

Smokeless Tobacco Pricing Strategies and Policies

Frank J. Chaloupka, University of Illinois at Chicago 8th National Summit on Smokeless and Spit Tobacco Albuquerque, New Mexico, April 20, 2016

Overview

- State taxation of other tobacco products
- Impact of tax structure on price
- Impact of taxes and prices on smokeless tobacco product use



Disclosures

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 Office on Smoking and Health
- Robert Wood Johnson Foundation

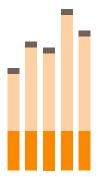


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State OTP Taxation

OTP Chartbook







Tobacco Product Taxation:

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

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Section 1: Introduction

Purpose of This 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

tobacconomics.org/research/otp-chartbook



OTP State Data Profile Page Sample





OTP Appendix Sample

Table A-2. State Cigar Taxation Laws, Selected Years 2005-2014

✓ Yes Blank No

W/ OTP (With other OTPs); Std. AL (Stand-alone definition/taxation); CP (Cost Price); DP (Distributor's Price); ae (each); MIP (Manufacturer's Invoice Price); MLP (Manufacturer's Price); MP (Manufacturer's Price); MP (Manufacturer's Price); WP (Product Value); PP (Purchase Price); TSP (Taxable Sales Price); WC (Wholesale Cost); WCP (Wholesale Cost Price); WPP (Wholesale Purchase Price); WSP (Wholesale Price); WP (Wholesale Price); WPP (Wholesale Price); W

	Cigons	Cigars How H		200	05	200	8	20	011	2014	
	Taxed	Defined (2014)	Taxed (2014)	Ad Valorem	Specific	Ad Valorem	Specific	Ad Valorem	Specific	Ad Valorem	Specific
AL	✓	Std. Al.	Std. Al.		\$0.006 ea		\$0.006 ea		\$0.006 ea		\$0.006 ea
AK	✓	W/ OTP	W/ OTP	75% WP		75% WP		75% WP		75% WP	
AZ	✓	W/ OTP	Std. Al.		\$0.13 ea		\$0.218 ea		\$0.218 ea		\$0.218 ea
AR	✓	W/ OTP	W/ OTP	32% MSP		32% MSP		68% MSP		68% MSP	
CA	✓	W/ OTP	W/ OTP	46.76% WC		46.76% WC		33.02% WC		29.82% WC	
со	✓	W/ OTP	W/ OTP	40% MLP		40% MLP		40% MLP		40% MLP	
СТ	✓	W/ OTP	W/ OTP	20% WSP		20% WSP		27.5% WSP		50% WSP	
DE	1	W/ OTP	W/ OTP	15% WP		15% WP		15% WP		15% WP	
DC											
FL											
GA	✓	W/ OTP	Std. Al.	23% WCP		23% WCP		23% WCP		23% WCP	
ні	✓	W/ OTP	Std. Al.	40% WP		40% WP		50% WP		50% WP	
ID	✓	W/ OTP	W/ OTP	40% WSP		40% WSP		40% WSP		40% WSP	
IL	✓	W/ OTP	W/ OTP	18% WP		18% WP		18% WP		36% WP	
IN	✓	W/ OTP	W/ OTP	18% WP		24% WP		24% WP		24% WP	
IA	✓	W/ OTP	W/ OTP	22% WSP		50% WSP		50% WSP		50% WSP	
KS	✓	W/ OTP	W/ OTP	10% WSP		10% WSP		10% WSP		10% WSP	
KY	✓	W/ OTP	W/ OTP			7.5% WSP		15% WSP		15% DP	
LA	1	Std. Al.	Std. Al.	20% MIP		20% MIP		20% MIP		20% MIP	
ME	1	W/ OTP	W/ OTP	16% WSP		20% WSP		20% WSP		20% WSP	
MD	✓	W/ OTP	Std. Al.	15% WP		15% WP		15% WP		70% WP	
MA	✓	Std. Al.	W/ OTP	30% WP		30% WP		30% WP		40% WP	
MI	✓	W/ OTP	W/ OTP	32% WP		32% WP		32% WP		32% WP	
MN	1	W/ OTP	W/ OTP	35% WSP		70% WSP		70% WSP		95% WSP	
MS	1	W/ OTP	W/ OTP	15% MLP		15% MLP		15% MLP		15% MLP	
МО	✓	W/ OTP	W/ OTP	10% MIP		10% MIP		10% MIP		10% MIP	
MT	✓	W/ OTP	W/ OTP	25% WP		50% WP		50% WP		50% WP	

 $To bacco\ Product\ Taxation\ Across\ the\ States\ \mid\ \underline{www.tobacconomics.org}\ \mid\ Twitter:\ \underline{@tobacconomics}$

Table A-2. State Cigar Taxation Laws, Selected Years 2005-2014

✓ Yes Blank No

W/ OTP (With other OTPs); Std. Al. (Stand-alone definition/taxation); CP (Cost Price); DP (Distributor's Price); ea (each); MIP (Manufacturer's Invoice Price); MIP (Manufacturer's Price); MSP (Manufacturer's Sales Price); WC (Wholesale Cost); WCP (Wholesale Cost);

	Cigars	How		2005		200	8	2011		2014	
	Taxed	Defined (2014)	Taxed (2014)	Ad Valorem	Specific	Ad Valorem	Specific	Ad Valorem	Specific	Ad Valorem	Specific
NE	✓	W/ OTP	W/ OTP	20% PP		20% PP		20% PP		20% PP	
NV	✓	W/ OTP	W/ OTP	30% WP		30% WP		30% WP		30% WP	
NH	✓	W/ OTP	W/ OTP					65.03% WSP		65.03% WSP	
NJ	1	W/ OTP	W/ OTP	30% WP		30% WP		30% WP		30% WP	
NM	✓	W/ OTP	W/ OTP	25% PV		25% PV		25% PV		25% PV	
NY	1	W/ OTP	W/ OTP	37% WP		37% WP		75% WP		75% WP	
NC	1	W/ OTP	W/ OTP	2% CP		10% CP		12.8% CP		12.8% CP	
ND	1	Std. Al.	Std. Al.	28% WPP		28% WPP		28% WPP		28% WPP	
ОН	✓	W/ OTP	W/ OTP	17% WP		17% WP		17% WP		17% WP	
ок	✓	W/ OTP	Std. Al.		\$0.12 ea		\$0.12 ea		\$0.12 ea		\$0.12 ea
OR	✓	W/ OTP	W/ OTP	65% WSP		65% WSP		65% WSP		65% WSP	
PA											
RI	✓	Std. Al.	W/ OTP	30% WC		40% WC		80% WC		80% WC	
SC	✓	W/ OTP	W/ OTP	5% MP		5% MP		5% MP		5% MP	
SD	✓	W/ OTP	W/ OTP	10% WPP		35% WPP		35% WPP		35% WPP	
TN	1	W/ OTP	W/ OTP	6.6% WCP		6.6% WCP		6.6% WCP		6.6% WCP	
TX	✓	W/ OTP	Std. Al.		\$0.011 ea		\$0.011 ea		\$0.011 ea		\$0.011 ea
UT	✓	W/ OTP	W/ OTP	35% MSP		35% MSP		86% MSP		86% MSP	
VT	✓	W/ OTP	Std. Al.	41% WP		41% WP			\$2.00 ea		\$2.00 ea
VA	✓	W/ OTP	W/ OTP			10% MSP		10% MSP		10% MSP	
WA	✓	W/ OTP	W/ OTP	129.42% TSP		75% TSP		95% TSP		95% TSP	
wv	1	W/ OTP	W/ OTP	7% WP		7% WP		7% WP		7% WP	
WI	✓	W/ OTP	W/ OTP	25% MLP		50% MLP		71% MLP		71% MLP	
WY	✓	Std. Al.	W/ OTP	20% WPP		20% WPP		20% WPP		20% WPP	

 ${\it Tobacco\ Product\ Taxation\ Across\ the\ States\ |\ {\it www.tobacconomics.org\ |\ Twitter:\ @\it tobacconomics.org\ |\ Twitter:\ &\it tobacconomics.org\ |\$

OTP Fact Sheets





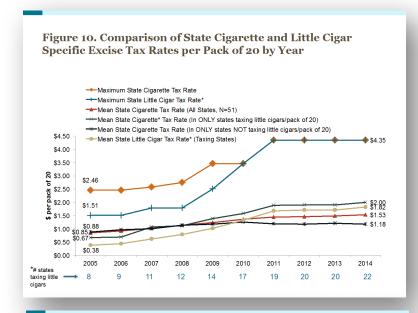


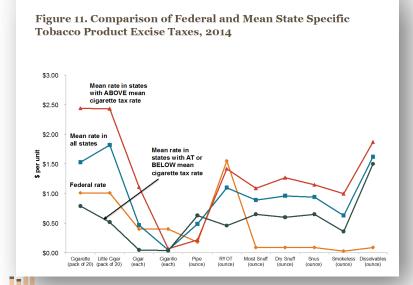
OTP State Profiles Sheets





Addt'l Chartbook Companion Materials





Additional resources released alongside the OTP chartbook

Those resources include:

- Slide deck to accompany the chartbook focused on slides from the national overview section
- Full Dataset (2005-2014)
- Codebook

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

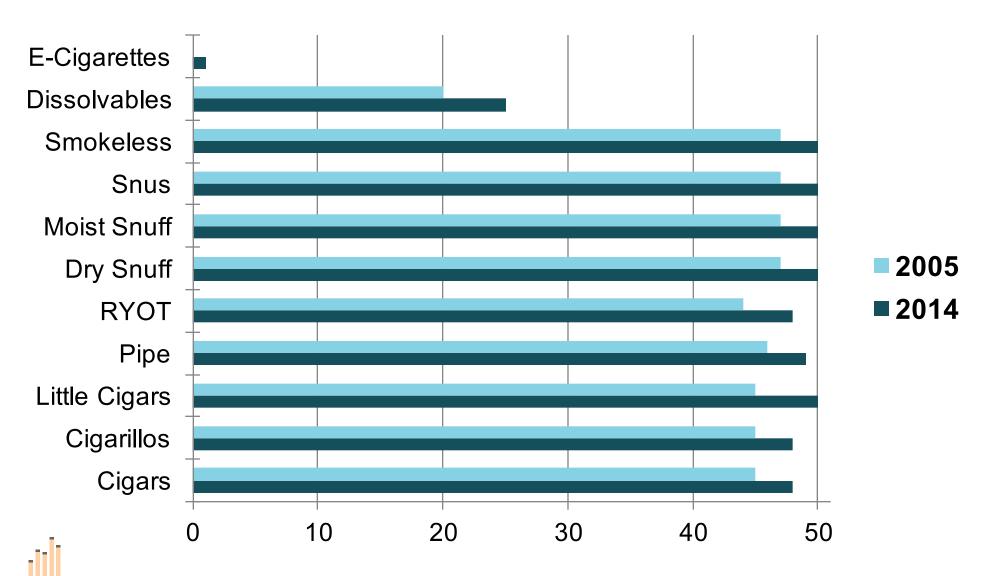


Figure 2. OTP Tax Categorizations (as of January 1, 2014)

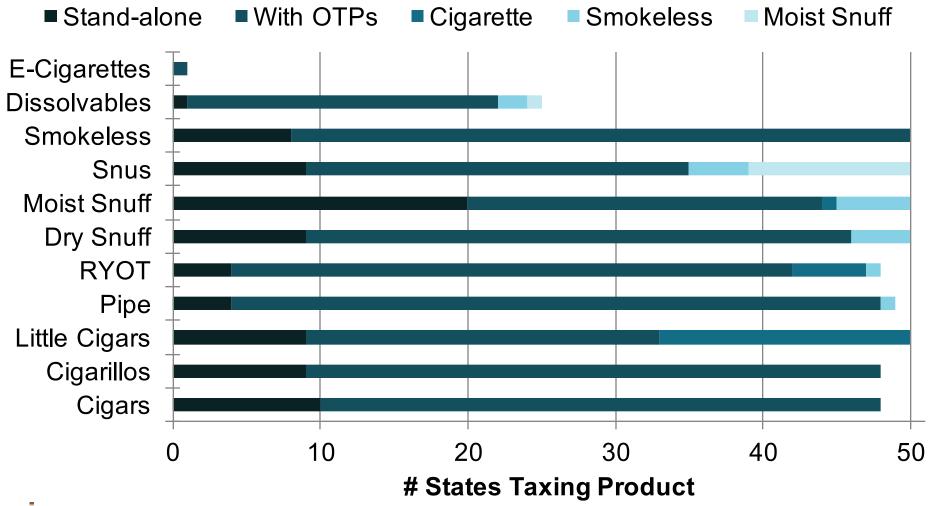




Figure 3. States Applying Ad Valorem vs. Specific Taxes by Product (January 1, 2005)

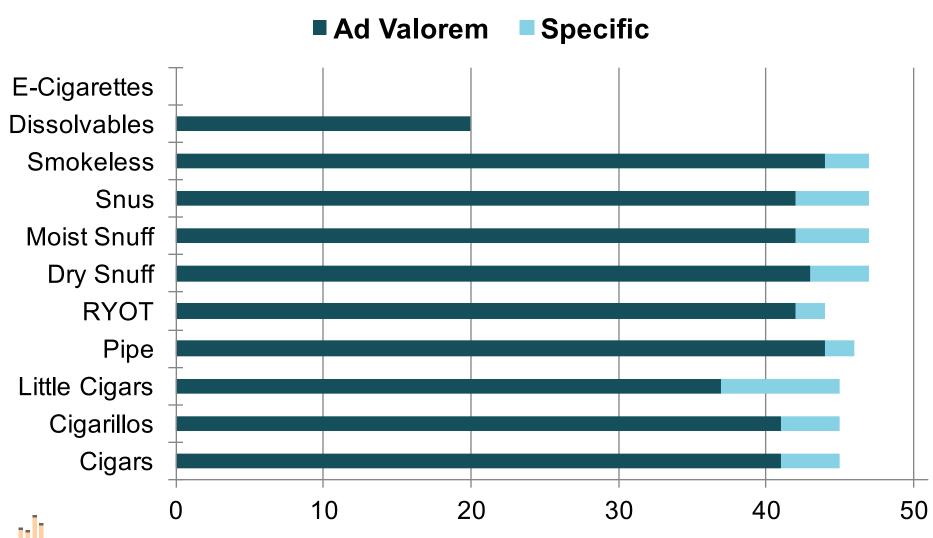


Figure 4. States Applying Ad Valorem vs. Specific Taxes by Product (January 1, 2014)

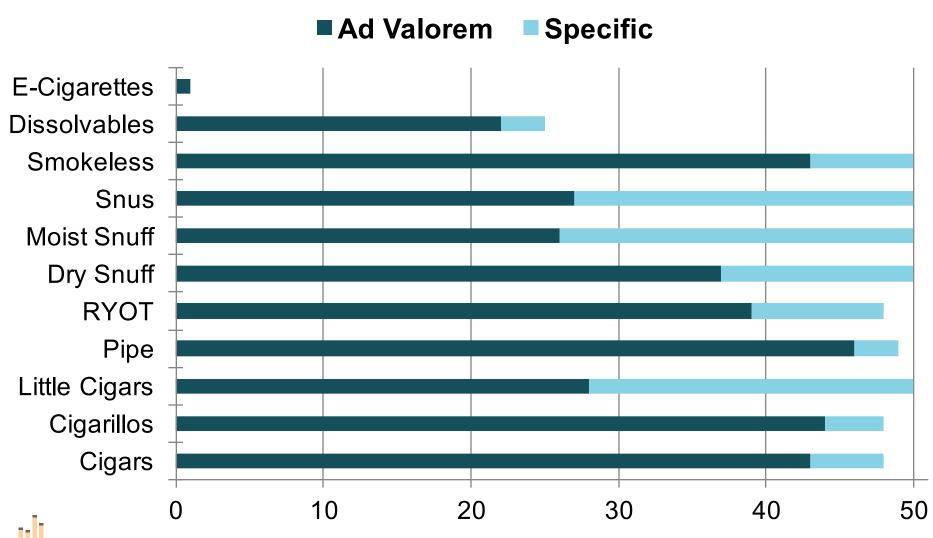
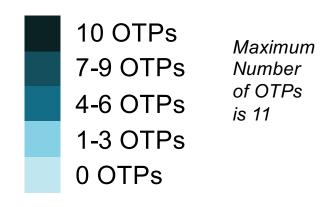


Figure 5. Number of OTPs Taxed Ad Valorem by State (January 1, 2005)



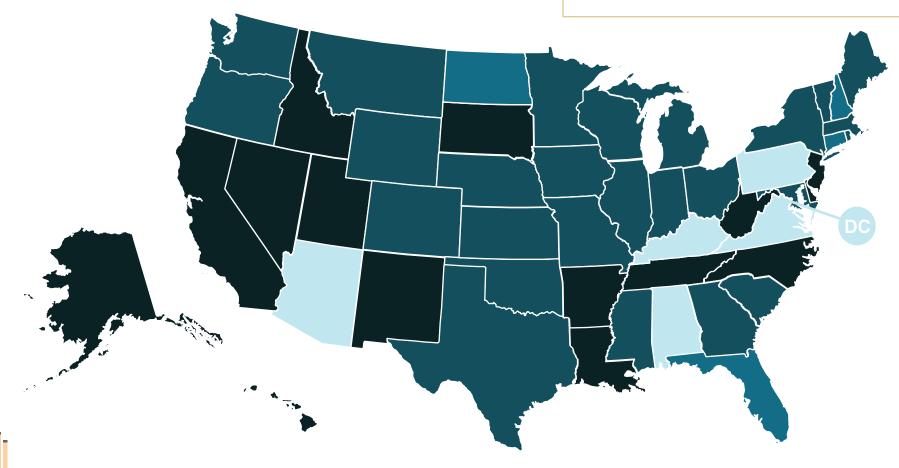
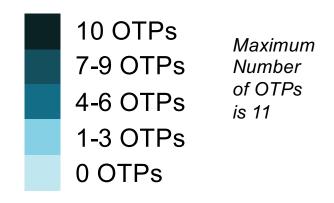


Figure 6. Number of OTPs Taxed Ad Valorem by State (January 1, 2014)



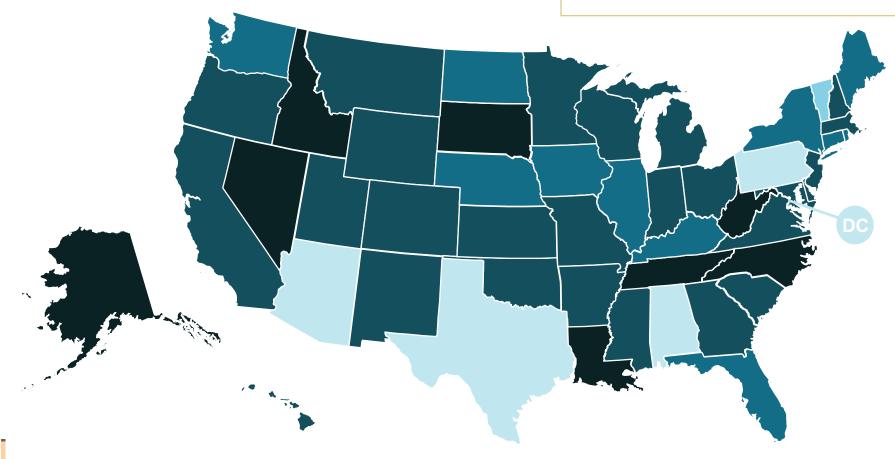
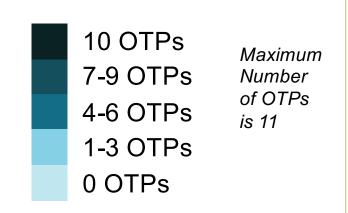


Figure 7. Number of OTPs Taxed with Specific Taxes by State (January 1, 2005)



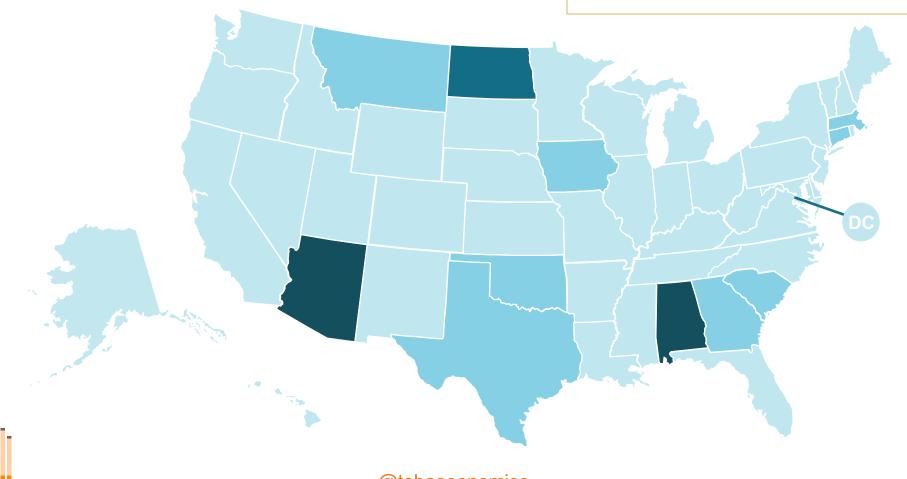
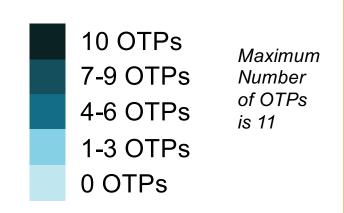




Figure 8. Number of OTPs Taxed with Specific Taxes by State (January 1, 2014)



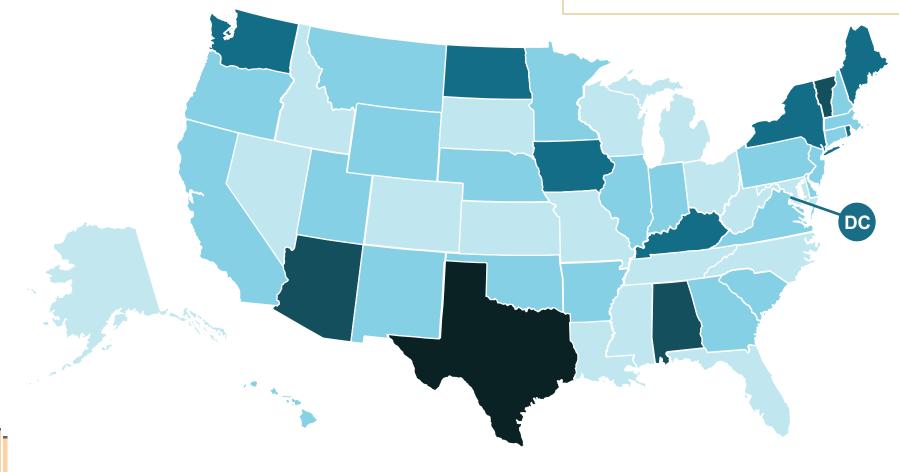


Table 1. National Averages*: Ad Valorem Taxes (%age) by OTP Type

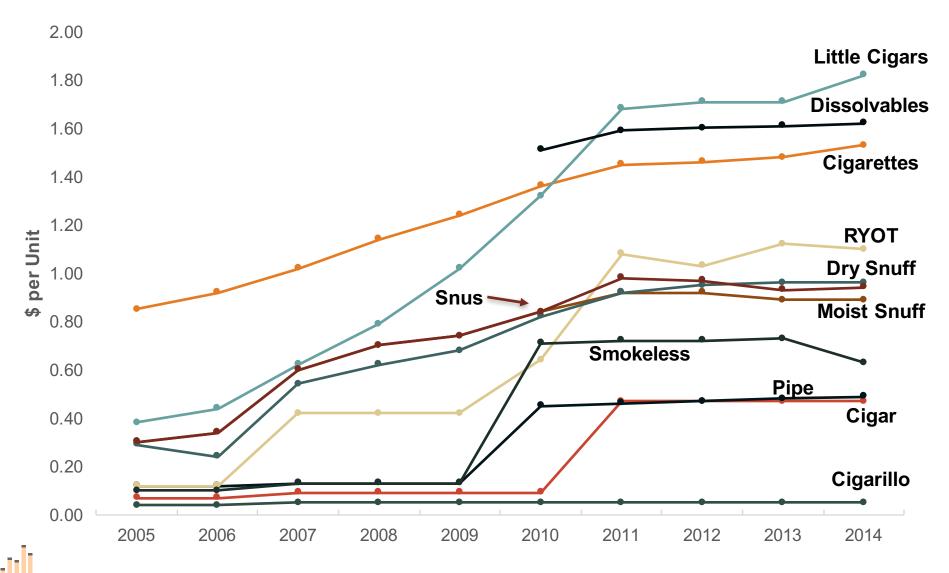
		Janı	uary 1, 2	005		January 1, 2014				
ОТР	# states	Mean	SD	Min	Max	# states	Mean	SD	Min	Max
Little Cigars	37	28.89	23.06	2.00	129.42	28	30.87	21.69	6.60	75.00
Cigars	41	28.31	22.04	2.00	129.42	43	38.63	26.11	5.00	95.00
Cigarillos	41	28.31	22.04	2.00	129.42	44	39.85	27.03	5.00	95.00
Pipe	44	29.57	22.80	2.00	129.42	46	41.27	27.98	5.00	95.00
RYOT	42	29.60	23.35	2.00	129.42	39	37.06	26.08	5.00	95.00
Moist Snuff	42	31.43	24.79	2.00	129.42	26	42.63	43.51	5.00	210.00
Dry Snuff	43	31.28	24.51	2.00	129.42	37	43.39	39.31	5.00	210.00
Snus	42	31.43	24.79	2.00	129.42	27	44.56	43.84	5.00	210.00
Smokeless	44	31.07	24.32	2.00	129.42	43	45.87	38.02	5.00	210.00
Dissolvables	20	29.29	18.19	2.00	75.00	22	45.92	29.42	6.60	95.00
E-Cigarettes	0					1	95.00		95.00	95.00

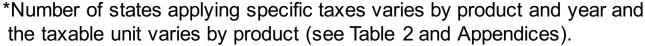


Table 2. National Averages*: Specific Taxes (\$) by OTP Type

	<u> </u>									
		Jan	uary 1, 200)5	January 1, 2014					
ОТР	# states	Mean	SD	Min	Max	# states	Mean	SD	Min	Max
Cigarettes (pack of 20)	51	0.85	0.56	0.05	2.46	51	1.53	1.01	0.17	4.35
Little Cigars (pack of 20)	8	0.38	0.51	0.02	1.51	22	1.82	1.25	0.02	4.35
Cigars (each)	4	0.07	0.07	0.01	0.13	5	0.47	0.86	0.01	2.00
Cigarillo (each)	4	0.04	0.05	0.00	0.10	4	0.05	0.05	0.00	0.10
Pipe (ounce)	2	0.12	0.11	0.04	0.20	3	0.49	0.64	0.04	1.22
RYOT (ounce)	2	0.12	0.11	0.04	0.20	9	1.10	1.22	0.04	4.03
Moist Snuff (ounce)	5	0.30	0.23	0.01	0.60	24**	0.89	0.65	0.01	2.02
Dry Snuff (ounce)	4	0.29	0.27	0.01	0.60	13	0.96	0.69	0.01	2.02
Snus (ounce)	5	0.30	0.23	0.01	0.60	23	0.94	0.69	0.01	2.11
Smokeless (ounce)	3	0.10	0.08	0.02	0.16	7	0.63	0.75	0.02	2.02
Dissolvables (ounce)	0					3	1.62	0.35	1.22	1.87

Figure 9. Trends in Average State Specific Tobacco Product Taxes*, All States (As of January 1 each year, 2005-2014)





Key Findings

- States' definitions of 'tobacco products' play a critical role in determining which OTPs are taxed and at what rate.
- States have been shifting from ad valorem to specific taxes on many OTPs
- States are increasingly taxing emerging OTPs (e.g. dissolvables and e-cigarettes)
 - But many states do not tax
- From 2005 to 2014, OTP tax rates increased or stayed the same in all states except California and Washington



Key Findings

- Many states raised their taxes on little cigars, RYOT, and smokeless tobacco products following the 2009 federal tobacco tax increases
- States with higher cigarette taxes also tend to tax OTPs at higher rates
- State taxes are generally higher on average than federal taxes, and make up a larger portion of the tax burden on OTPs.



Coming soon.....





State Regulation of Tribal Tobacco Sales:

A Historical State-by-State Analysis, 2005-2014

DeLong H, Chriqui JF, Gourdet C, Leider J, Chaloupka FJ, University of Illinois at Chicago



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Tobacco Product Pricing Laws:

A State-by-State Analysis, 2014

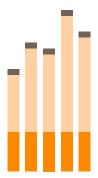
DeLong H, Chriqui JF, Gourdet CG, Leider J, Chaloupka FJ., University of Illinois at Chicago

Fall 2015



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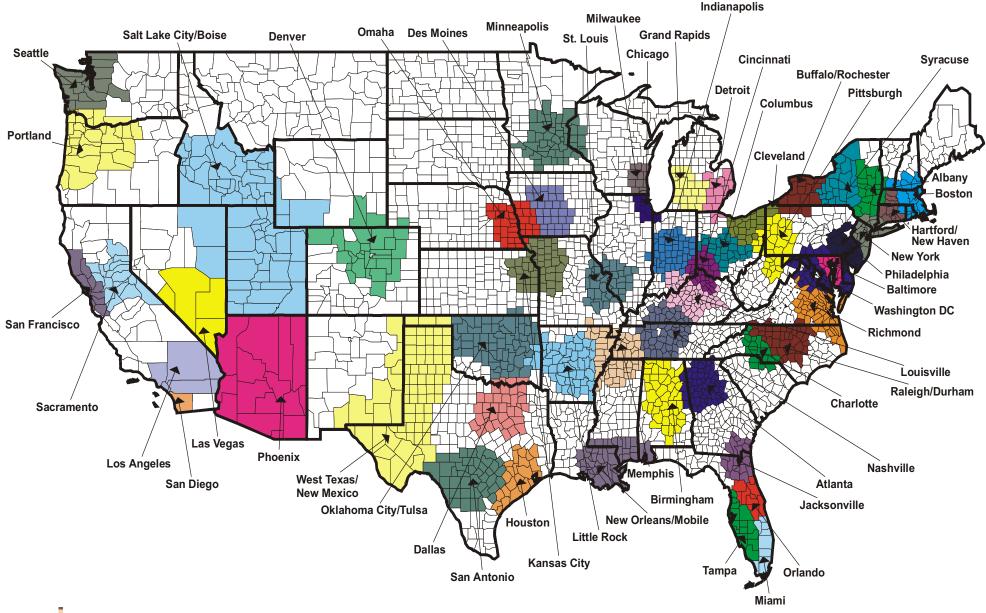




- Tax Structure Data
 - OTP tax structure data from original legal research
- Price Data
 - OTP prices from Nielsen store scanner data
 - 52 designated Nielsen markets
 - Quarterly market-level prices at the Universal Product Code (UPC) level
 - Years 2007 to 2013



Nielsen Store Scanner Data





Empirical Approach

- Linear regression analysis was used to estimate the association between prices and tax structure.
- Analytical Model:

$$Price_{jt} = NoTax_{jt} + AdValTax_{jt} + Efftax_{jt} + \delta_t + \gamma_j + \varepsilon_{jt}$$

- NoTax indicator for states that don't have any tax
- AdValTax indicator for states with Ad Valorem Tax
- Efftax effective tax rate (total tax as a percent of price)
- $\delta_t + \gamma_i$ year and quarter indicators



Table 1: Regression Estimates for Price (contd)

	Dry	Snuff	Mois	t Snuff	Snus		
	(1)	(2)	(1)	(2)	(1)	(2)	
No Tax	-2.099***	-1.915***	-1.534***	-1.396***	-1.936***	-1.712***	
	(0.1300)	(0.1350)	(0.0572)	(0.0779)	(0.0744)	(0.0952)	
	-0.782***	-0.774***	-0.353***	-0.313***	-0.218*	-0.210*	
Advalorem Tax	(0.1360)	(0.1370)	(0.0679)	(0.0724)	(0.0899)	(0.0911)	
Effective Tax		0.00682**		0.00286**		0.00623***	
Rate		(0.0021)		(0.0009)		(0.0014)	
Constant	2.441***	2.272***	2.072***	1.957***	2.839***	2.665***	
	(0.1640)	(0.1650)	(0.1140)	(0.1230)	(0.1520)	(0.1570)	
N	1020	1020	1408	1408	1408	1408	
adj. R-sq	0.093	0.105	0.044	0.05	0.03	0.044	

Standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001

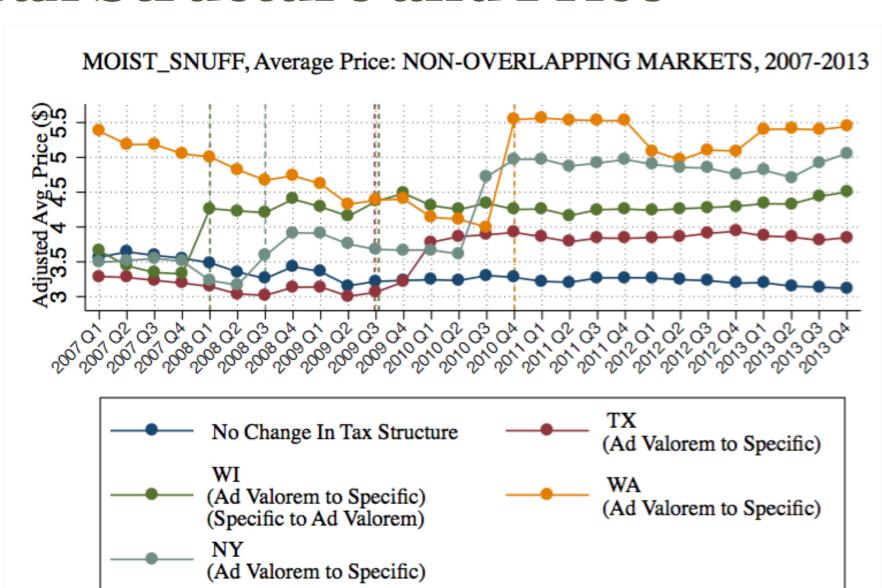


- Conclusions:
 - Taxes increase prices for other tobacco products
 - Prices are higher under a specific tax structure than under an ad valorem tax structure



- Case studies:
 - Tried to assess changes in prices in states where tax structure switched from ad valorem to specific
 - Nielsen data less than ideal given that many markets cross state lines
 - Limited to New York, Texas, Wisconsin, and Washington for moist snuff
 - New York and Washington for little cigars

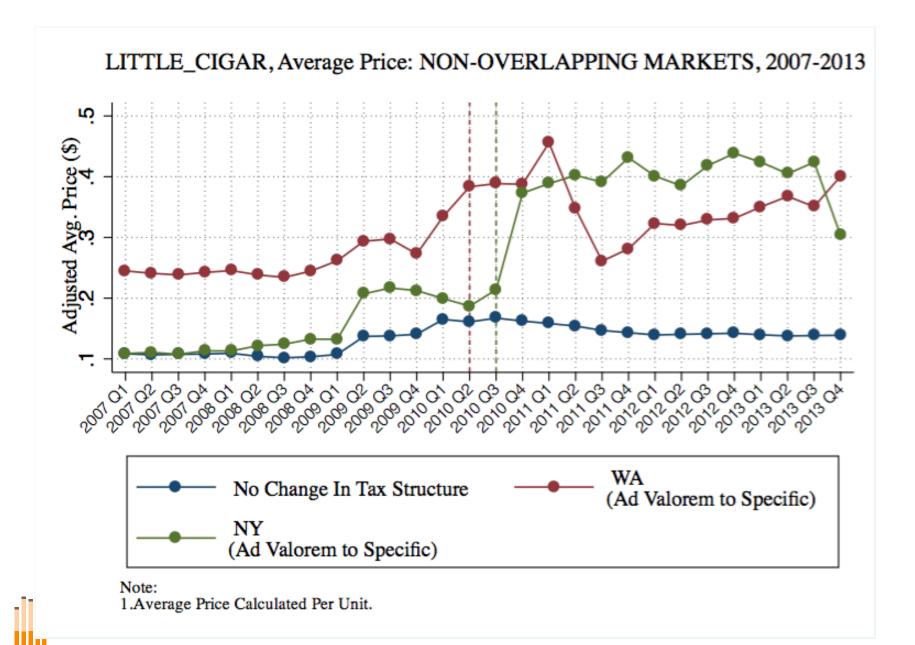




Note:

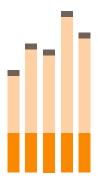
1. Average Price Calculated Per Unit.





- Conclusions:
 - Switch from ad valorem to specific tax appears to result in higher prices
 - Increase in effective tax rate as part of the switch?





OTP Taxes and OTP Use

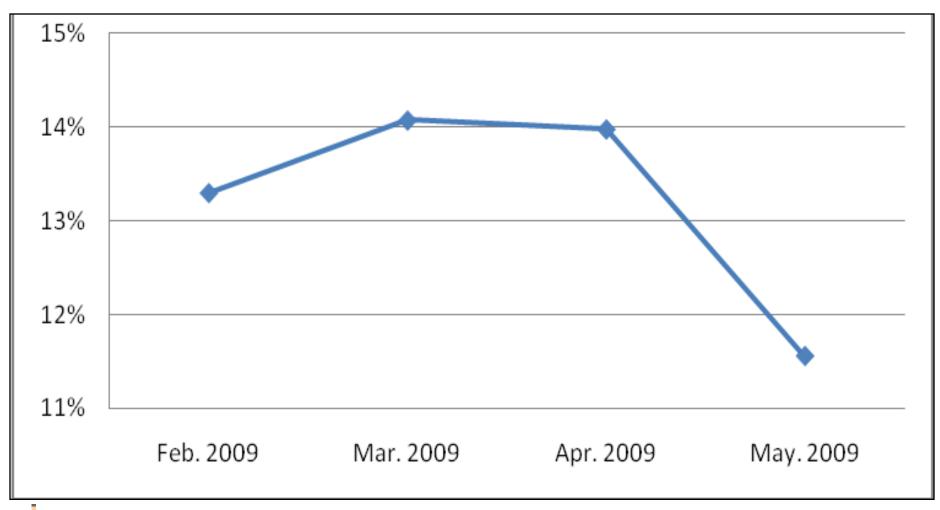
Impact of 2009 Federal Tobacco Tax Increases

- 2008 & 2009 Monitoring the Future Surveys
 - compare within 2009
 - compare same schools 2008-2009
 - alternative cut points
 - cigarette smoking & smokeless tobacco use
 - control for variety of individual, school, state factors
 - alternative estimation strategies

Sources: Huang and Chaloupka, 2013

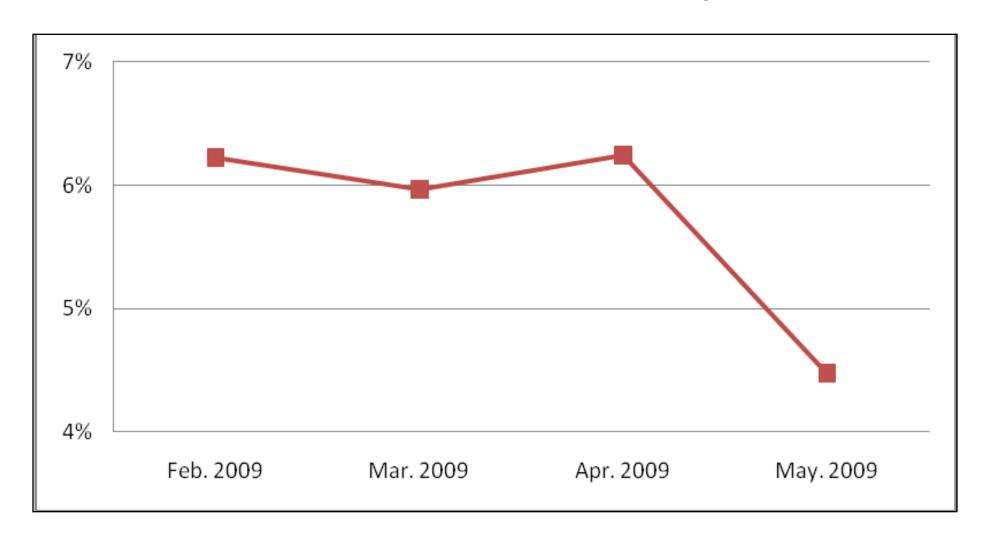


8th, 10th & 12th Grade Prevalence of Cigarette Smoking in Past 30 Days





8th, 10th & 12th Grade Prevalence of Smokeless Use in Past 30 Days





Results - Summary

•	2009 MTF	2008 and	DD Model 2
Cigarette Smoking (Pre-tax: before April 1, 2009; Post-tax:	Model 2	2009 MTF	
on or after May 1, 2009)		Model 2	
Pre Tax Increase Mean (%)	13.4%	12.8%	12.8%
Estimated Percentage Point Decrease after Tax Increase	-1.3	-1.4	-1.7
Estimated Percent Decrease in Smoking after Tax Increase	-9.7%	-11.0%	-13.3%
Estimated Price Elasticity	-0.44	-0.50	-0.60
Number of FEWER Students (age 14 - 18) Smoking in the			
Past 30 Days Due to the Tax Increase (in 1,000)	220	237	287
	2009 MTF	2008 and	DD Model 2
Smokeless Tobacco (Pre-tax: before April 1, 2009; Post-tax:	Model 2	2009 MTF	
on or after May 1, 2009)		Model2	,
Pre Tax Increase Mean (%)	6.1%	5.0%	5.0%
Estimated Percentage Point Decrease after Tax Increase	-1.2 ¹	-1.2	-0.8 ¹
Estimated Percent Decrease in Use of Smokeless Tobacco			
after Tax Increase	-19.8%	-24.0%	-16.0%
Estimated Price Elasticity ²	-1.46	-1.84	-1.23
Number of FEWER Students (age 14 - 18) Using Smokeless			
Tobacco in the Past 30 Days Due to the Tax Increase (in			
1,000)	203	203	135



Prices and OTP Sales

- Price and Sales Data
 - Prices/sales from Nielsen store scanner data for 15 nicotine products
 - 52 Nielsen Food, Drug, Mass Merchandise store (FDM) markets, 2007-2014
 - 30 Nielsen Convenience store markets, 2010-2014
 - Basic models:

```
Ln(ProductSalesVolume)_{market/quarter/storetype} = intercept + \beta_1 Ln(ProductPrice)_{market/quarter/storetype} + \beta_2 Year + \beta_3 Quarter + \beta_4 (Market-StoreDummy) + \beta_5 (SFA and TC Funding) + error
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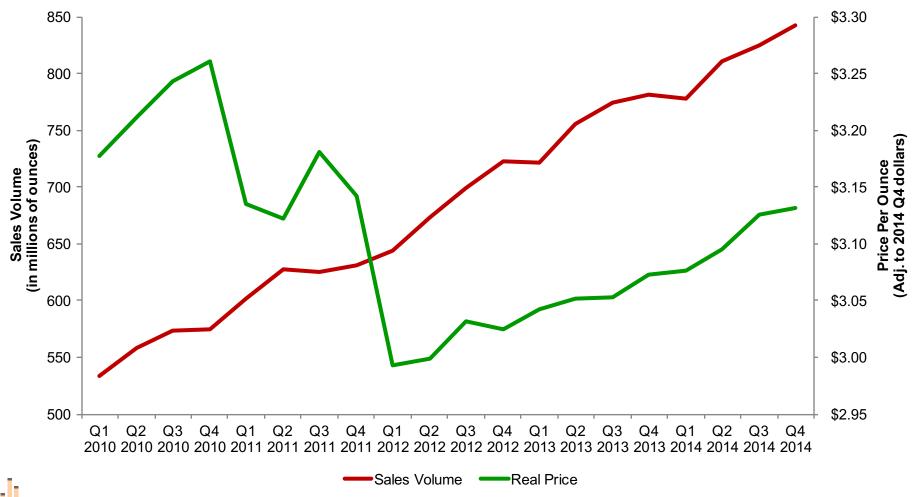
 Also ran models with cigarette prices in addition to own price



Trends: Moist Snuff

Moist Snuff Sales Volume and Price per Ounce

Total US Market - Combined Convenience and FDM Stores

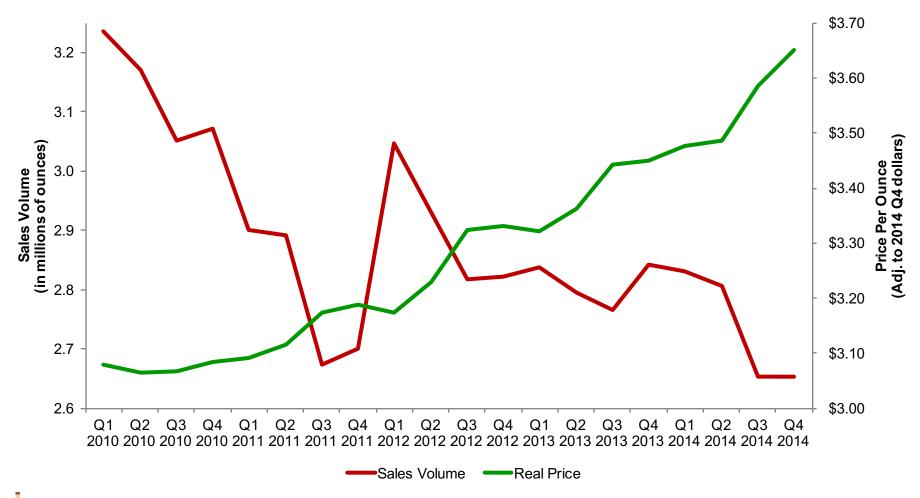




Twitter: @tobacconomics

Trends: Dry Snuff

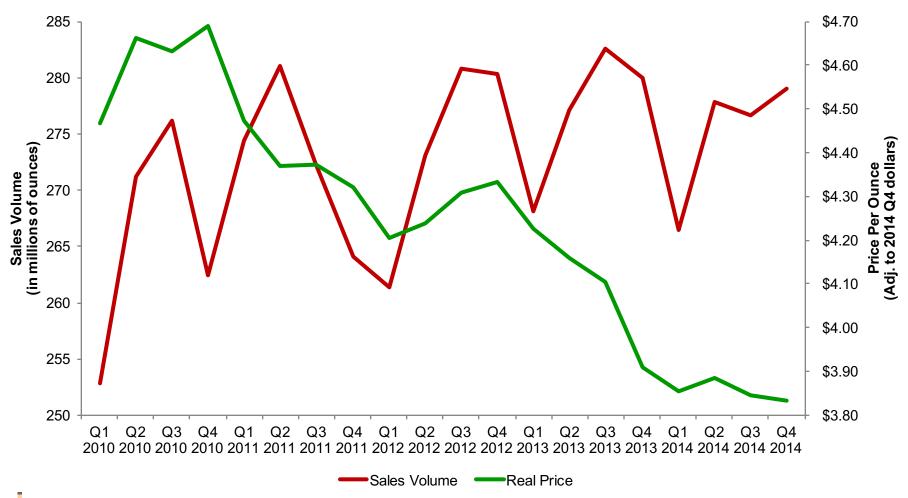
Dry Snuff Sales Volume and Price per Ounce





Trends: Snus

Snus Sales Volume and Price per Ounce





Trends: Looseleaf Chewing Tobacco

Chewing Looseleaf Sales Volume and Price per Ounce

Total US Market - Combined Convenience and FDM Stores

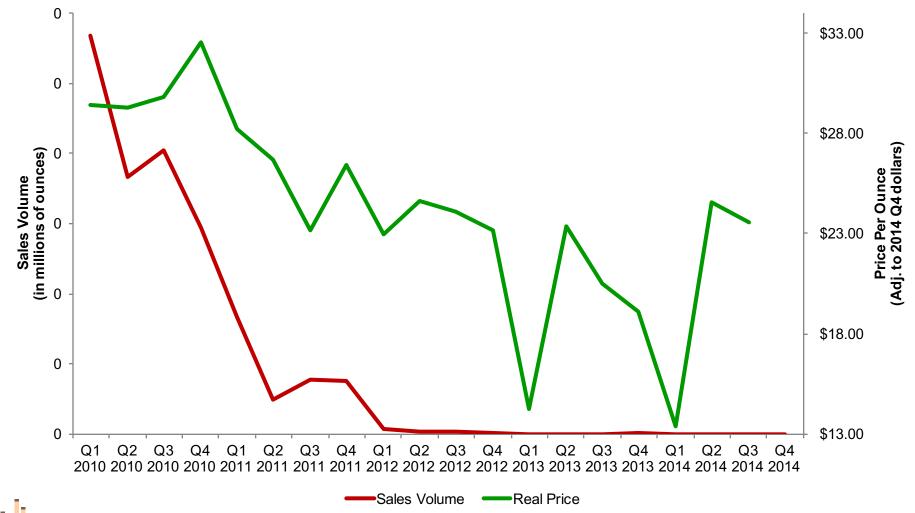




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Trends: Orbs

Dissolvable Orbs Sales Volume and Price per Ounce

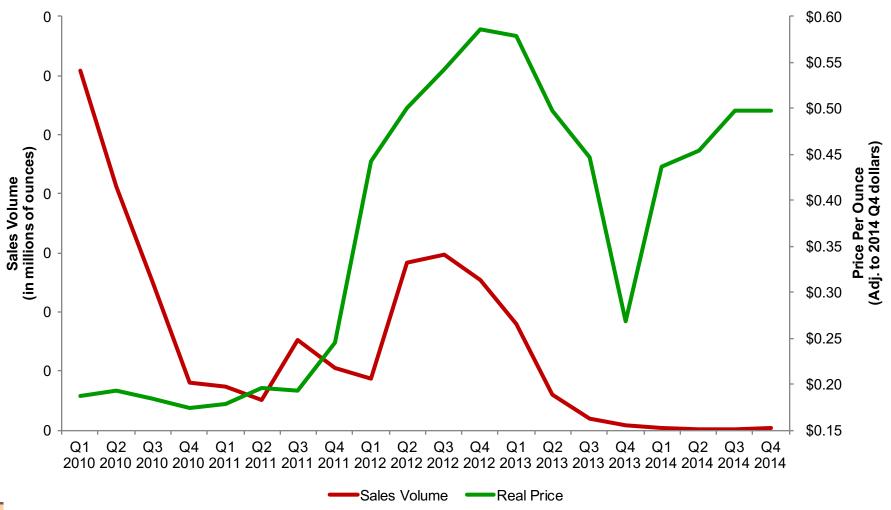




Trends: Strips

Dissolvable Strips Sales Volume and Price per Ounce

Total US Market - Combined Convenience and FDM Stores

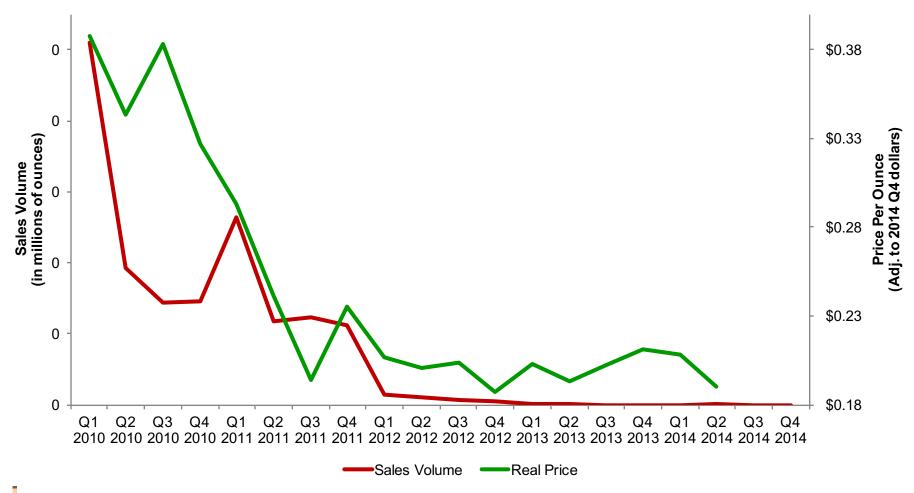




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Trends: Sticks

Dissolvable Sticks Sales Volume and Price per Ounce





Trends: Plugtwist Chewing Tobacco

Chewing Plugtwist Sales Volume and Price per Ounce

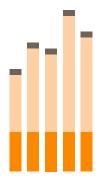




Results:

- Generally negative and significant effects of own-prices on sales of various products
- Estimated own-price elasticities vary considerably by product and across samples:
 - Moist snuff: -0.55 to -1.11
 - Dry snuff: -3.2 to -9.2
 - Chewing tobacco: -2.1 to -2.5
 - Snus: -0.42 to -1.28
- No evidence of substitution between smoked and smokeless products
 - Generally negative, but insignificant effects suggesting economic complementarity between cigarettes and smokeless products





Summary

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- Considerable variability in state taxation of smokeless tobacco products
 - Generally rising over time
 - Increasingly using specific taxes
 - Slow to tax emerging products
- Specific taxes generally result in higher retail prices
 - But need to be regularly increased to keep up with inflation
- Increases in smokeless tax/prices lead to significant reductions in use
 - Generally more responsive to price than is cigarette demand
 - No evidence of substitution between smoked, smokeless products

Youth use particularly sensitive to price

For more information:

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