/200's	\$2.51/200's	\$3.51/200's
Cigars	30% WP Δ	30% WP Δ	30% WP Δ	40% WP Δ
Cigarillos	30% WP Δ	30% WP Δ	30% WP Δ	40% WP Δ
Little Cigars	\$1.51/200's	\$1.51/200's	\$2.51/200's	\$3.51/200's
Pipe Tobacco	30% WP Δ	30% WP Δ	30% WP Δ	40% WP Δ
Roll-Your-Own Tobacco	30% WP Δ	30% WP Δ	30% WP Δ	40% WP Δ
Dry Snuff	90% PPL Δ	90% PPL Δ	90% PPL Δ	210% PPL Δ
Moist Snuff	90% PPL Δ	90% PPL Δ	90% PPL Δ	210% PPL Δ
Snus	90% PPL Δ	90% PPL Δ	90% PPL Δ	210% PPL Δ
Smokeless Tobacco Generally	90% PPL Δ	90% PPL Δ	90% PPL Δ	210% PPL Δ
Dissolvables	--	--	--	--
E-cigarettes	--	--	--	--

WP Wholesale Price
 "... the price set for such products or, the wholesale value of these products." (MASS. GEN. LAWS ANN. ch. 64C, § 6)

PPL Price Paid by Licensee
 "... the excise imposed by this section shall equal 150 per cent of the price paid by such licensee or modified excise to purchase smokeless tobacco." (MASS. GEN. LAWS ANN. ch. 64C, § 6)

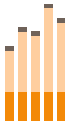
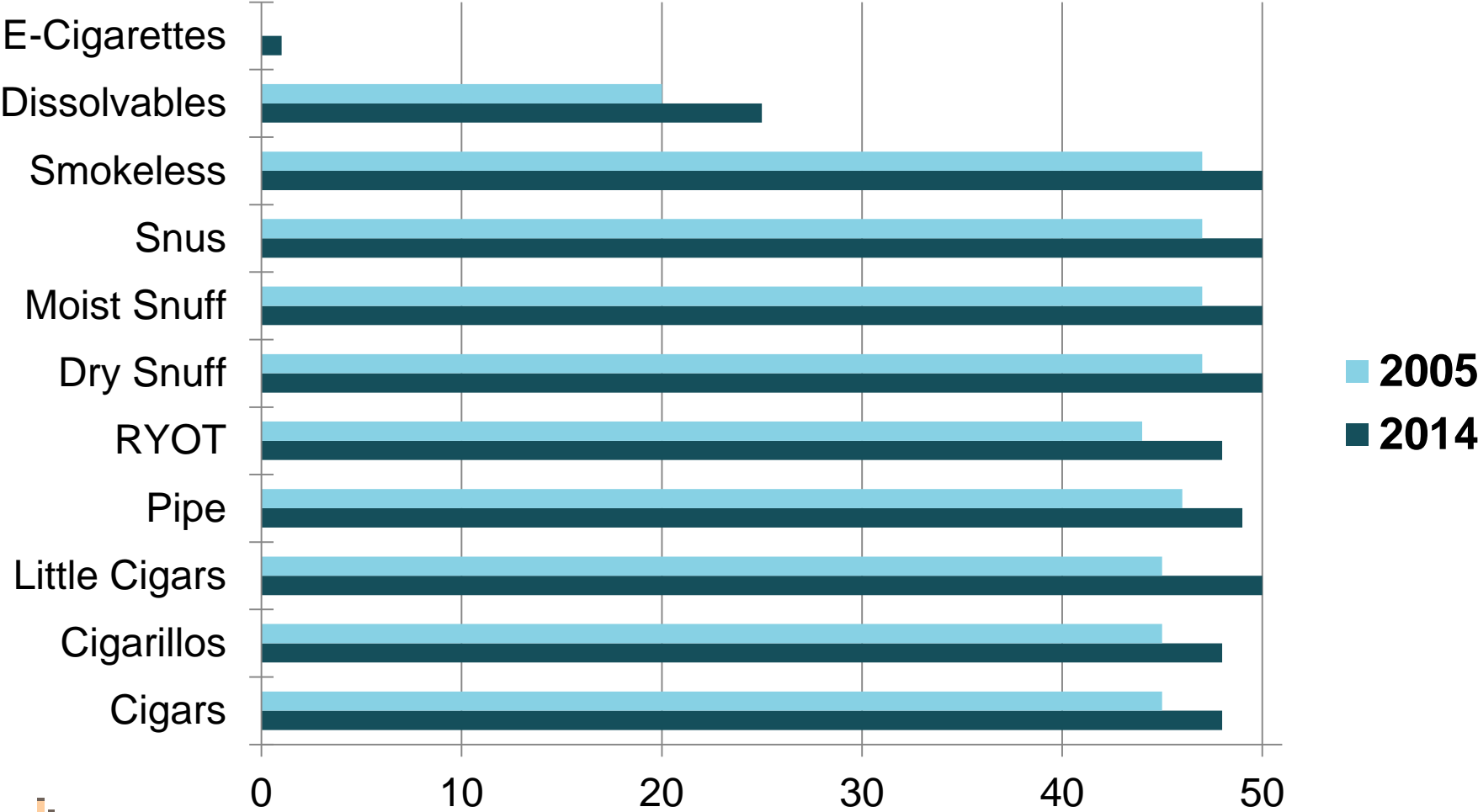
Δ Underlined language indicates the unit of analysis

WC

Wholesale Cost
 "... the cost of tobacco products to a distributor, before the allowance of any discount, trade price)

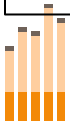
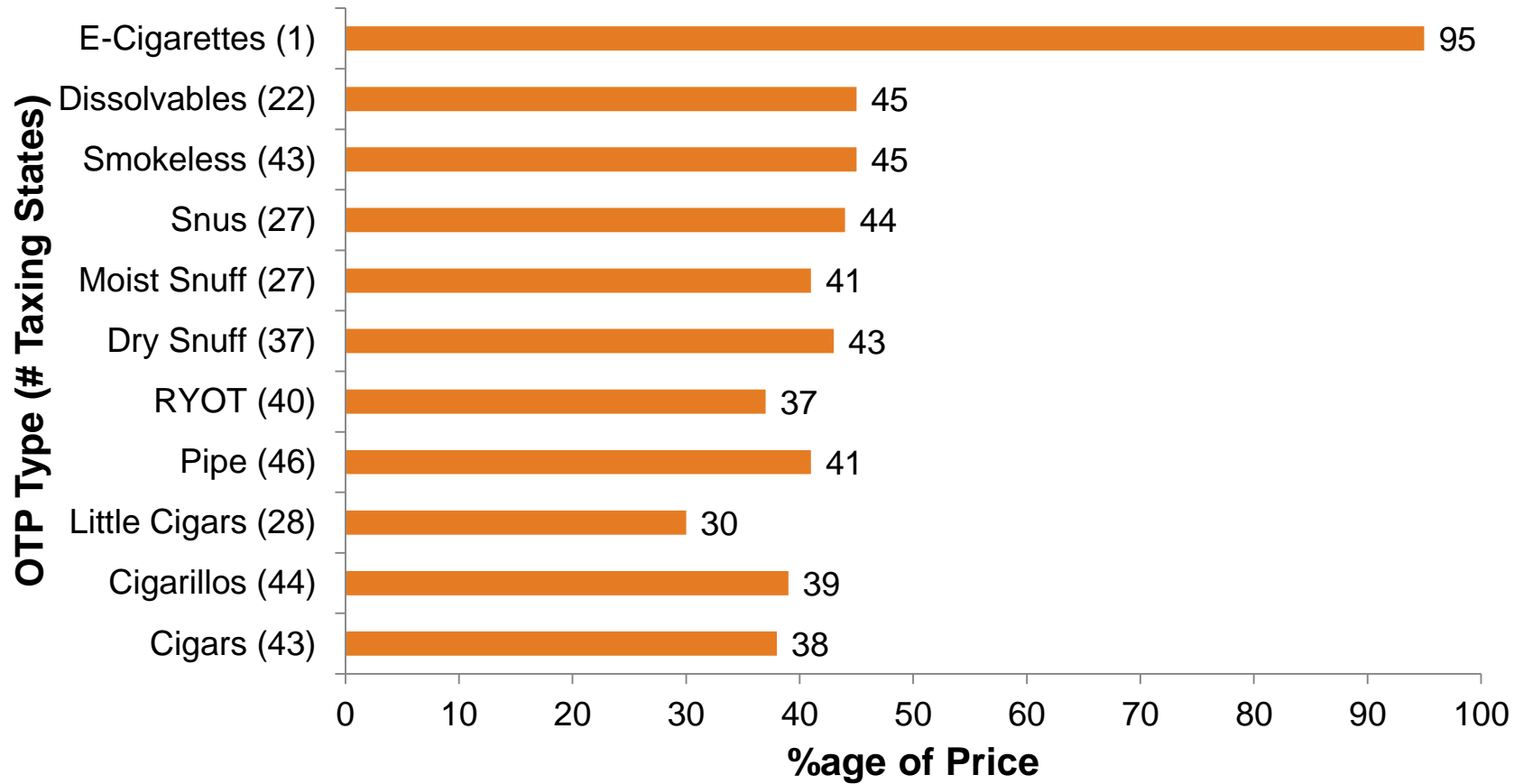
Tobacco Product Taxation Across the States | www.tobaccoeconomics.org | Twitter: @tobaccoeconomics

Number of States Taxing Each of the 11 OTPs (January 1, 2005 and 2014)

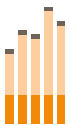
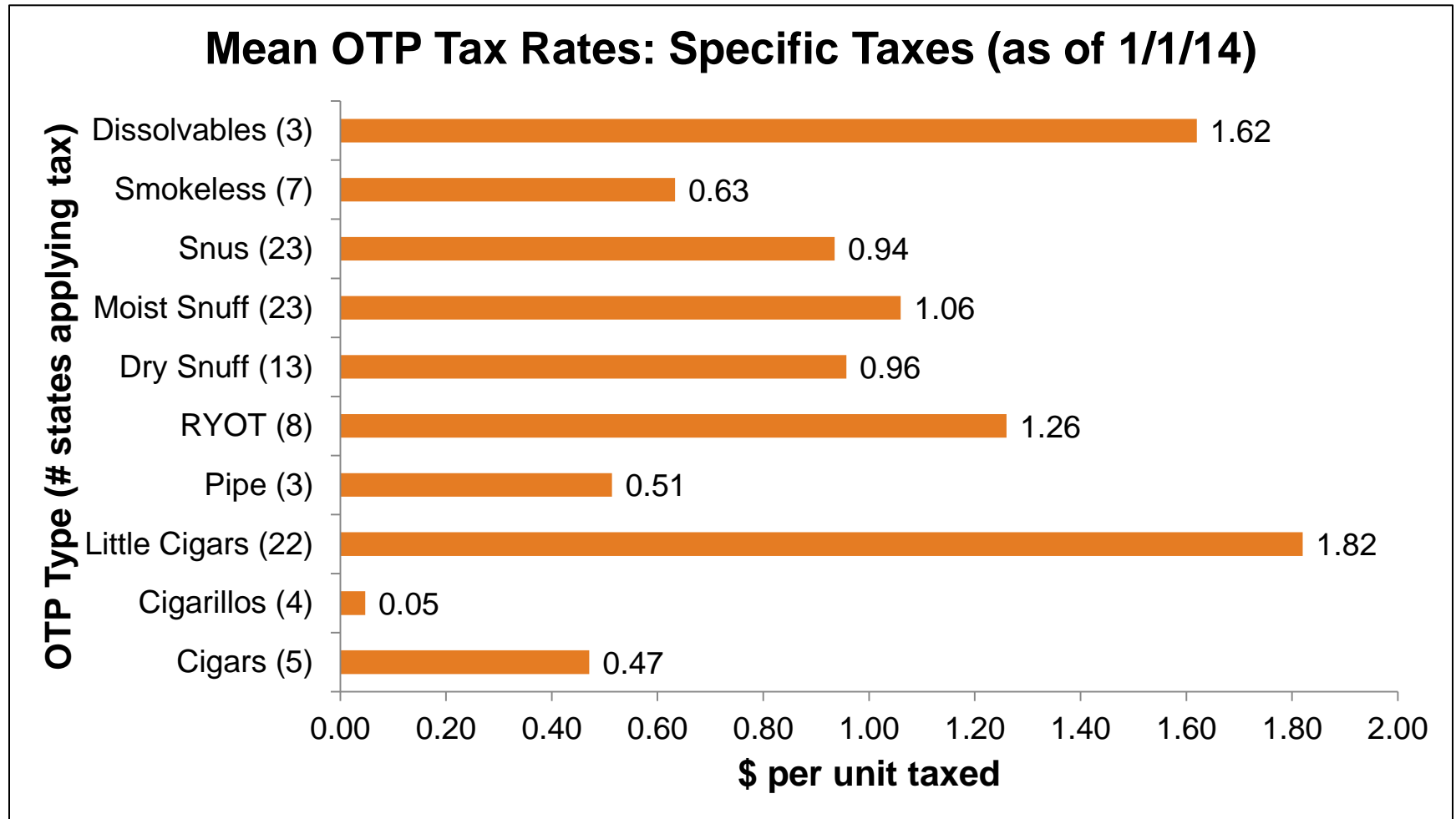


OTP Tax Rates

Mean OTP Tax Rates: Ad Valorem Taxes (as of 1/1/14)

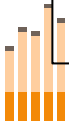
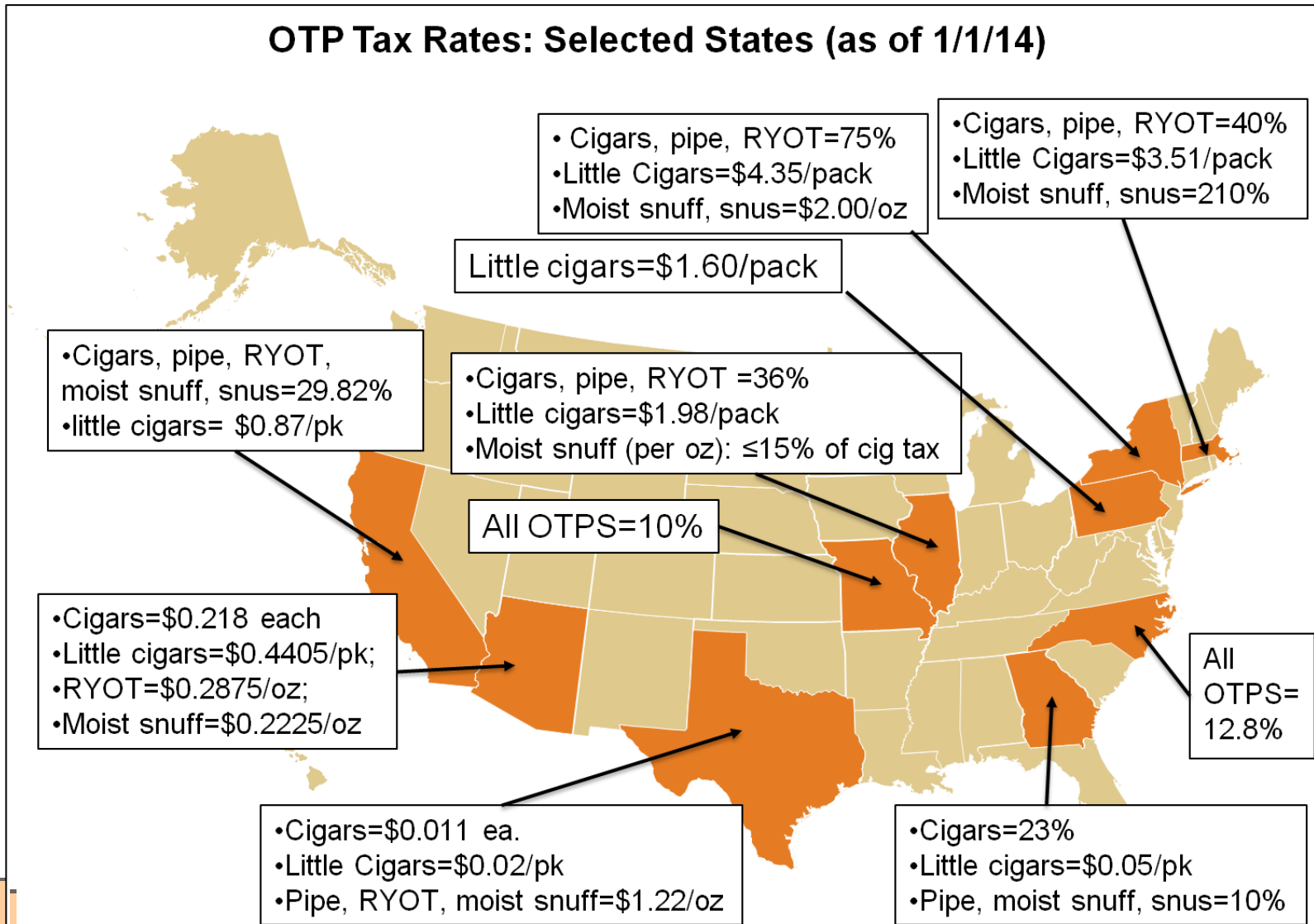


OTP Tax Rates

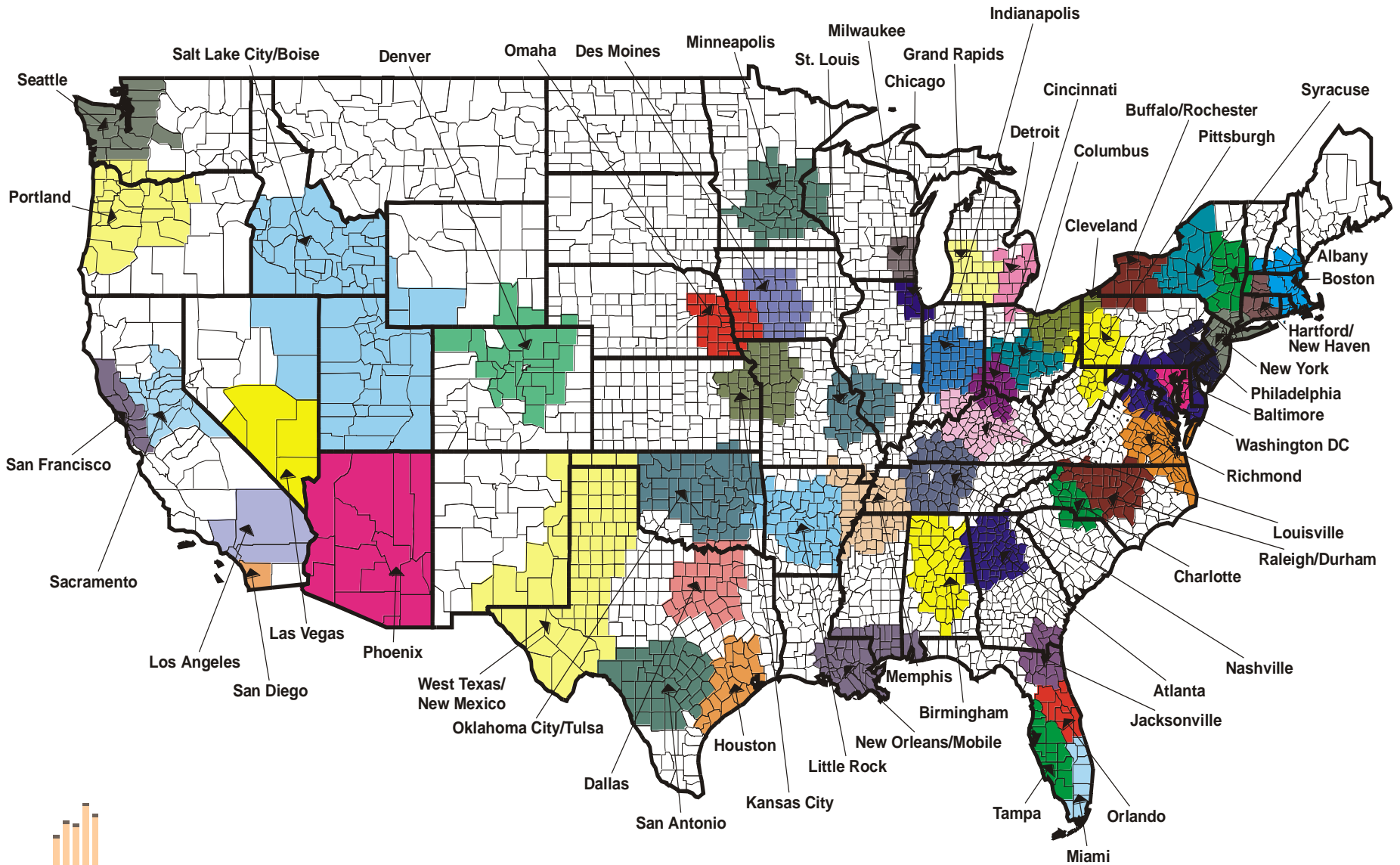


OTP Tax Rates

OTP Tax Rates: Selected States (as of 1/1/14)

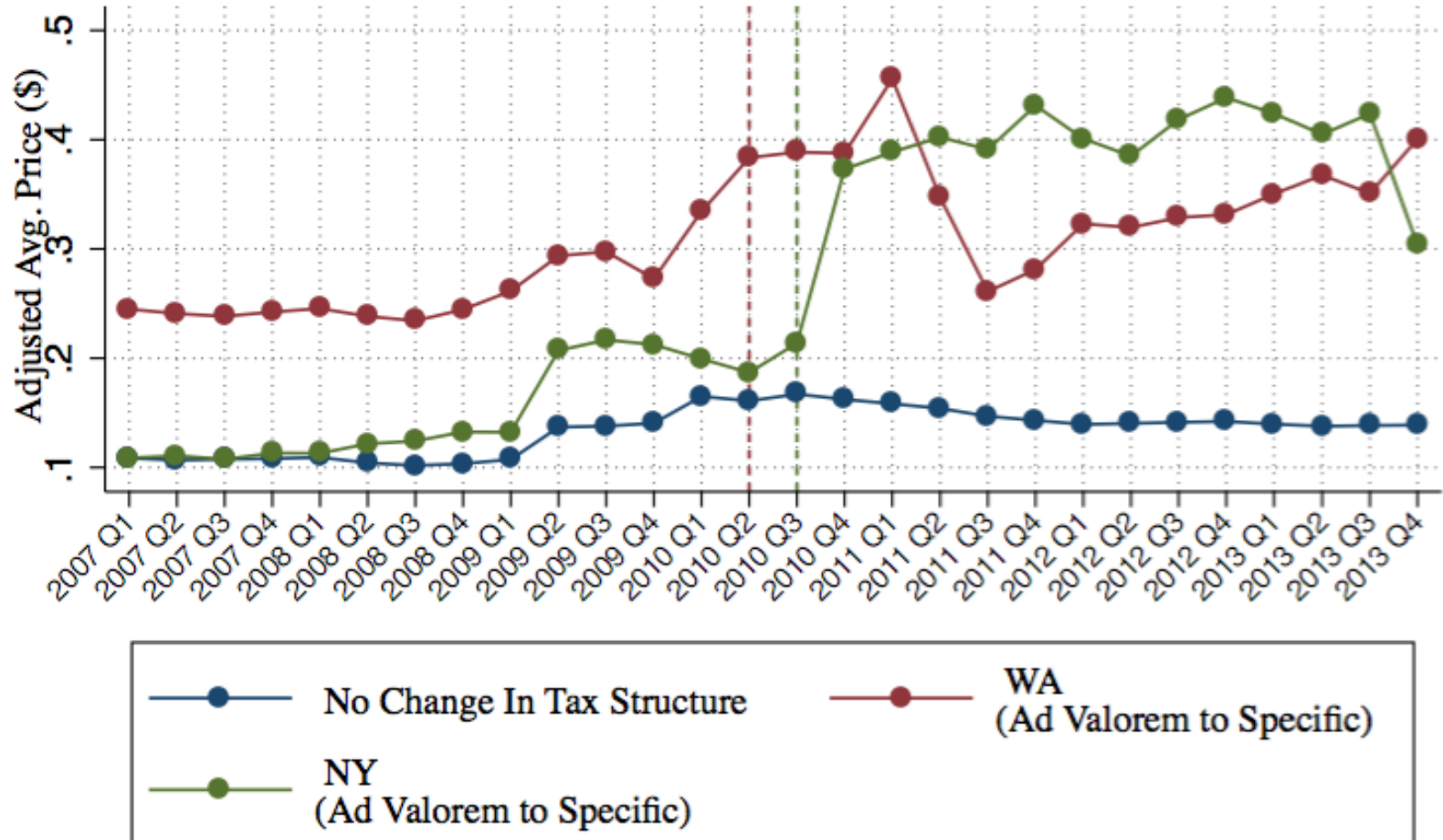


Nielsen Store Scanner Data



Impact of tax structure change on prices

LITTLE_CIGAR, Average Price: NON-OVERLAPPING MARKETS, 2007-2013

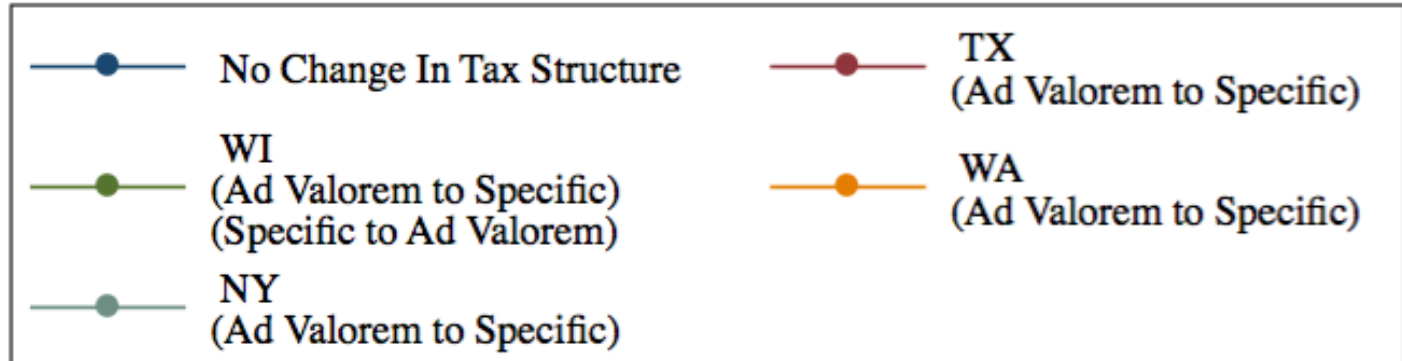
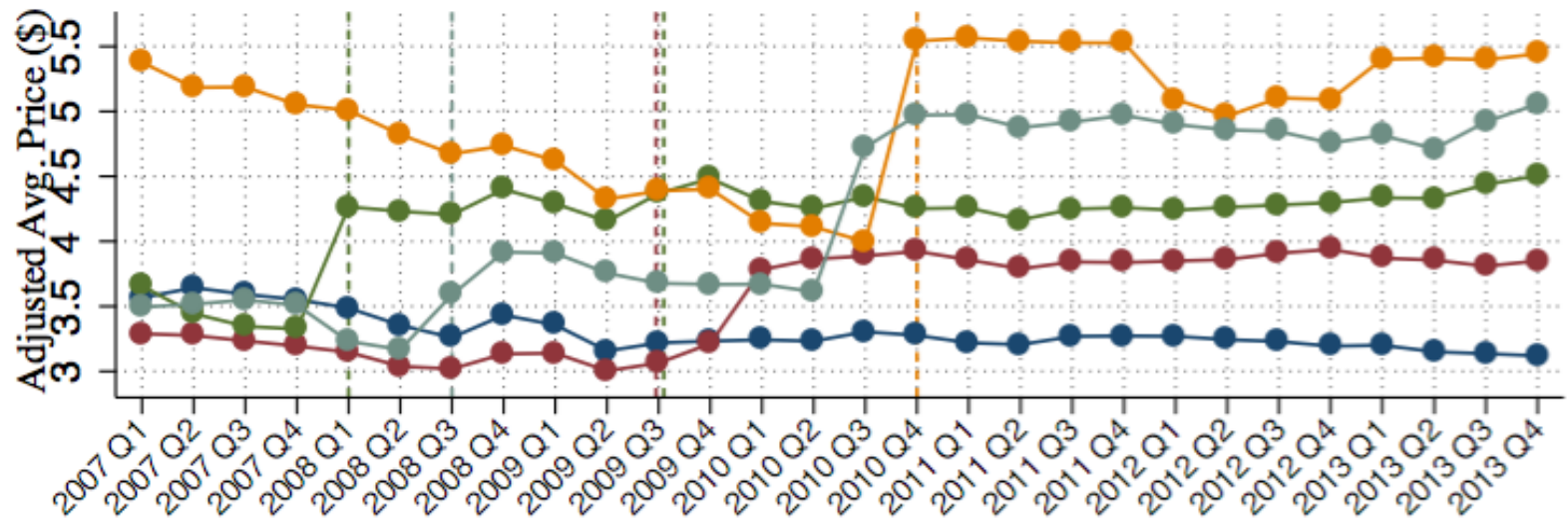


Note:
1. Average Price Calculated Per Unit.

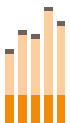


Impact of tax structure change on prices

MOIST_SNUFF, Average Price: NON-OVERLAPPING MARKETS, 2007-2013

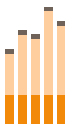


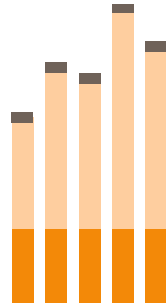
Note:
1. Average Price Calculated Per Unit.



OTP Demand

- Preliminary findings based on analysis of Nielsen data:
 - Strong own-price effects; generally more responsive to price than cigarette demand
 - Generally consistent cross-price effects for like products
 - e.g. loose tobacco, little cigars, cigarettes are substitutes
 - Mixed findings for cross-price effects among different products
 - Substitution vs. dual use?

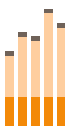
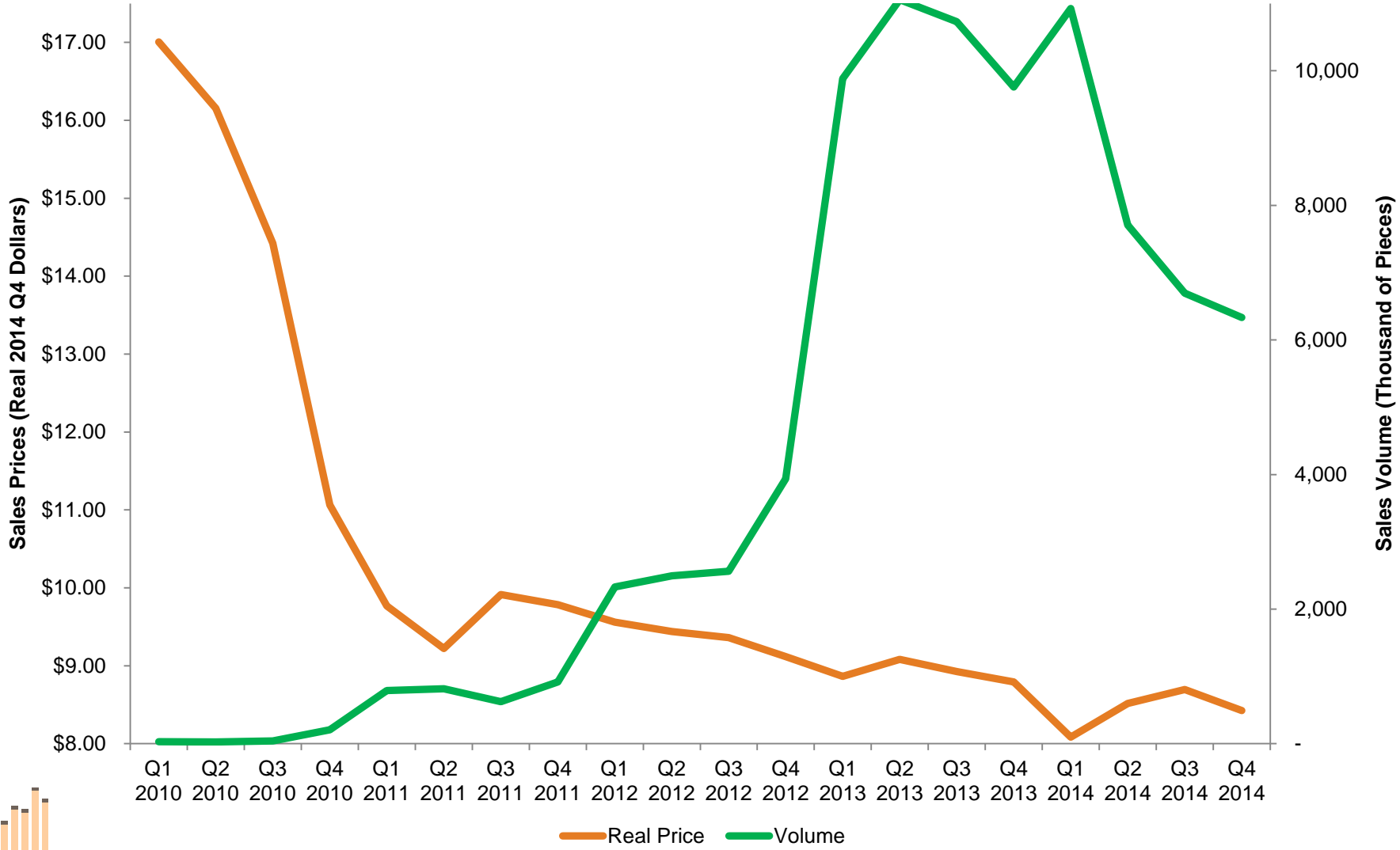




E-Cigarette Demand

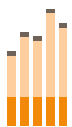
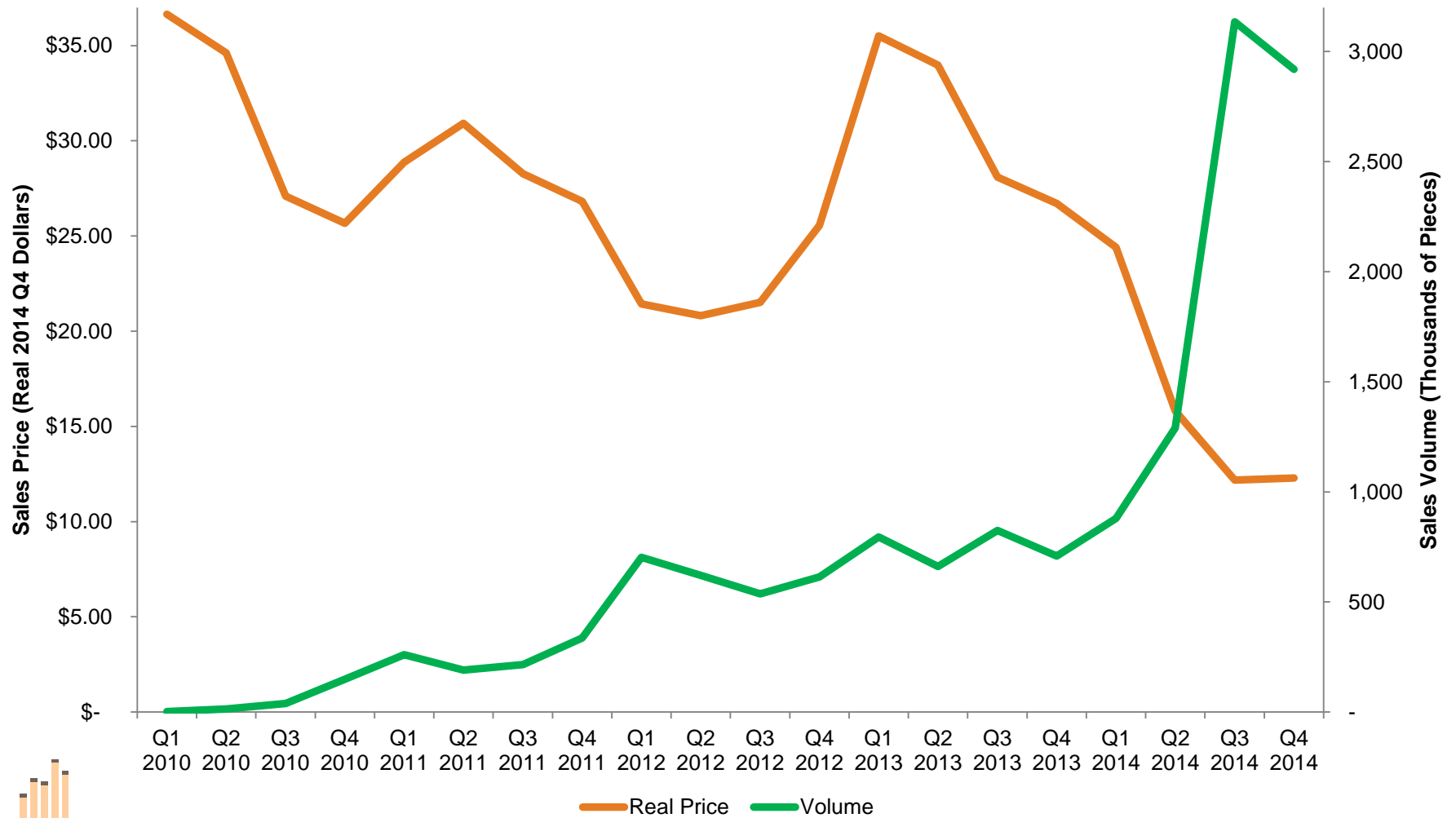
Disposable ENDS

Sales Volume and Price, US 2010 - 2014



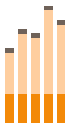
Reusable ENDS

Sale Volume and Price, US 2010 - 2014



E-Cigarette Prices & Sales

- Huang, et al., *Tobacco Control*, 2014
 - Overall sales of e-cigarettes are sensitive to price changes
 - A 10% increase in price reduces sales of disposable e-cigarettes by approximately 12%, and by about 19% for reusable e-cigarettes.
 - Sales of disposable e-cigarettes were higher in markets with stronger SFA policies.
 - No consistent statistical significant relationship between cigarette prices and e-cigarette sales.
 - Increasing reusable e-cigarette price will lead to an increase in disposable e-cigarette sales.

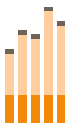


Own Price Elasticities

Model	E-Cig Rechargeable	N	E-Cig Disposable	N
(1)FDM CV	-1.190*** [-1.709,-0.670]	803	-0.968 [-2.205,0.270]	900
(2)FDM CV	-1.176*** [-1.702,-0.649]	803	-1.157** [-2.261,-0.0538]	900
(1)FDM	-0.171 [-0.561,0.219]	423	-1.097 [-2.536,0.343]	515
(2)FDM	-0.141 [-0.522,0.240]	423	-1.381* [-2.806,0.0447]	515
(1)CV	-2.635*** [-3.569,-1.701]	380	-0.963 [-2.878,0.951]	385
(2)CV	-2.636*** [-3.595,-1.678]	380	-0.946 [-2.924,1.033]	385

(1) Controls for year and quarter fixed effects and store dummy for FDM CV models. *** p<0.01, ** p<0.05, * p<0.1. 95% confidence intervals in the brackets.

(2) Additional controls for tobacco control funding, smoke free air index, and average cigarette tax rate (except for Cigarette set and aggregated US Market sets)

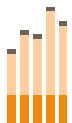


Cross Price Elasticities

Model	E-Cig Rechargeable		N	E-Cig Disposable		N
(1)FDM CV	1.307	[-2.745,5.360]	803	-0.373	[-3.362,2.617]	900
(2)FDM CV	1.175	[-2.858,5.209]	803	-0.174	[-2.962,2.614]	900
(1)FDM	-0.267	[-4.600,4.067]	423	-3.376	[-7.550,0.797]	515
(2)FDM	-0.243	[-4.555,4.069]	423	-3.358	[-7.645,0.930]	515
(1)CV	2.486	[-4.847,9.818]	380	4.237	[-0.970,9.443]	385
(2)CV	2.236	[-5.178,9.651]	380	4.037*	[-0.789,8.862]	385

(1) Controls for year and quarter fixed effects and store dummy for FDM CV models. *** p<0.01, ** p<0.05, * p<0.1. 95% confidence intervals in the brackets.

(2) Additional controls for tobacco control funding and smoke free air index



Impact of e-cig entry on NRT

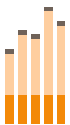
	Disposable e-cigs		Reusable e-cigs	
	NRT patch	NRT gum	NRT patch	NRT gum
A. Quarter first differenced model				
Ordinary least square	-0.0506	-0.170*	0.0908	0.0507
	-0.0599	-0.0866	-0.0614	-0.0945
Observations	573	649	573	649
Two-stage least square	-0.408***	-2.053***	-0.0923	-3.597**
	-0.153	-0.67	-0.31	-1.589
Instrument F-statistics	45.84	40.22	35.64	39.6
B. Linear year trend model				
Ordinary least square	-0.0566	-0.170**	-0.0423	-0.0516
	-0.0563	-0.0803	-0.0408	-0.108
Observations	629	740	629	740
Two-stage least square	-0.428***	-0.868**	-0.754***	-1.337**
	-0.133	-0.382	-0.287	-0.658
Instrument F-statistics	22.17	28.72	6.466	9.783

Notes: Each coefficient represents a separate regression. NRT stands for nicotine replacement therapies. Also controlled for natural log of own price, natural log of price of combustible tobacco products (cigarettes, cigarillo, little cigar, cigar), smoking-free air index, year dummies, quarter dummies, market dummies, store dummy, and a constant. Standard errors in parentheses were clustered at market level.



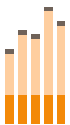
E-Cigarette Prices & Sales

- Stoklosa, Drope & Chaloupka (under review)
 - 2011-2014 monthly data on e-cigarette sales in six EU countries (Estonia, Ireland, Latvia, Lithuania, Sweden, and UK)
 - Own price elasticities range from -0.83 to -0.87
 - E-cigarette sales generally positively associated with cigarette prices, but mostly not statistically significant



Impact of Price on E-cigarette Use

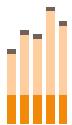
- Huang et al. (under review)
- Methods:
 - Nationally representative 2013 online survey
 - 7,522 U.S. adults from GFK's Knowledge Online Panel.
 - Survey data were linked with Nielsen e-cigarette retail prices
 - separately for disposable and reusable e-cigarette
 - Weighted survey logistic regression analysis
 - ever use and current use
 - Control for cigarette price, demographics, and socioeconomics



Impact of Price on E-cigarette Use

Descriptive Statistics

Variable	N	%/Mean	(95% CI)
E-Cigarette Outcome Measures			
Ever Use	3910	14.8	(14.0 , 15.5)
Current Use	1605	5.1	(4.7 , 5.5)
Tobacco Control Policy			
No comprehensive smoking bans	4156	26.9	(26.0 , 27.8)
Smoking bans at restaurants, bars, or private workplaces	5110	30.9	(30.0 , 31.8)
Smoking bans at restaurants, bars, and private workplaces	8241	42.2	(41.2 , 43.1)
E-Cigarette Price Measures (Mean Price in U.S. Dollars)			
Disposable e-cigarettes	15491	8.74	(8.72 , 8.76)
Rechargeable e-cigarettes	15161	27.0	(26.81 , 27.13)
Disposable e-cigarettes: Top selling brand	14732	9.9	(9.88 , 9.91)
Rechargeable e-cigarettes: Top selling brand	13921	57.2	(56.95 , 57.46)
Marlboro Price (Mean Price in U.S. Dollars)	15491	5.8	(5.80 , 5.85)



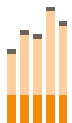
Impact of Price on E-cigarette Use

Results: E-cigarette Ever Use

	Average Disposable Price	Average Rechargeable Price	Top Selling Disposable Brand Price	Top Selling Rechargeable Brand Price	Average Disposable Price	Average Rechargeable Price	Top Selling Disposable Brand Price	Top Selling Rechargeable Brand Price
Estimated E-cigarette Own Price Elasticity	-0.911*** (-1.556 , -0.266)	-	-0.978** (-1.888 , -0.069)	-	-0.852** (-1.515 , -0.189)	-	-0.811* (-1.769 , 0.146)	-
Odd Ratios:								
Price of E-cigarettes	0.886*** (0.813 , 0.965)	1.006 (0.998 , 1.014)	0.891** (0.801 , 0.992)	1.002 (0.996 , 1.007)	0.893** (0.817 , 0.975)	1.006 (0.998 , 1.014)	0.909* (0.812 , 1.017)	1.002 (0.997 , 1.008)
Marlboro Price	-	-	-	-	0.970 (0.911 , 1.034)	0.965 (0.905 , 1.028)	0.965 (0.904 , 1.029)	0.953 (0.892 , 1.019)
No Smoking Bans (Reference Category)								
Smoking Bans in Restaurants, Bars, or Private Workplaces	-	-	-	-	1.050 (0.873 , 1.263)	1.014 (0.846 , 1.215)	1.021 (0.843 , 1.237)	1.023 (0.846 , 1.237)
Smoking Bans in Restaurants, Bars, AND Private Workplaces	-	-	-	-	0.897 (0.745 , 1.080)	0.879 (0.730 , 1.057)	0.893 (0.738 , 1.079)	0.898 (0.742 , 1.087)
Observations	15,449	15,120	14,691	13,882	15,436	15,107	14,681	13,872

95% confidence intervals in parentheses All models controlled for individual level demographic and socioeconomic characteristics.

*** p<0.01, ** p<0.05, * p<0.1



Impact of Price on E-cigarette Use

Results: E-cigarette Current Use

	Average Disposable Price	Average Rechargeable Price	Top Selling Disposable Brand Price	Top Selling Rechargeable Brand Price	Average Disposable Price	Average Rechargeable Price	Top Selling Disposable Brand Price	Top Selling Rechargeable Brand Price
Estimated E-cigarette Own Price Elasticity	-	-	-	-	-	-	-	-
Odds Ratios:								
Price of E-cigarettes	1.023 (0.913 , 1.146)	1.01 (0.999 , 1.021)	0.937 (0.785 , 1.118)	0.999 (0.992 , 1.007)	1.025 (0.911 , 1.153)	1.011 (1.000 , 1.022)	0.932 (0.771 , 1.127)	0.999 (0.991 , 1.007)
Marlboro Price	-	-	-	-	1.007 (0.919 , 1.103)	1.012 (0.925 , 1.107)	1.008 (0.921 , 1.103)	1.005 (0.916 , 1.102)
No Smoking Bans (Reference Category)								
Smoking Bans in Restaurants, Bars, or Private Workplaces	-	-	-	-	1.040 (0.807 , 1.339)	1.050 (0.820 , 1.344)	1.110 (0.853 , 1.445)	1.106 (0.853 , 1.433)
Smoking Bans in Restaurants, Bars, AND Private Workplaces	-	-	-	-	0.860 (0.665 , 1.111)	0.853 (0.656 , 1.108)	0.868 (0.666 , 1.132)	0.857 (0.658 , 1.116)
Observations	15,449	15,120	14,691	13,882	15,436	15,107	14,681	13,872

95% confidence intervals in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Estimated price elasticities were not reported given none of the estimated odds ratios for e-cigarette prices were statistically significant.

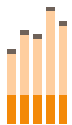
All models controlled for individual level demographic and socioeconomic characteristics.



Impact of Price on E-cigarette Use

Summary:

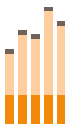
- 15% of respondents reported ever using e-cigarettes
- 5.1% reported current use
- young adults and cigarette smokers had the highest odds of both ever use and current use.
- Higher disposable e-cigarette prices correlated with lower odds of ever use
 - estimated own price elasticity ranges from -0.81 to -0.98
- Neither rechargeable e-cigarette price nor combustible cigarette price was found associated with e-cigarette ever use
- No significant interactions were discovered between e-cigarette or cigarette price and e-cigarette current use.



Impact of Price on E-cigarette Use

In progress:

- 2014 Monitoring the Future data on youth use of e-cigarettes
- Nielsen scanner price data
- Preliminary estimates suggest very large effects of price on youth
- Next steps: add 2015 data



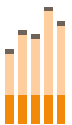
Impact of Price on E-cigarette Use

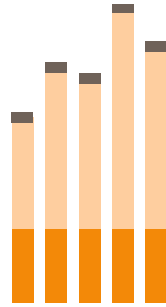
Policy Implications:

- Taxes on disposable and rechargeable e-cigarettes will reduce sales
- Taxes on disposable e-cigarettes likely to reduce e-cigarette ever use (trial use and experimentation)

Research Needs:

- Better measures of e-cigarette costs, which distinguish initial fixed costs on devices and recurring costs on e-juices, are needed
- Better measures of e-cigarette use (frequency, intensity, device type) are needed

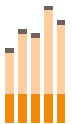




ANDS Taxation

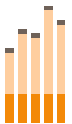
Rationale for ANDS Taxation

- Improve Public Health
 - Encourage switching from combusted to potentially 'less harmful' products
 - Prevent youth initiation
- Raise Revenue
 - Revenue replacement



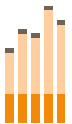
U.S. State and Local Overview: ANDS Taxes

- Minnesota was first state to implement a tax on e-cigarettes
- North Carolina tax recently implemented
- Kansas tax beginning July 2016
- Almost two dozen other states have discussed or are considering
- Local taxes in Petersburg and Juneau Alaska
 - Chicago tax proposed recently



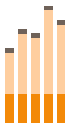
Minnesota ANDS Tax

- Minnesota taxes e-cigarettes at 95% of the wholesale price by determining that they fall in the definition of a tobacco product
- Based on Department of Revenue decision that e-cigarettes fit the state's definition of a tobacco product
- Public health community not actively involved in the decision



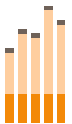
Minnesota Language – Department of Revenue

- Minnesota Dept. of Revenue memo:
 - An electronic cigarette or e-cigarette is a device that simulates smoking tobacco. In Minnesota, e-cigarettes and e-juice which contain nicotine derived from tobacco meet the definition of a tobacco product found in (Minnesota Statutes, section 297F.01, subdivision 19).
 - E-Cigarettes are taxable.
 - E-cigarettes and e-juice are considered tobacco products and are subject to the Tobacco Tax, which is currently 95% of the wholesale cost of any product containing or derived from tobacco.
- Source: <http://www.revenue.state.mn.us/businesses/tobacco/Pages/e-Cig.aspx>



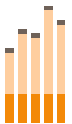
Minnesota ANDS Tax

- Minnesota tax based on value of the e-juice
 - But if sold as part of a package (e.g. reusable e-cigarettes or starter kits), tax applied to entire package
- Taxes collected from licensed ‘distributors’
 - Retailers, vape shops can get list of licensed distributors from state tax authorities
- Active enforcement
 - Compliance checks of retailers, vape shops to determine if taxes have been paid
 - Untaxed products subject to seizure



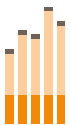
North Carolina ANDS Tax

- Tax on vapor products adopted May 2014; effective July 1, 2015
 - RJR proposal; no public health input
- Five-cents per milliliter of ‘consumable product’
 - “any nicotine liquid solution or other material that is depleted as vapor product is used”
- Taxes collected from licensed distributors
 - Retailers, vape shops can be licensed as distributors
 - Similar to approach used for OTP tax
- Relatively passive enforcement
 - Efforts to increase awareness of tax among distributors, retailers



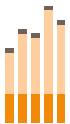
Kansas ANDS Tax

- Tax adopted June 2015; effective July 1, 2016
 - Part of a larger tobacco tax measure that increased cigarette and other tobacco product taxes effective July 1, 2015
- Twenty cents per milliliter of ‘consumable product’
- Implementation details unclear



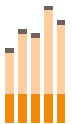
Chicago Proposed ANDS Tax

- Combined cigarette taxes in Chicago are highest in the U.S.
 - \$7.17 per pack; NYC second at \$6.85
 - No taxes on other tobacco products
- \$1.25 on devices
- \$0.25 per milliliter of nicotine containing solution



International ANDS Taxes

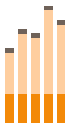
- Very few countries apply excise tax on ENDS
 - Togo – taxed as a “derivative product” at 45% of price (WAEMU cap)
 - Republic of Korea – taxes e-juice at equivalent of 1,799 won/milliliter (US\$1.65)
 - Italy – 58.5% of retail price, but recently repealed
 - >50% drop in users; almost 40% drop in sales
- Subject to VAT in many countries
 - Although some exempt or apply lower rate for pharmaceutical use



Importance of Definitions

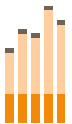
- State statutory definitions of e-cigarettes can be categorized as*:
 - Inclusive: e-cigarettes are included in the statutory definitions of tobacco products (9 states)
 - Neutral: e-cigarettes are defined separately from tobacco products in statute, but not exempted from future inclusion in the definition of tobacco products or further application of tobacco control-related statutes (14 states)
 - Exempting: e-cigarettes are explicitly exempt from being defined or treated as a tobacco product by statute (6 states)

* Note these reflect definitions as of early 2014.



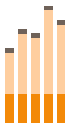
Structure of ANDS Taxes

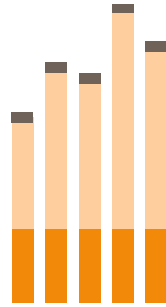
- *Ad Valorem* vs. Specific Excise Tax
 - Diversity and rapid evolution of products suggests *ad valorem* tax would be easier to administer
- Disadvantages of *Ad Valorem Tax*:
 - Valuation problems
 - Tax depends on industry pricing strategies
 - Larger price gaps between high, low priced products
 - High tax on devices could discourage use
- Advantages of *Ad Valorem Tax*:
 - Is not eroded by inflation



Structure of ANDS Taxes

- What to tax?
 - All products/components vs. e-juice?
 - Only products that contain nicotine?
 - All nicotine vs. nicotine derived from tobacco?
 - Differential taxes based on nicotine content?
- Where to collect tax?
 - Distributor vs. retailer?
 - Need for licensing

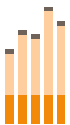




Level of ANDS Taxation

Option A: Low ANDS prices

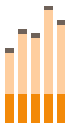
- Apply little or no tax
 - NC approach
- Rationale:
 - Maximize switching
- Potential consequences:
 - Promotes initiation, gateway to combustible use
 - Encourages dual use



Option B:

High e-cigarette price

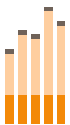
- Parity with combustible, OTP taxes
 - MN approach
- Rationale:
 - Discourage youth initiation
 - Treat all tobacco products the same
 - Discourage dual use
- Potential consequences:
 - Discourage switching



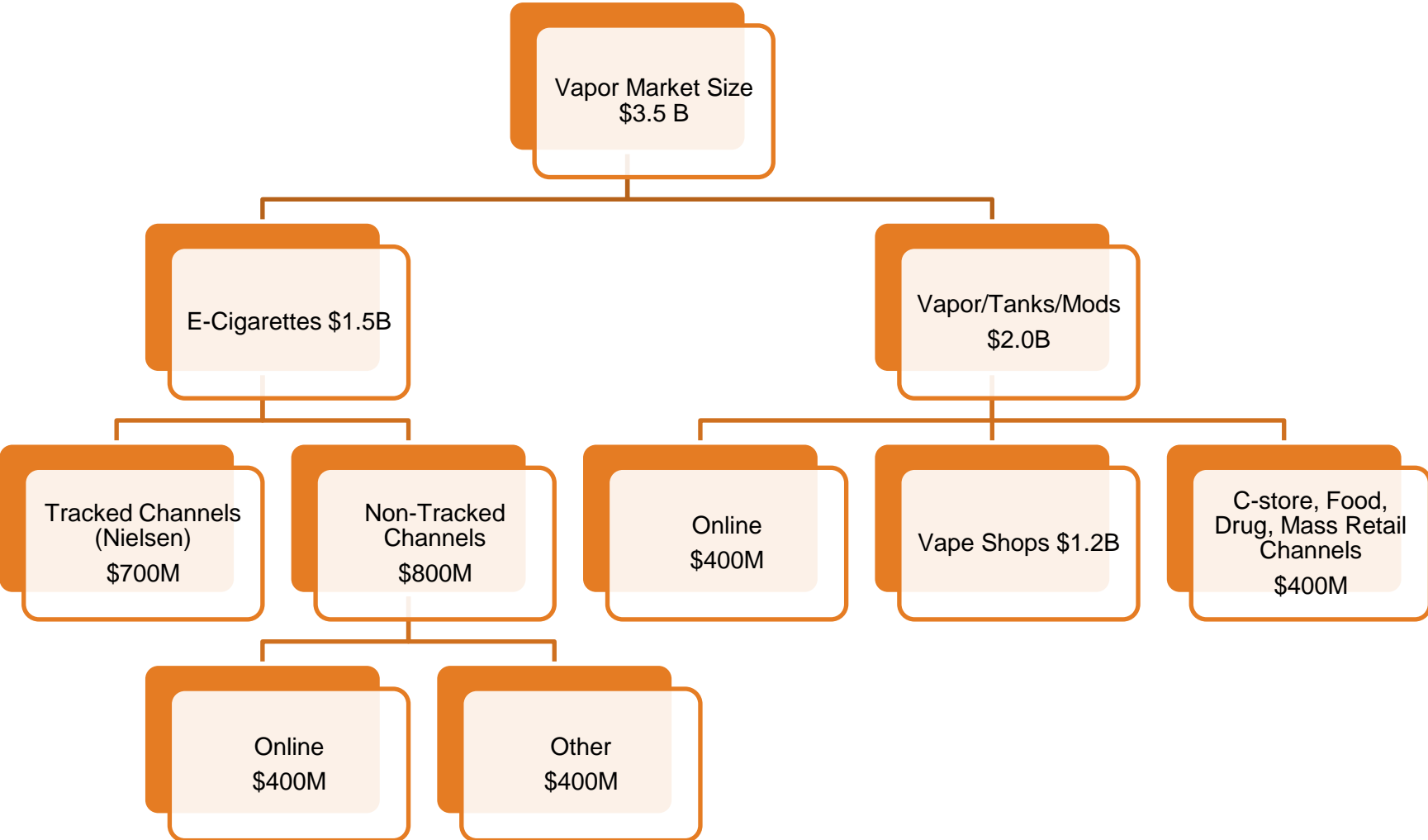
Option C:

Increase e-cigarette price

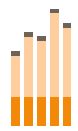
- Tax e-cigarettes while increasing taxes on combustible tobacco products
 - Maintain or increase relative price of combustibles
 - KS approach (almost?)
- Rationale:
 - Maximize switching
 - Discourage dual use
 - Discourage initiation
 - Discourage combustible use



Estimated Size of the Vapor Market

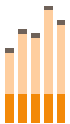


Source: Presentation: Development of Premium E-Flavors and Market Analysis
Note: Other Non-Tracked channels include tobacco-only outlets and other e-cig retail locations



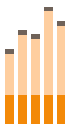
Potential ENDS Tax Revenues

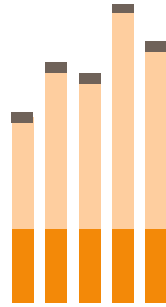
- Assume own-price elasticity of -1.5 based on published Nielsen data analysis
- Assume same elasticity in other market segments
- Impose tax that raises prices for all tracked sales by given percentage
- Calculate new sales and tax revenues
 - CA:
 - 20% tax – revenues around \$18.7 million
 - 40% tax – revenues around \$21.4 million



Recommended Approach:

- Tax e-cigarettes while increasing taxes on cigarettes and other tobacco products
 - Maintain or increase relative price of combustibles
 - Maximize switching while discouraging initiation and dual use
 - Use revenues to support prevention and cessation programs

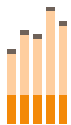




Implications for New Zealand's Smokefree 2025 Goal

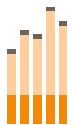
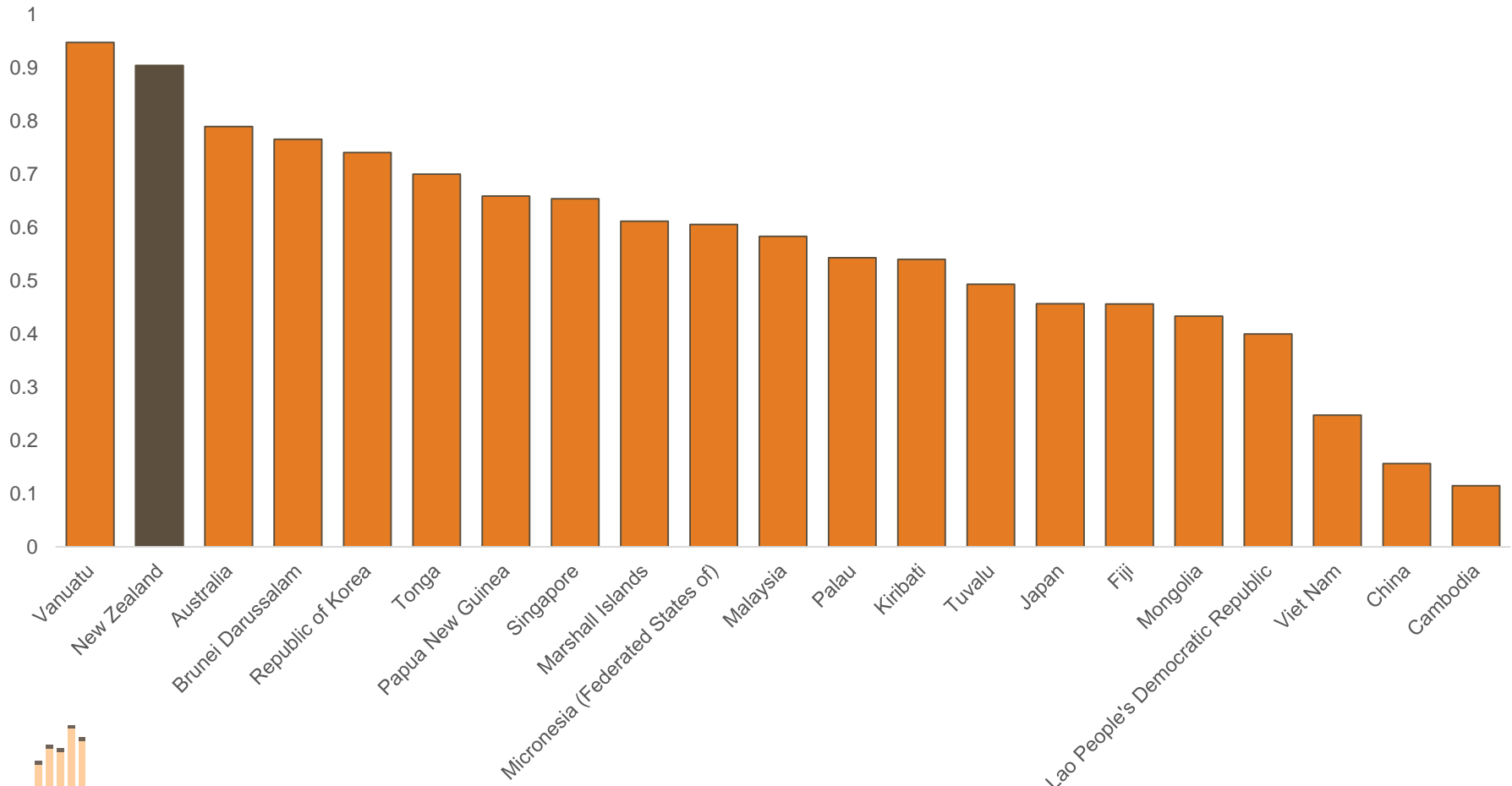
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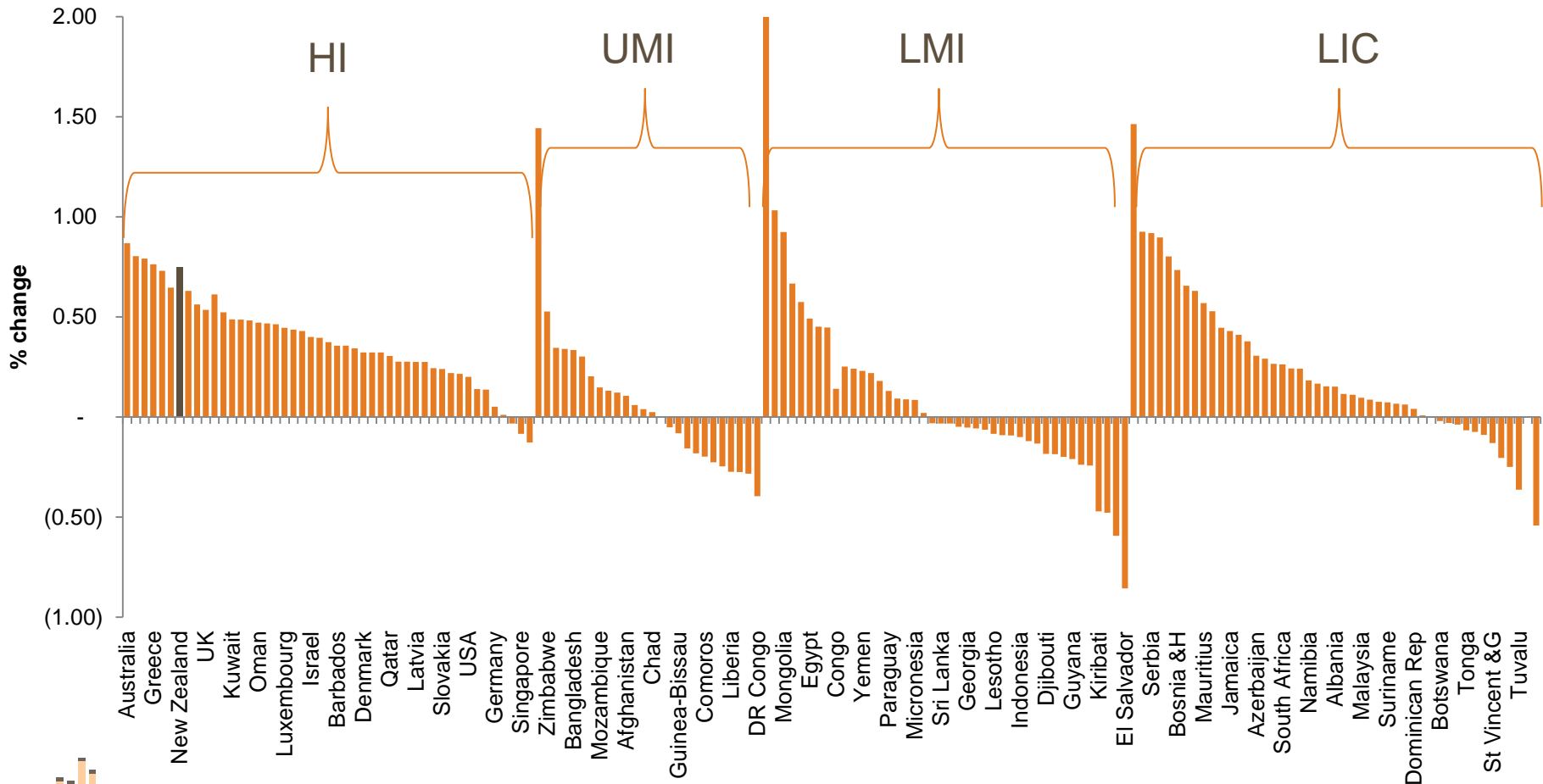
New Zealand Doing Well!

Price of Cheapest Brand Relative to Most Popular Brand, 2014



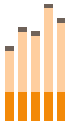
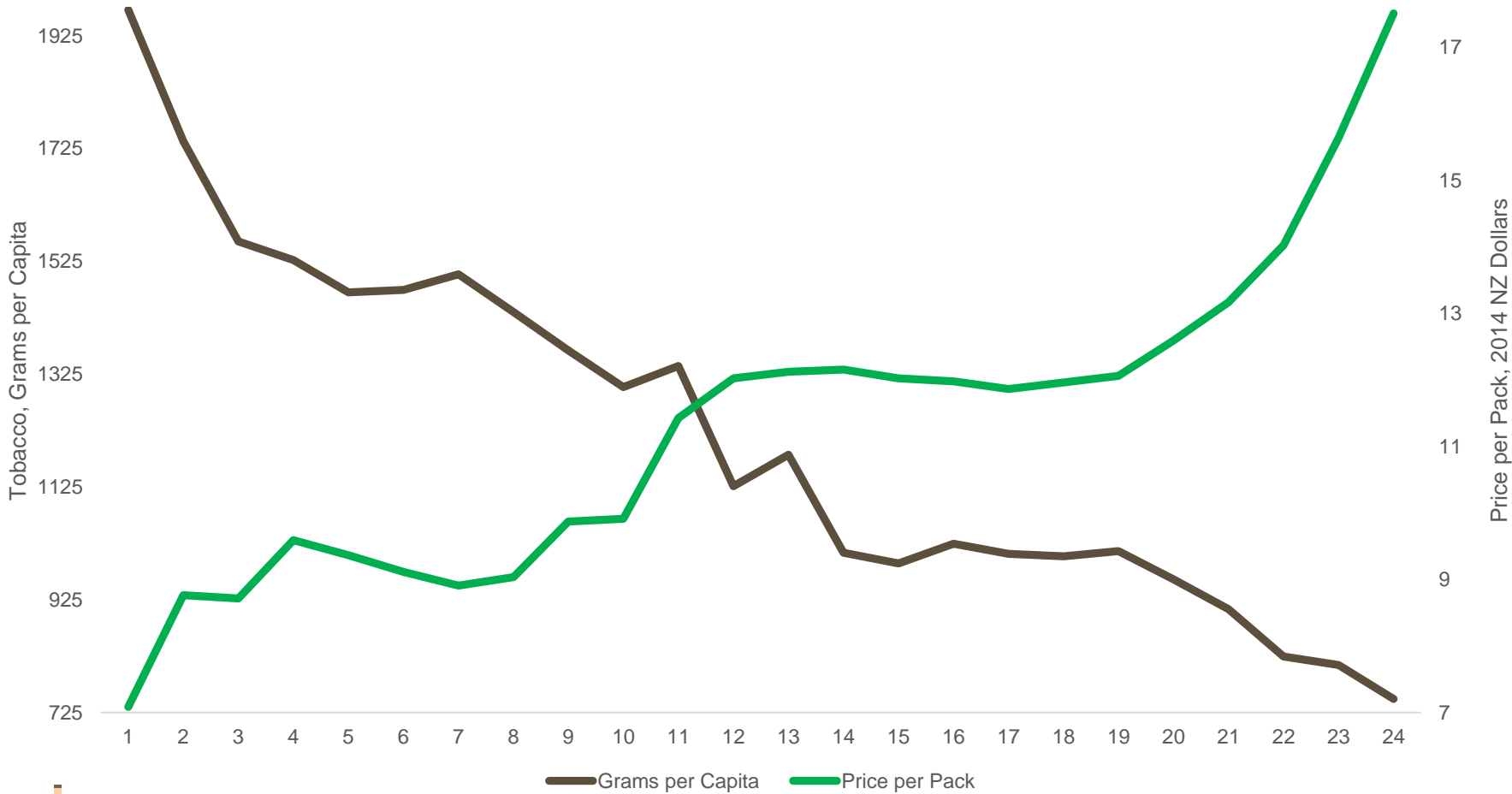
New Zealand Doing Well!

Change in affordability 2008-2014



New Zealand Doing Well!

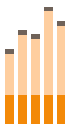
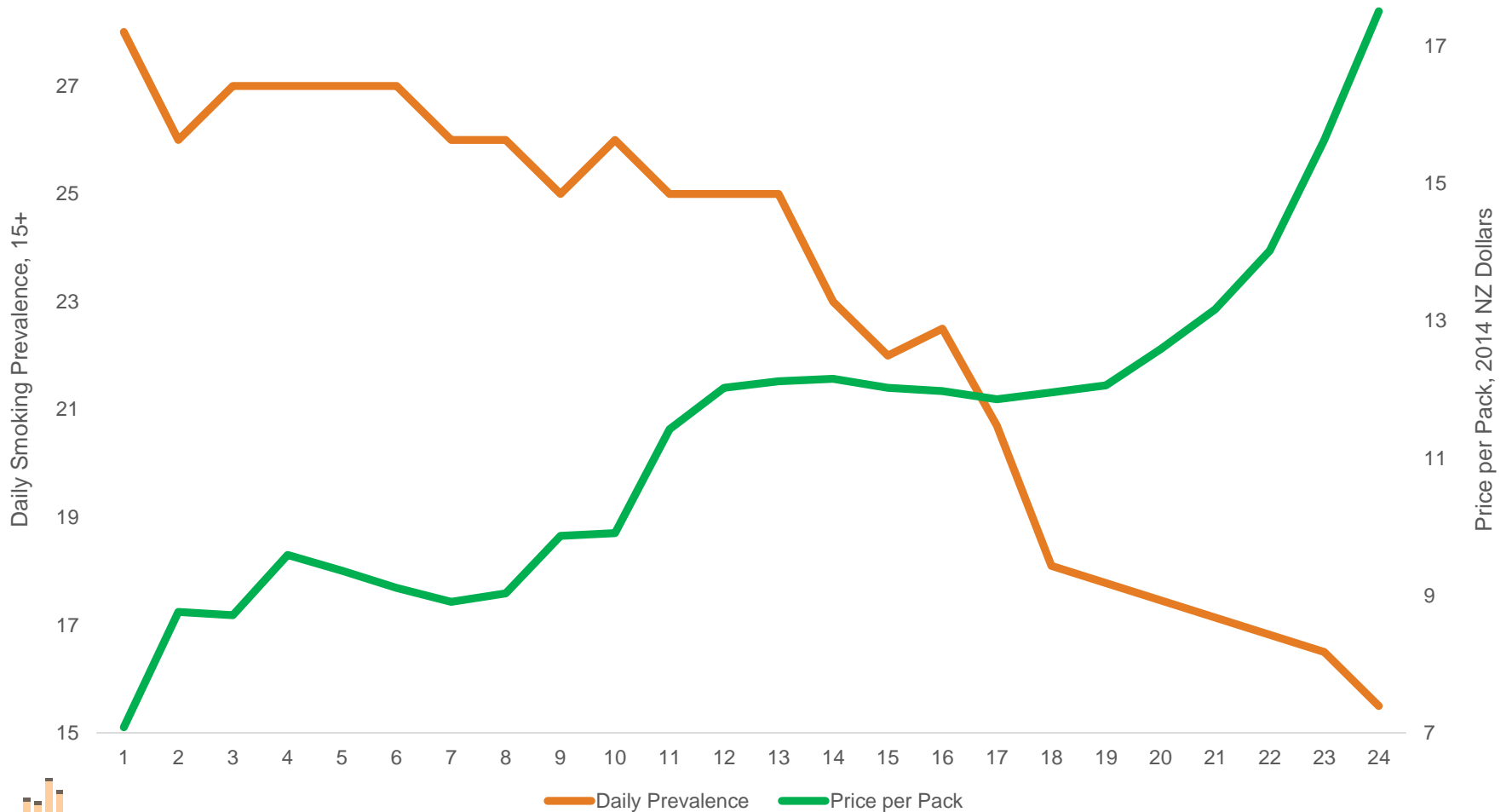
Tobacco Consumption and Cigarette Prices
New Zealand, 1990-2013, Inflation Adjusted



Sources: EIU, World Bank and OECD

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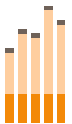
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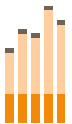
For Continued Progress

- Sizable increases in cigarette and other tobacco product taxes
 - In addition to regular inflation adjustments
 - Large enough to minimize industry ability to absorb
 - Less frequent and larger increases rather than series of phased in smaller increases
- Recent research from U.S. suggests impact of future increases may be greater than past



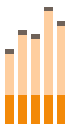
For Continued Progress

- Use revenues to support comprehensive tobacco control program
 - Support for cessation among current smokers
 - Mass media prevention campaigns
 - Particular need for targeted efforts to reduce disparities
 - Enhances public support for further tax increases, including among current tobacco users
- Experiences from U.S. and elsewhere show that comprehensive programs highly effective in adding to effects of tax increase



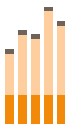
For Continued Progress

- Adopt/strengthen tobacco control policies
 - Tax increases are key component of comprehensive tobacco control strategy
 - Other policy changes reinforce tax increases and reach tobacco users who may be less responsive to tax/price increases
 - Plain packaging would be logical next step



For Continued Progress

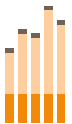
- Implement a harm reduction approach
 - ANDS subject to strong regulation
 - High taxes on ANDS to discourage youth uptake and reinitiation among former smokers
 - Taxes below combustible product taxes to encourage substitution among highly addicted smokers
 - Supported by restrictions on access, marketing, and use in public spaces/workplaces

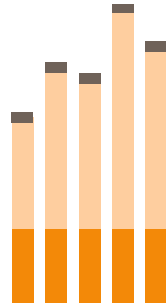


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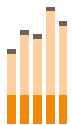




Tobacco Taxes & Tobacco Use

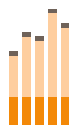
What We Know

- Increases in taxes that increase cigarette prices:
 - Decrease overall cigarette smoking
 - Reduce adult prevalence by inducing cessation induces current smokers to quit,
 - Deter re-initiation
 - Prevent youth uptake
 - Reduce consumption among continuing users
 - Lead to other changes in tobacco use behaviors
 - Brand/product choices, purchasing behaviors, tax avoidance, etc.



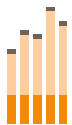
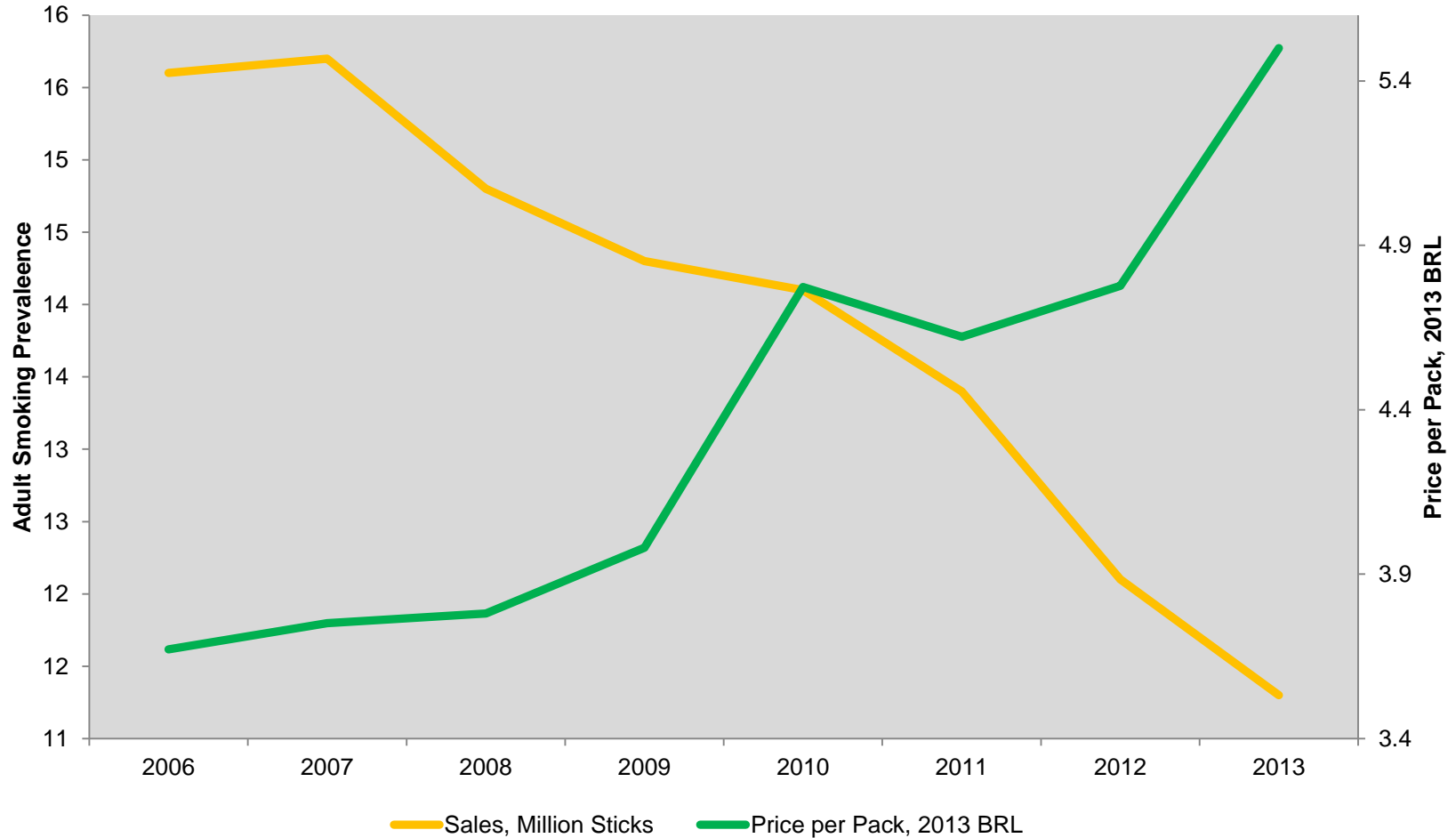
Cigarette Price & Consumption

Hungary, 1990-2011, Inflation Adjusted



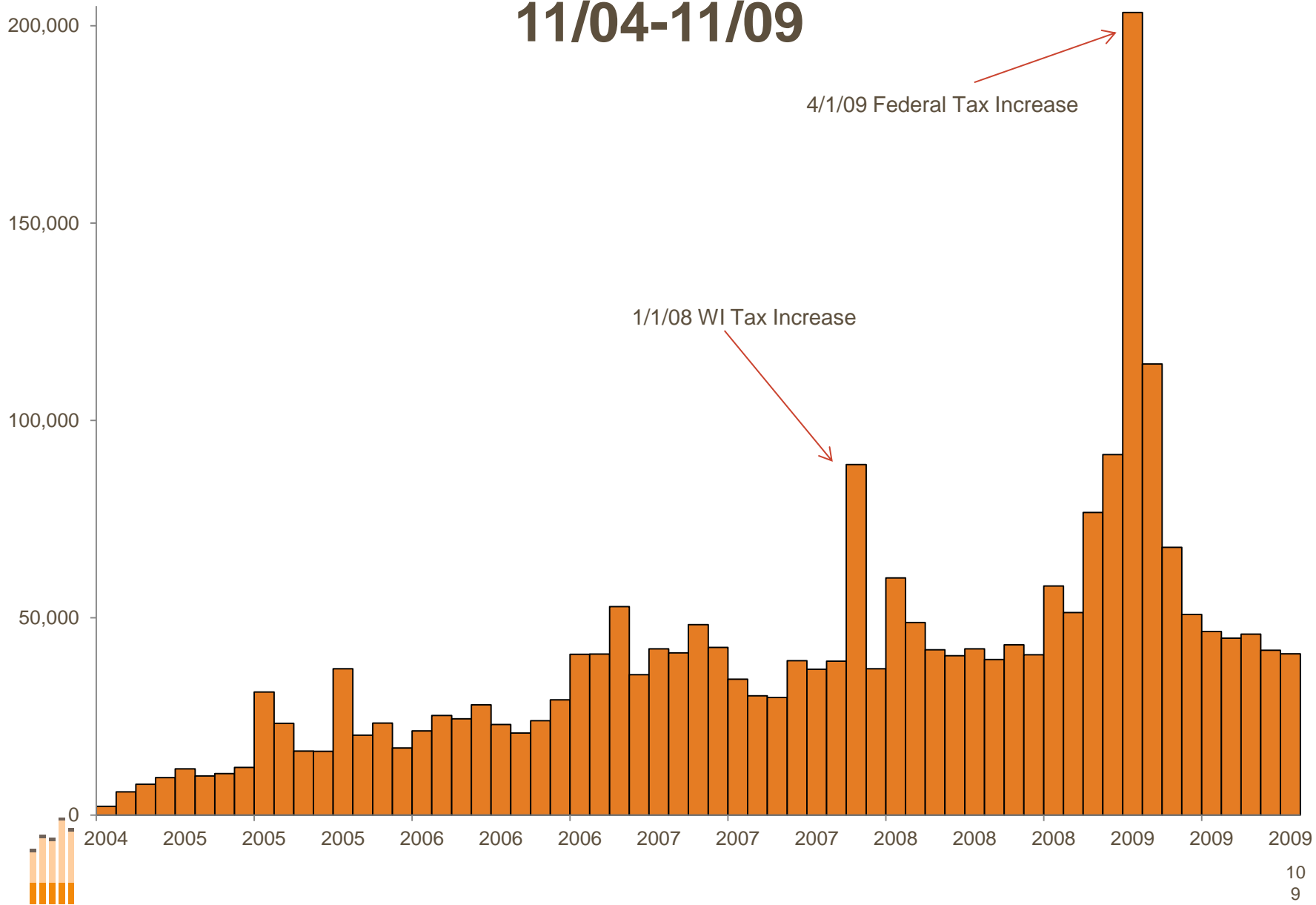
Adult Prevalence & Price, Brazil

Adult Smoking Prevalence and Cigarette Price Brazil, Inflation Adjusted, 2006-2013

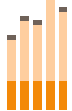
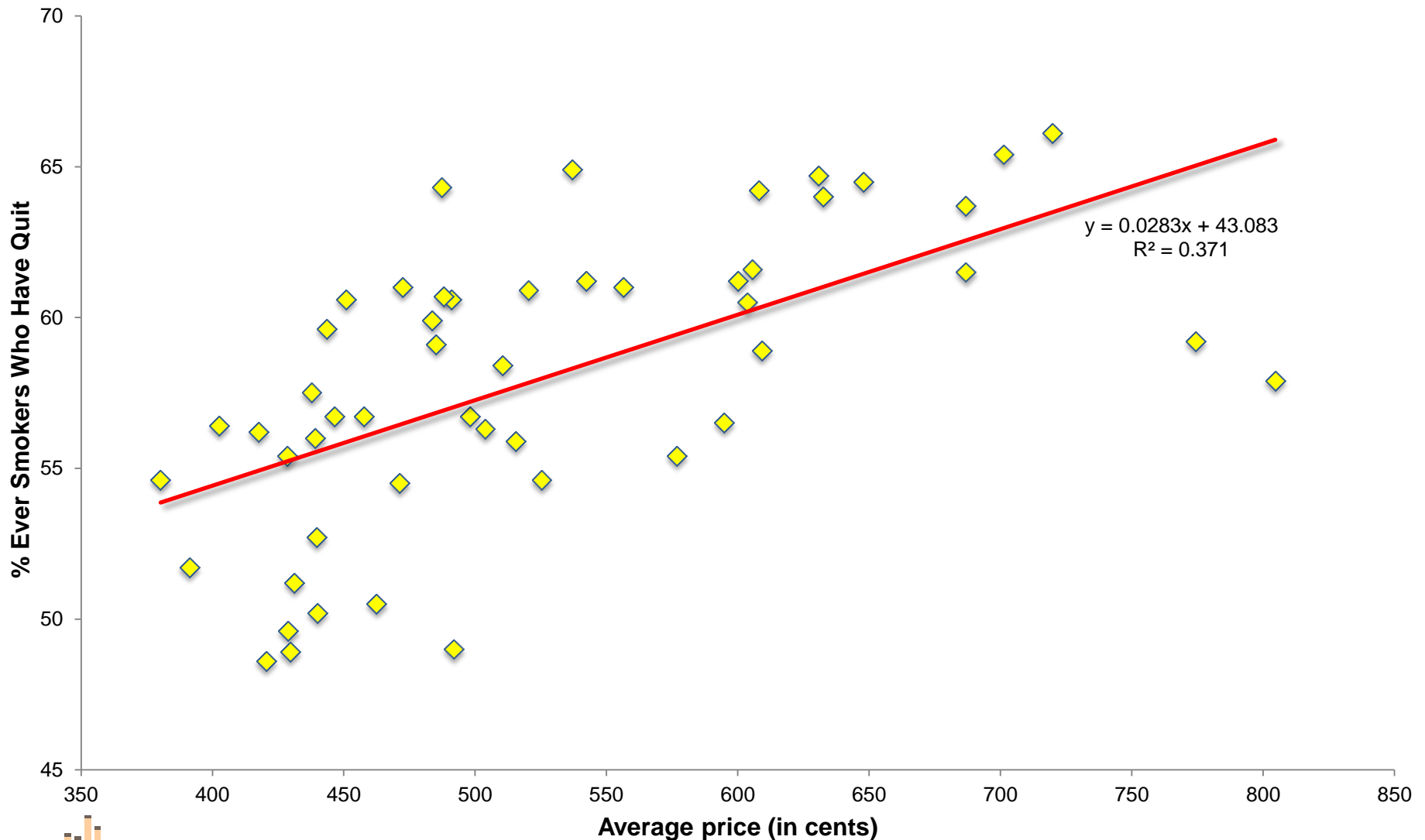


Sources: Ministry of Health, Brazil; EIU; World Bank

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

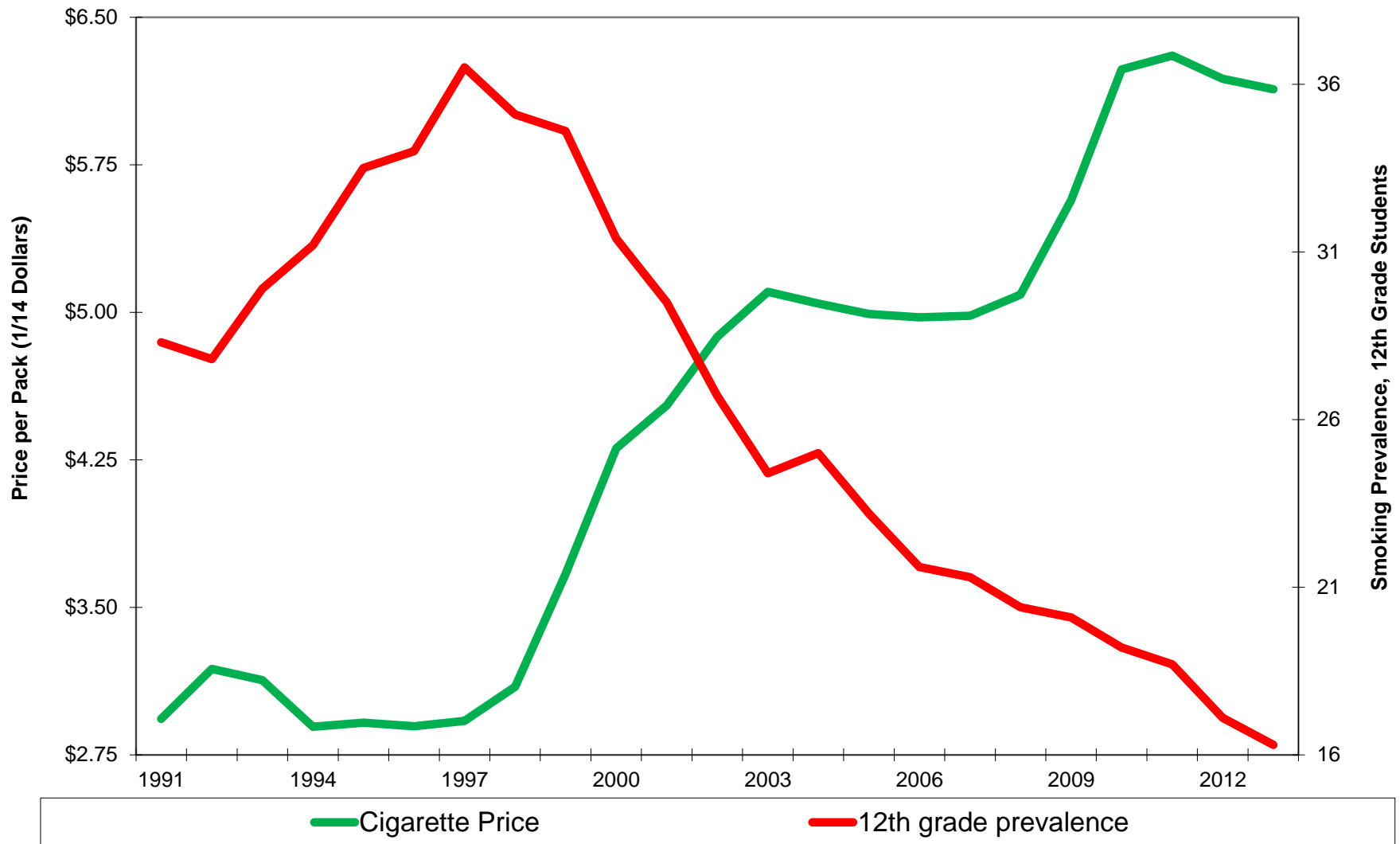


Cigarette Prices and Cessation US States & DC, 2009

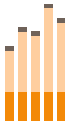


Source: BRFSS, *Tax Burden on Tobacco*, 2010, and author's calculations

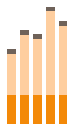
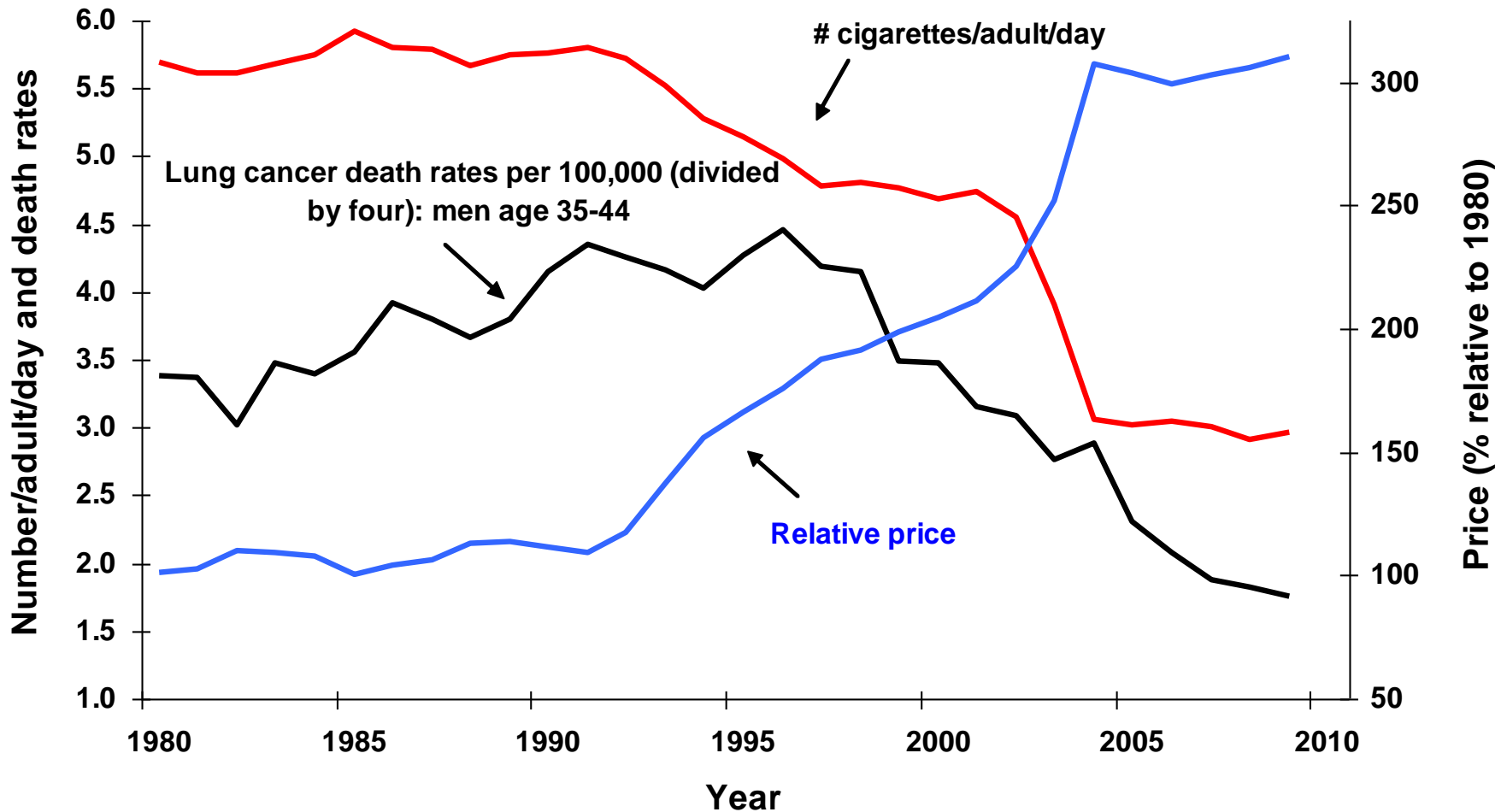
Cigarette Price & Youth Smoking Prevalence High School Seniors, United States, 1991-2013



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

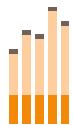


Price, Consumption & Lung Cancer, France

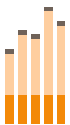
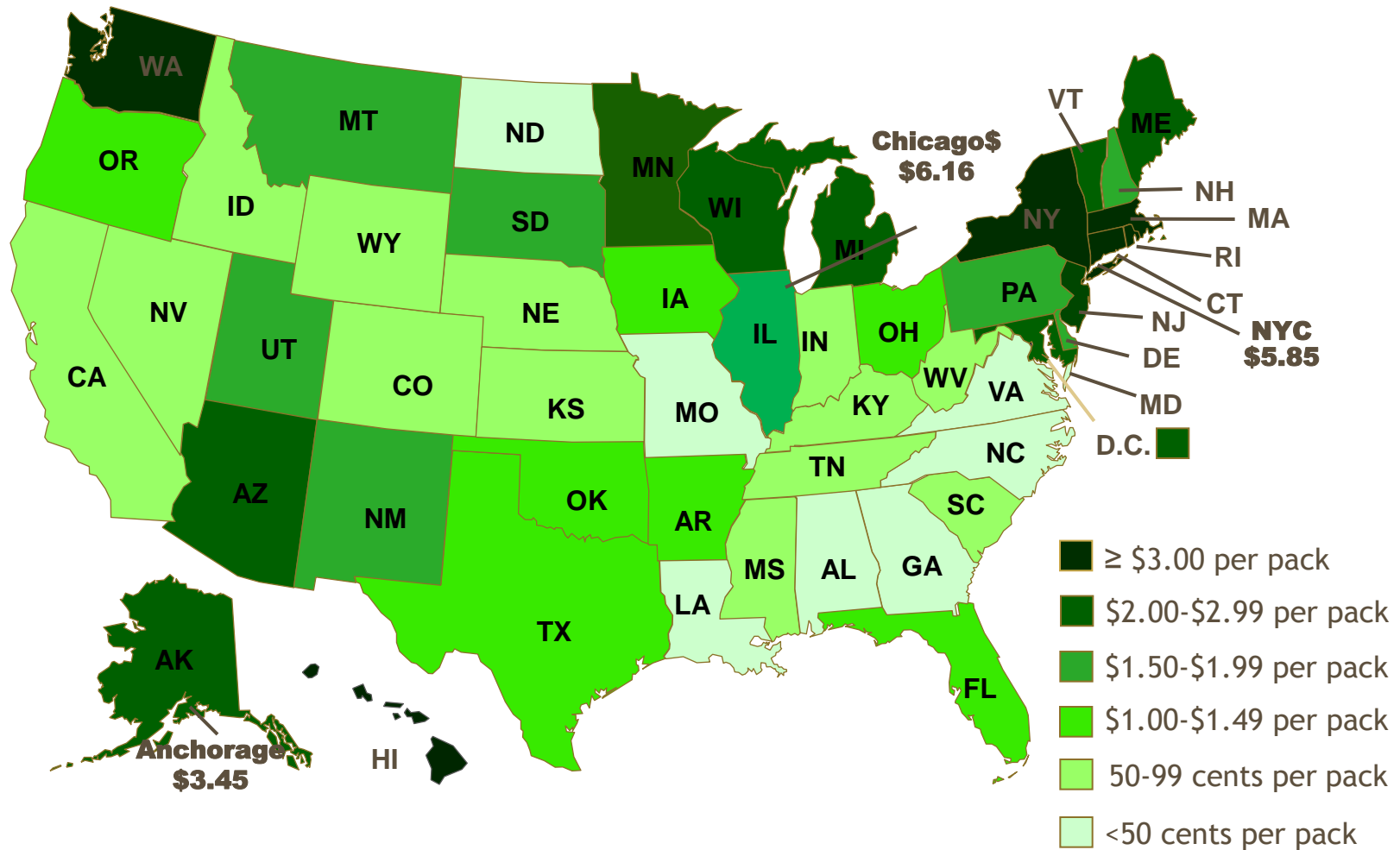


What We Need to Know

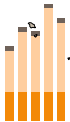
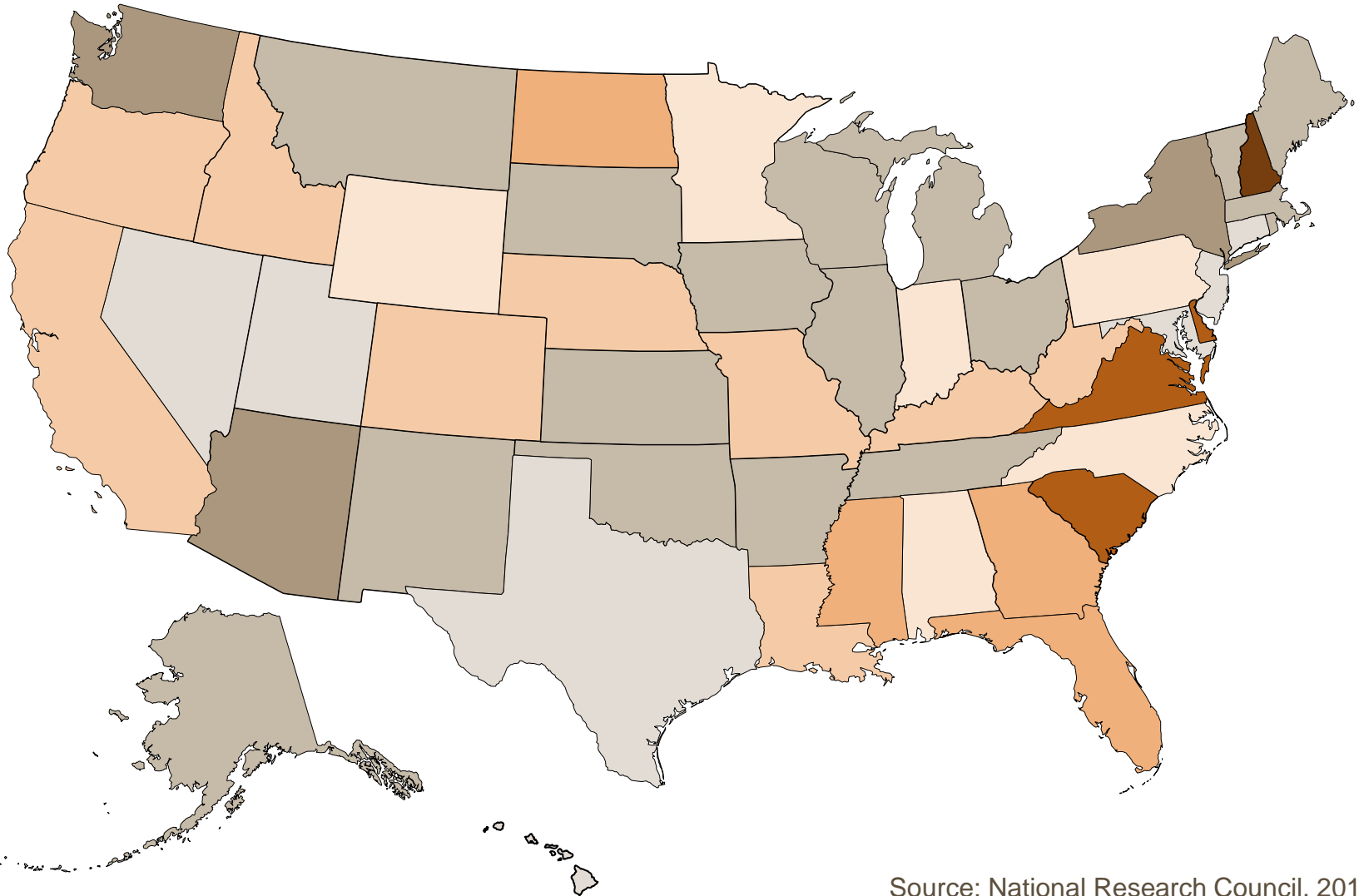
- How the effect of price increases changes as prices increase (potential nonlinear impact)
- Whether the impact of a price increase differs by the size of price increases (asymmetric impact)
- How opportunities for tax avoidance and evasion affect price elasticity estimates



State Cigarette Excise Tax Rates – February 2015

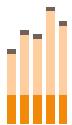


Estimated State Cigarette 'Importing' and 'Exporting', 2010-11

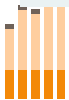
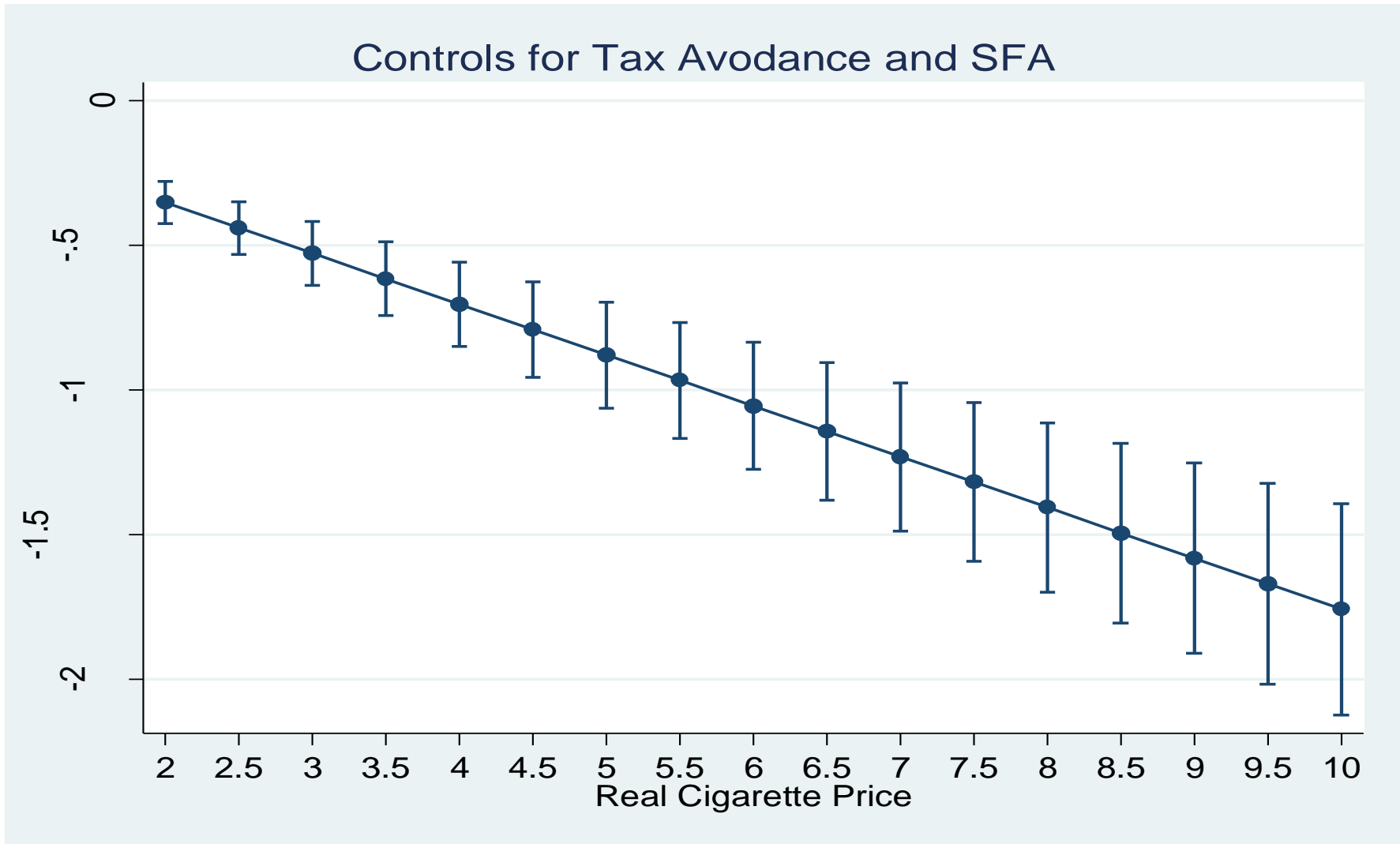


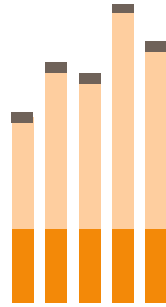
Nonlinearities in Price Elasticity

- Two sets of analyses in progress:
 - Aggregate analysis of state level tax-paid cigarette sales
 - Individual level analysis of cigarette smoking prevalence and consumption using data from multiple waves of the Tobacco Use Supplement to the Current Population Survey
 - Also emphasize how opportunities for tax avoidance and evasion can affect estimates of price elasticity
- All analyses control for other tobacco control policies and variety of other factors that influence cigarette demand



Results – Aggregate Data

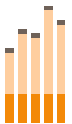




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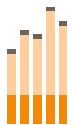
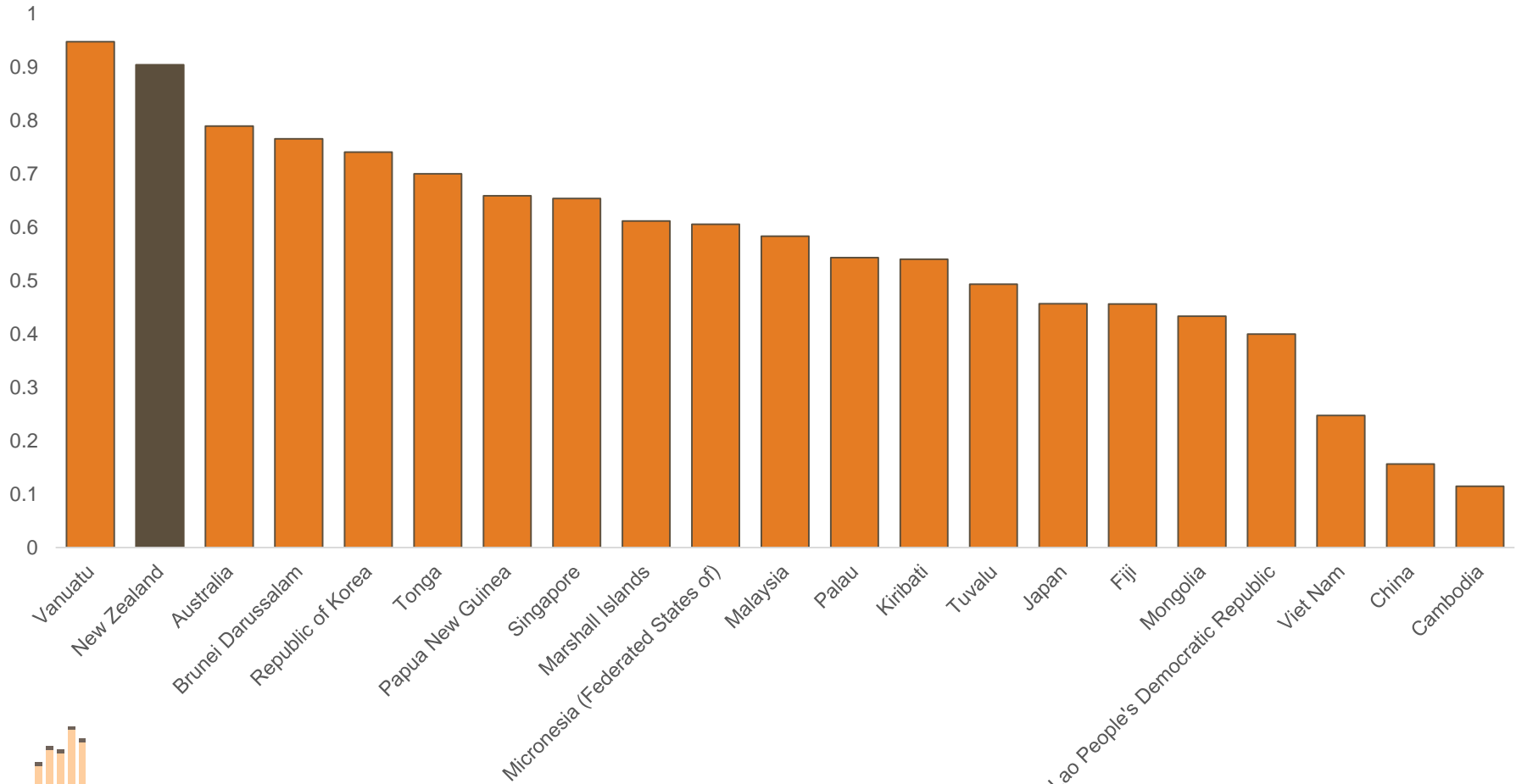
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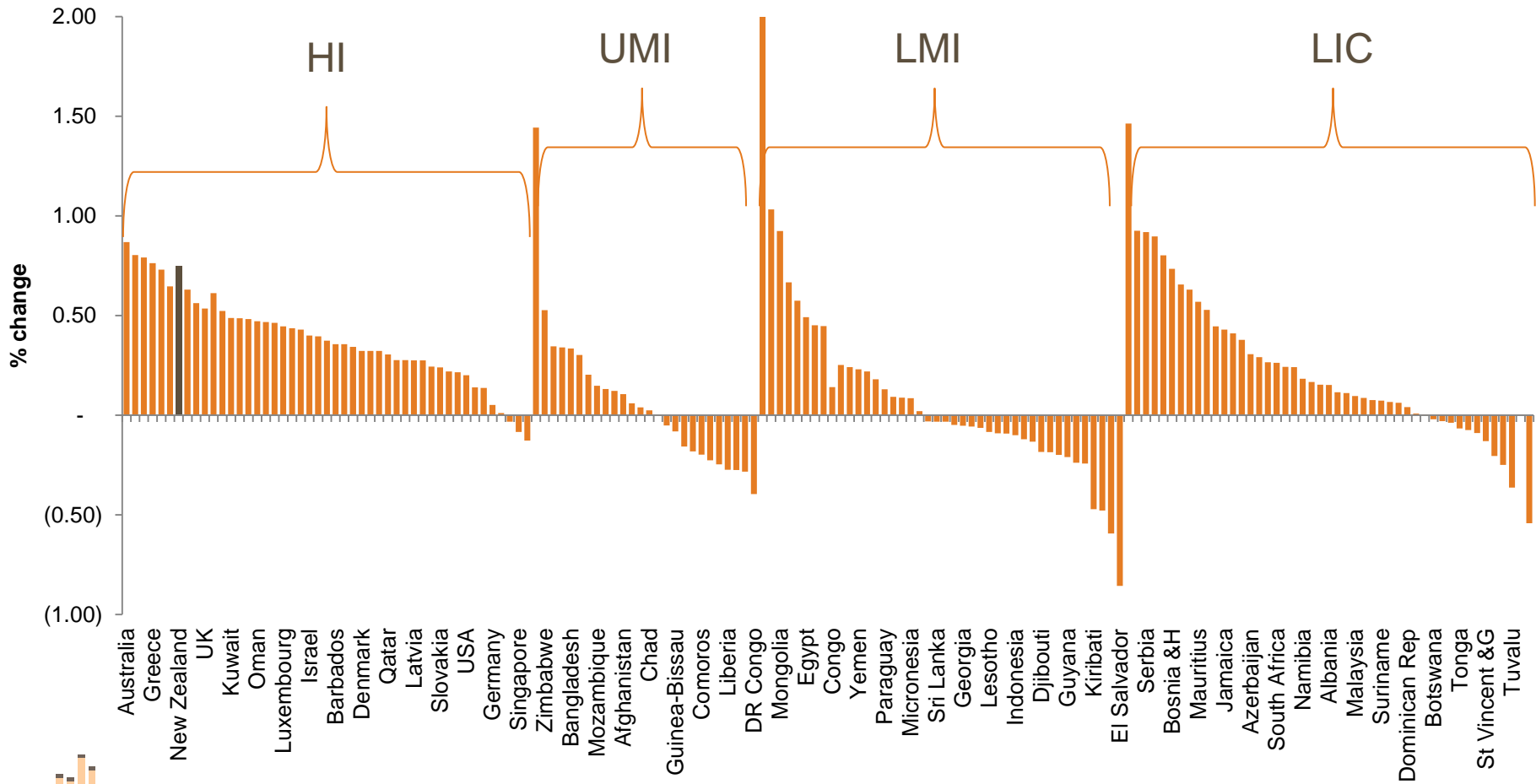
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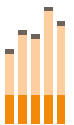
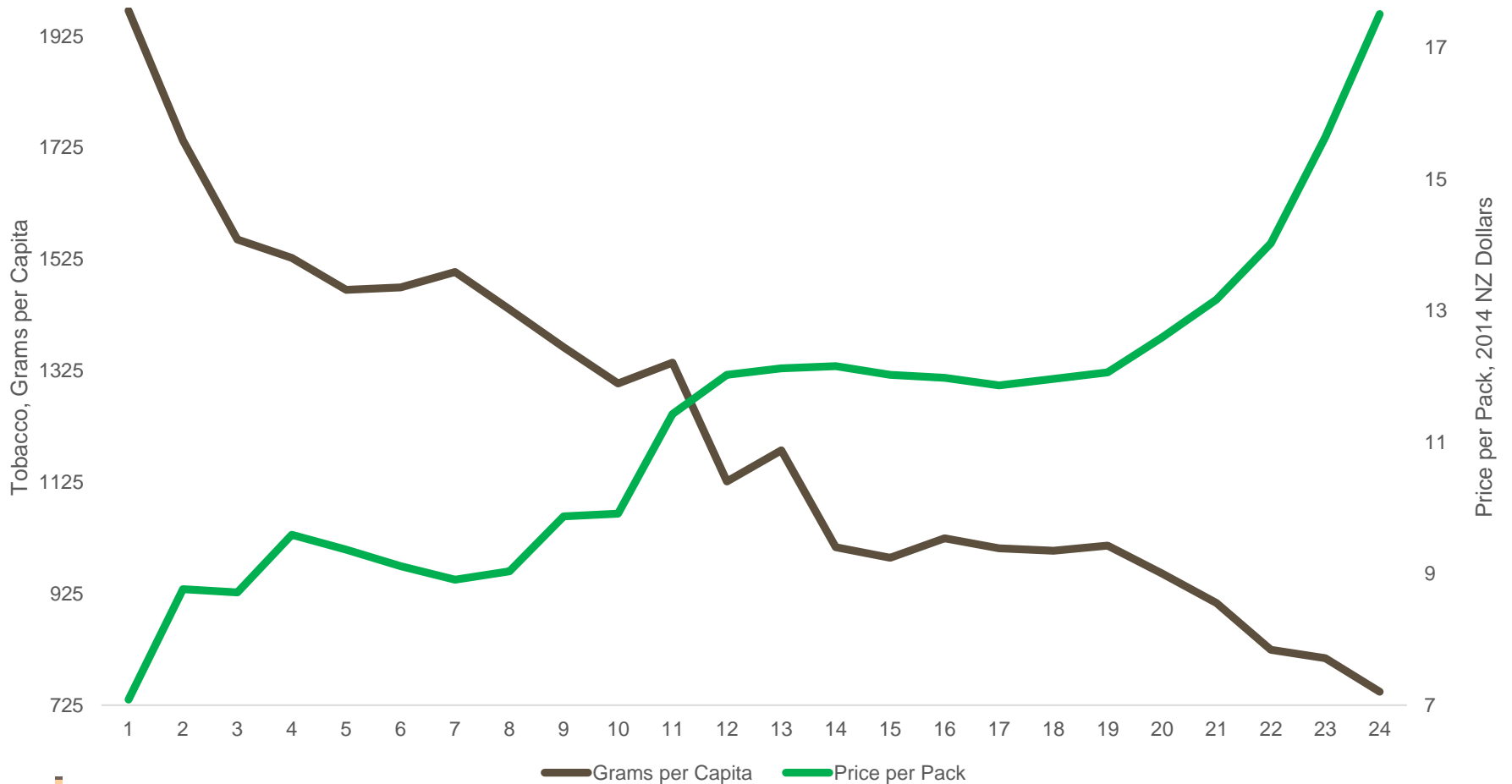
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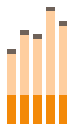
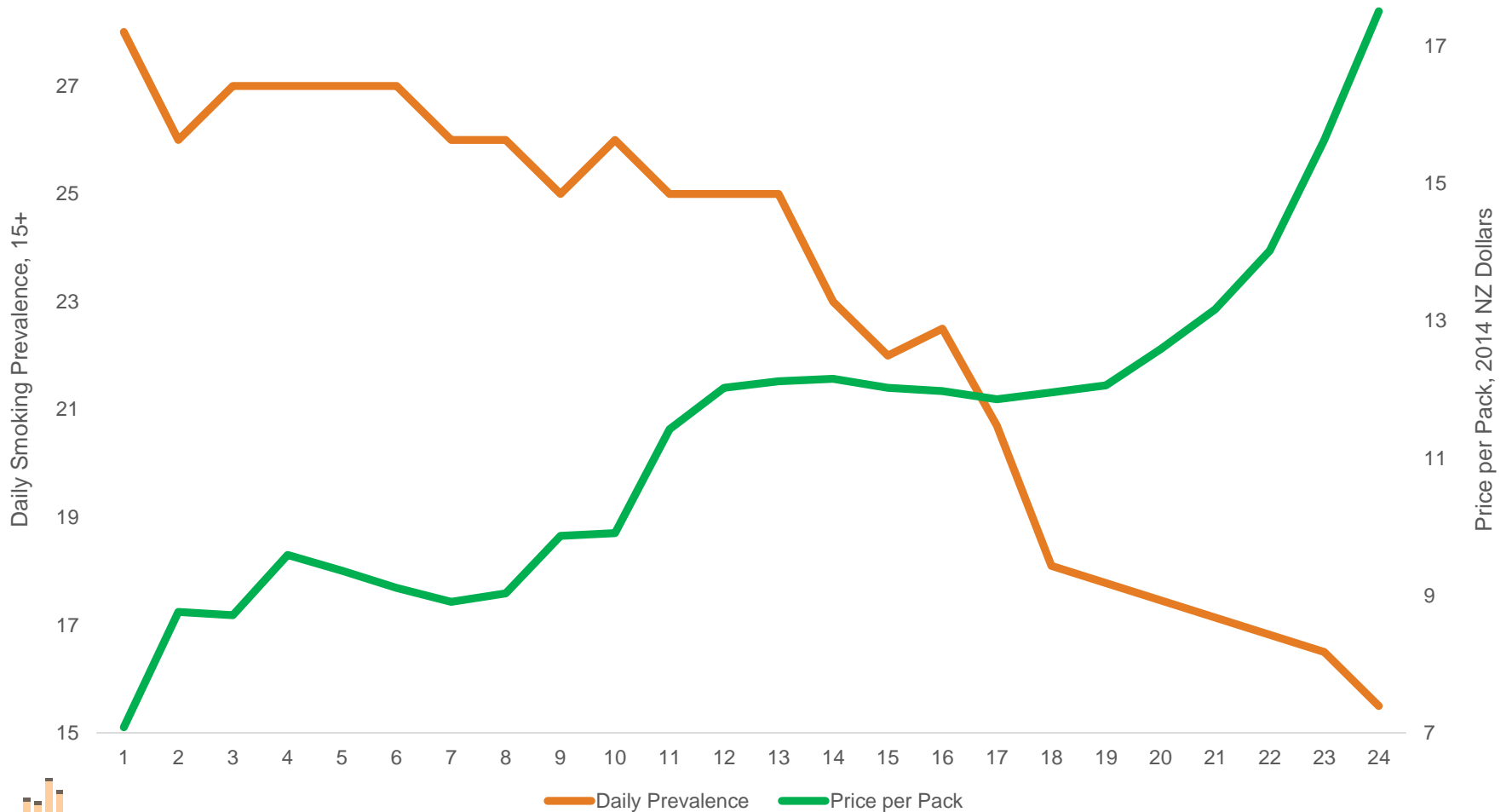
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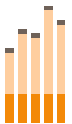
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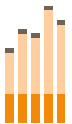
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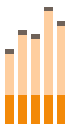
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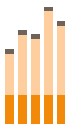
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