ImpacTeen:

A Policy Research Partnership to Reduce Youth Substance Use

Component Part of "Bridging the Gap: Research Informing Practice for Healthy Youth Behavior"

Supported by
The Robert Wood Johnson Foundation

Related support provided by NIDA, NCI, and CDC

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www.impacteen.org

Purposes of the Bridging the Gap Initiative:

- **To evaluate the impact on youth of:**
  Policies, Programs, and Practices
- **Simultaneously addressing various substances:**
  Alcohol, Illicit Drugs, and Tobacco
- **At different levels of social organization:**
  State, Community, School, and Individual

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YES! Youth, Education, & Society

Unique Aspects of Bridging the Gap

- **It integrates across:**
  - > **Multiple substances**
  - > **Multiple disciplines**
  - > **Multiple centers and collaborators**
  - > **Multiple levels of social organization**
  - > **Multiple data sources**

University of Michigan

Institute for Social Research

- **Monitoring the Future (MTF)**
- **Youth, Education and Society (YES!)**

University of Illinois at Chicago

Health Research and Policy Centers

- **ImpacTeen**
  - **Coordinating Center, Community Data Collections Polysubstance Use Research Alcohol Policy Research Healthy Eating/Physical Activity and Youth Obesity**
    UIC
  - **Illicit Drug Policy Research Team**
    Andrews U and RAND
  - **Tobacco Policy Research Team**
    Roswell Park

YES! Youth, Education, & Society

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Tobacco Research

Frank Chaloupka
Brian Flay
Lloyd Johnston
Patrick O'Malley
Gary Giovino
Mike Cummings
Andy Hyland
Melanie Wakefield
Sandy Slater
Dianne Barker
Erin Ruel

Yvonne Terry-McElrath
Sherry Emery
John Tauras
Hana Ross
Lan Liang
Bradley Gray
Lisa Powell
Jenny Williams
Anna Sandoval
Ryoko Yamaguchi
And many others

BTG Data Collections

- **Half-sample of MTF schools cycling out of the national sample**
  - > **c.215 schools per year**
  - > **National replicate sample**
- **Administrators in those schools surveyed**
- **Community data collected from their catchment areas**
  - > **Observational studies of retail outlets, communities**
  - > **Key informant interviews in the community**
- **Other existing archival data**
- **State level data on laws, etc.**

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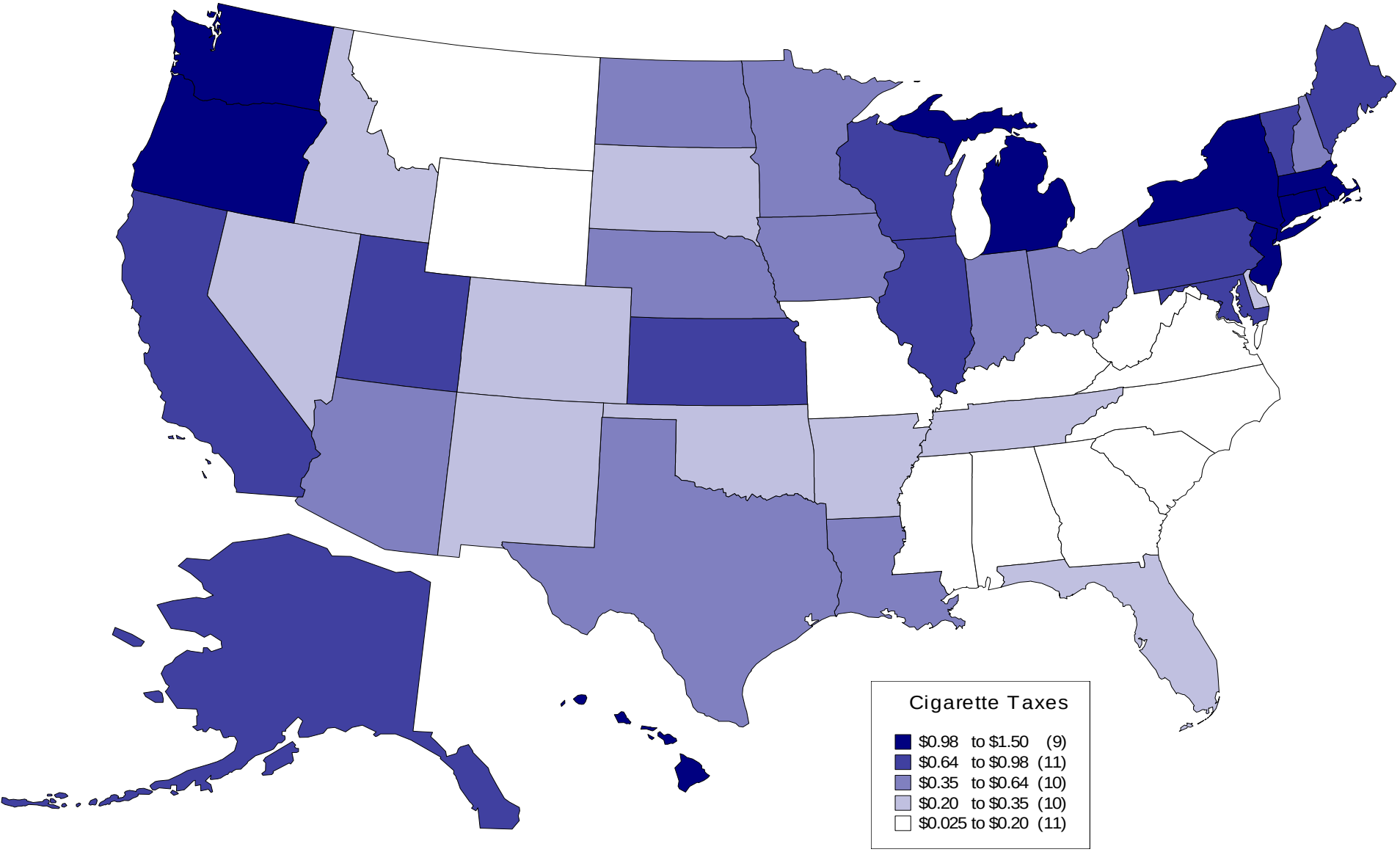
The Effects of Price on Youth/Young Adult Smoking

BTG Tobacco Research Team

The Association Between the Point-of-Purchase Environment And Youth Smoking

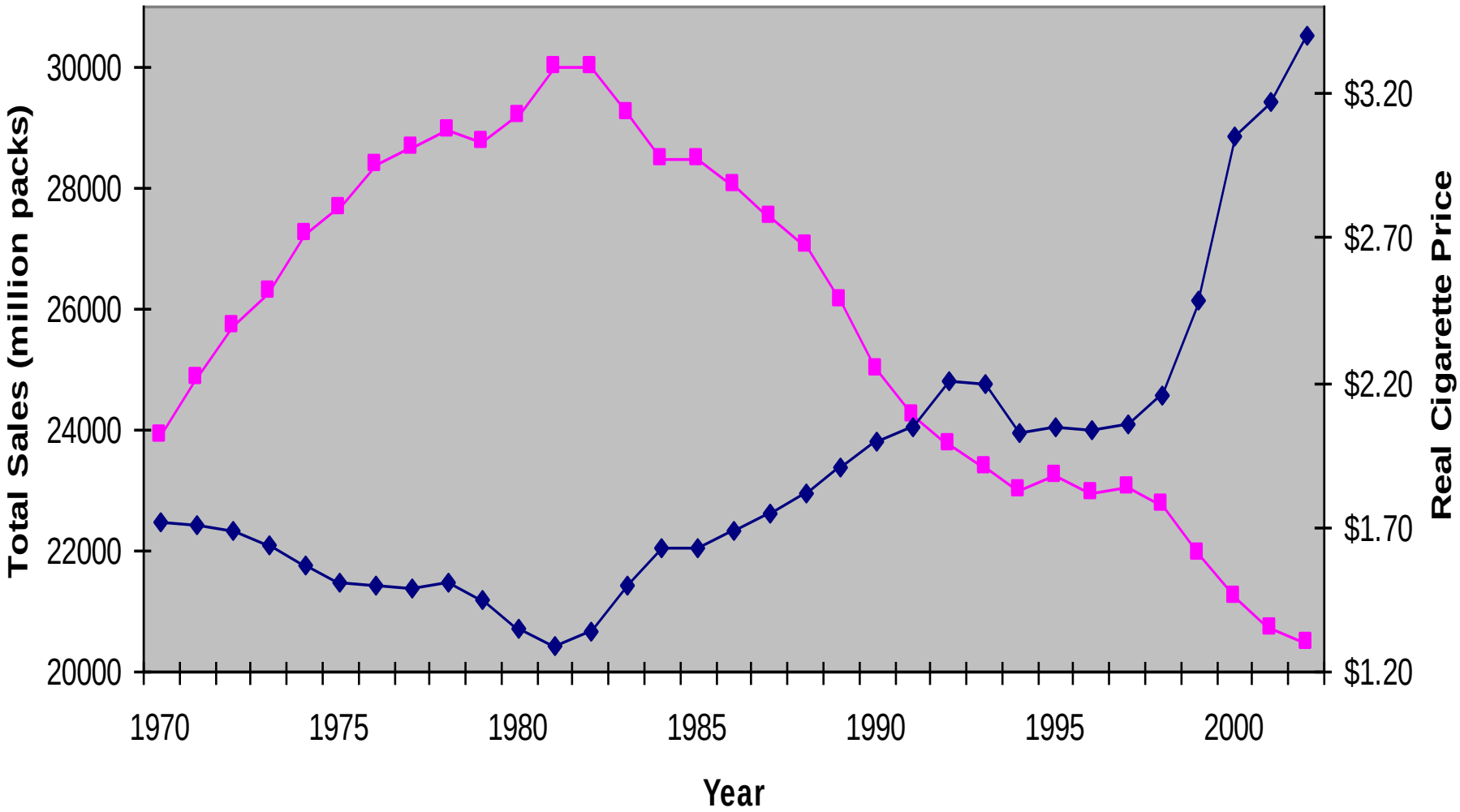
Slater, Ruel, Chaloupka, Johnston, O'Malley, Terry-McElrath, Giovino

State Cigarette Excise Taxes



Tax rates in effect, late 2002

Total Cigarette Sales and Cigarette Prices, U.S., 1970-2002



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Tobacco Taxes and Tobacco Use

- Higher taxes induce quitting, prevent relapse, and reduce consumption among adults.
- Estimates from high-income countries indicate that 10% rise in price reduces overall cigarette consumption by about 4%
- About half of impact of price increases is on smoking prevalence; remainder is on average cigarette consumption among smokers
- Long run response larger given impact of addiction

Source: Chaloupka *et al*., 2000

YOUNG PEOPLE MORE RESPONSIVE TO PRICE INCREASES

- Proportion of disposable income youth spends on cigarettes likely to exceed that for adults

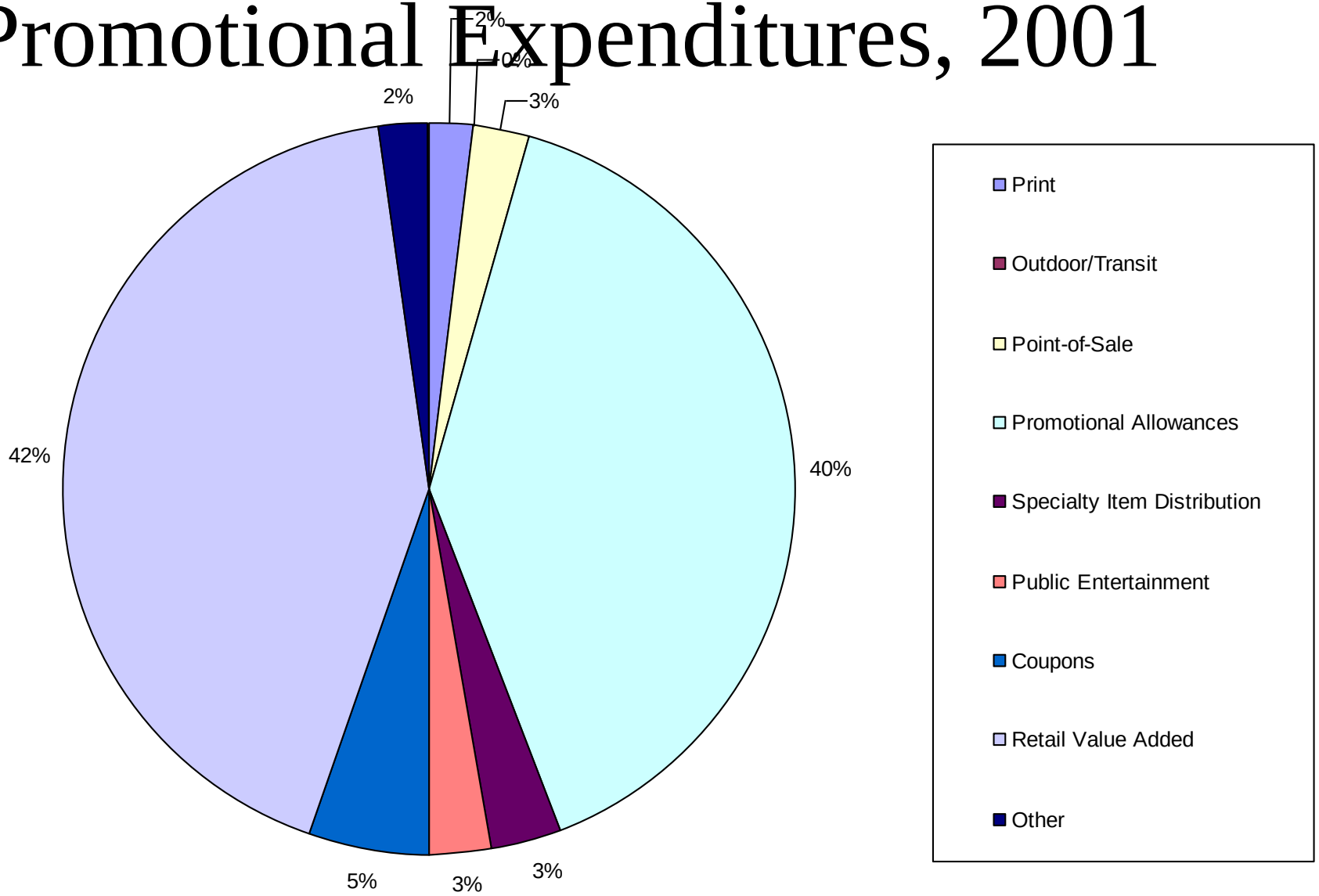
- Peer influences much more important for young smokers than for adult smokers

- Young smokers less addicted than adult smokers

- Young people tend to discount the future more heavily than adults

Because kids are highly sensitive to price, and given that 90 percent of smokers start when they are 18 or younger, an increase in excise taxes is one of the best ways to achieve long run reductions in overall smoking

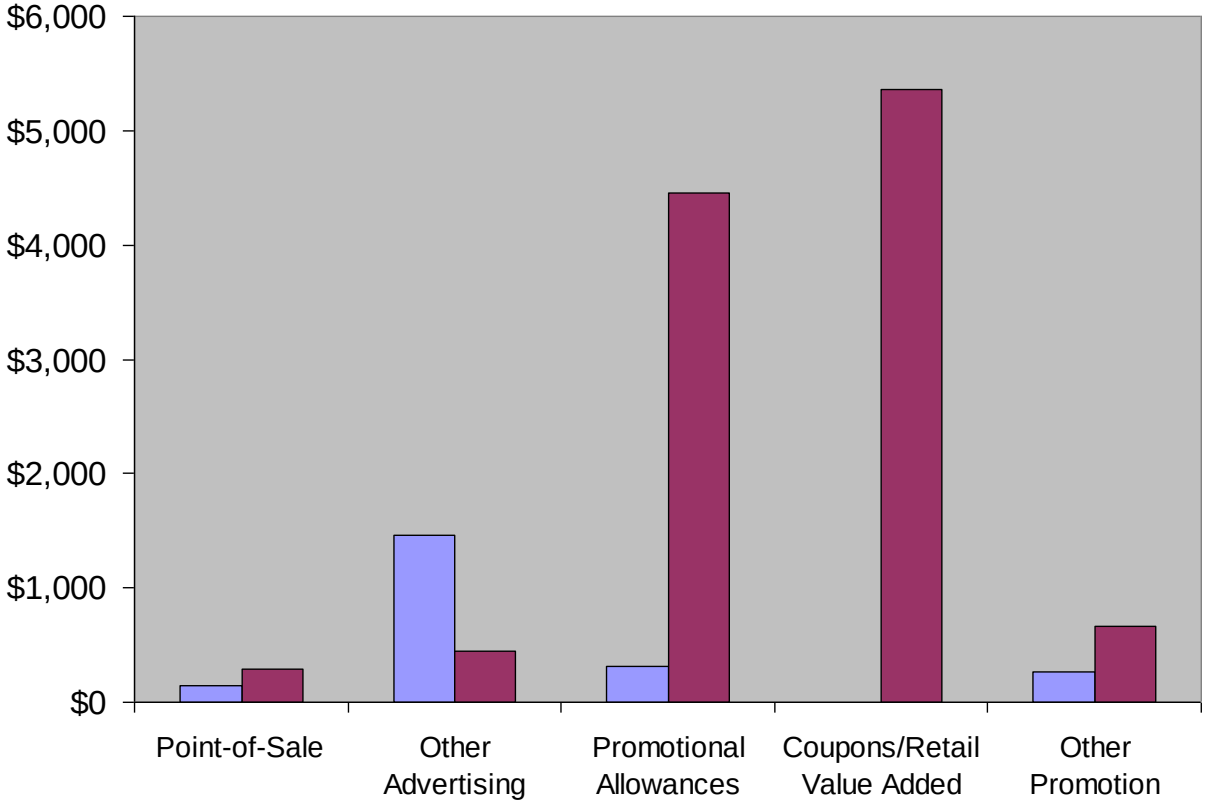
US Cigarette Advertising and Promotional Expenditures, 2001



Source: Federal Trade Commission (2003), *Report to Congress Pursuant to the Federal Cigarette Label and Advertising Act, 2001*

Cigarette Advertising and Promotion, 1978-2001

(millions of 2001 dollars)



Source: Federal Trade Commission (2003), *Report to Congress Pursuant to the Federal Cigarette Label and Advertising Act, 2001*, and author's calculations

HESS
20217
UNLEADED REGULAR
147 9/10
UNLEADED PLUS
1.58 9/10
UNLEADED PREMIUM
1.68 9/10
DIESEL
1.59 9/10
Marlboro
$
3.10
KOOL
CAMEL
$ 3.25
SPECIAL OFFER
Thanks for your business

Nothin' but
Winston
Nothin' but taste.
KOOL
KOOL
KOOL
CAMEL
PACKS
Coca-Cola

SALEM
SALEM
NEW SLIDE BOX
CAMEL
284

Get a
RIDE
Marlboro
12
9
3
6
ULTRA LIGHTS
SKOAL
SPECIAL VALUE
$1.94
$2.40
$22.89
$2.35
CAMEL
Marlboro
Auto Trader
Great Bargains!
Truck Trader
More Values, More Choices
NO CHECKS ACCEPTED

Advertising and Tobacco Use

- Econometric studies find either no impact or small positive impact of advertising on Overall cigarette use
  - Typically based on highly aggregated data
  - Econometric methods poorly suited to examining this issue
- Non-econometric studies find more evidence for Positive impact of advertising on smoking
  - High recall, strength of interest related to use
    - Youth brand choice more responsive to advertising Than adult brand choice
    - Ownership of promotional items related to smoking uptake

Source: Chaloupka and Warner, 2001; Saffer 2001

Advertising and Tobacco Use

- Econometric evidence on advertising bans supports positive effect of advertising on tobacco use
  - Comprehensive bans significantly reduce smoking
    - 6-7% reduction in consumption under relatively comprehensive restrictions on advertising/promotion
    - Partial bans have little to no impact on smoking
      - Shift spending to other non-restricted marketing efforts

Source: Saffer and Chaloupka, 2001; Saffer 2001

1999 Cigarette Billboard Ban

- **ImpacTeen in field as cigarette billboards came down under Master Settlement Agreement**
  - **multipack discounts, gifts with purchase, cents off coupons more likely after billboard ban**
  - **exterior and interior store advertising more pervasive after billboard ban**
  - **functional objects more frequent after billboard ban**

Source: Wakefield, et al., *AJPH*, 2001

Tobacco Use Data

- **Monitoring the Future Surveys**
  - > nationally representative, cross-sectional
    - ~ 430 schools/year; ~ 50,000 youth/year
    - - aggregated school-level data
  - > measures of smoking prevalence, cigarette consumption by smokers, cessation, more
  - > variety of indicators of attitudes towards tobacco, perceptions of risk from tobacco use, and much more
  - > longitudinal data for subset of cross-sectional survey samples

Tobacco Use Data

- **RWJF/Audits & Surveys Worldwide**
  - > nationally representative, cross-sectional survey of high school students, 1996
    - ~ 200 schools; ~17,000 students
  - > extensive data on tobacco use, attitudes, peer use, and much more
  - > self-reported price, expected response to price changes
- **Harvard College Alcohol Surveys**
  - > nationally representative, cross-sectional surveys of college students, 1993, 1997, 1999, 2001
    - ~ 120-140 schools; ~15-18,000 students
  - > basic measures of tobacco use

Price Data

- **Tobacco Institute/Orzechowski and Walker**
  - > State level average price per pack, including state excise taxes
  - > With and without discount (generic) brands
- **American Chamber of Commerce Researchers Association (ACCRA)**
  - > City-specific price for carton of Winston king-size
- **Nielsen/IRI Scanner-based prices**
- **Self-reported prices**
- **ImpacTeen retail-store observations**

Store Observations

- **Aim is to capture the marketing and countermarketing environment youth face for tobacco and alcohol at the point-of-purchase**
  - > Tobacco/alcohol pricing and promotions
  - > Product placement
  - > Functional objects
  - > Interior/exterior/parking lot advertising
  - > Access/health-relate signage
  - > Basic store characteristics
- **Store Sample**
  - > Potential outlets selected based on SIC codes
  - > Screening calls to determine if tobacco sold
  - > Random sample of up to 30 stores per site
    - about 4,500 per year or 17 per site

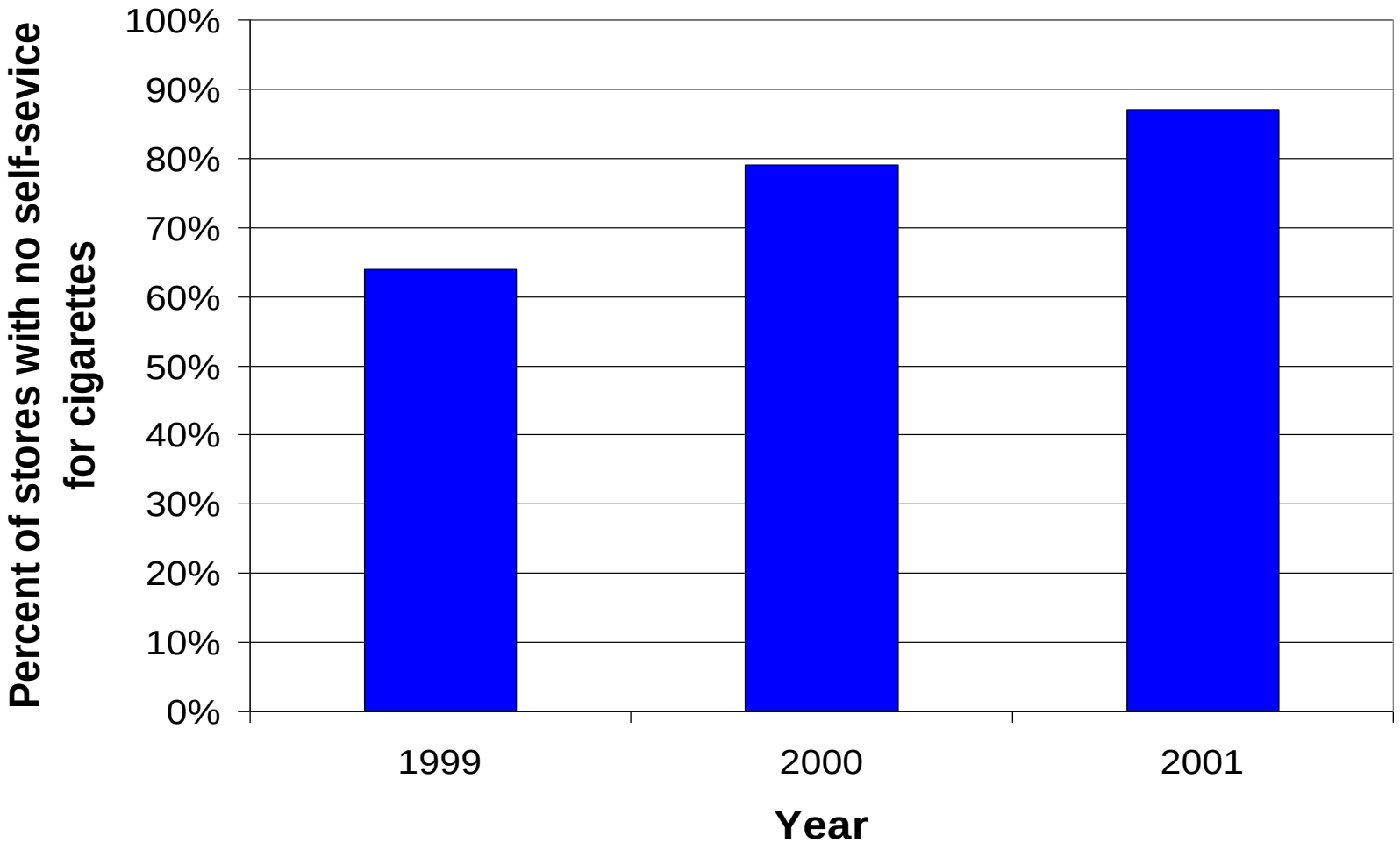
Cigarette Pricing

	1999	2000	2001
Marlboro	$2.95	$3.31	$3.54
Newport	$2.89	$3.25	$3.63

Cigarette Promotion

	1999	2000	2001
Marlboro	45%	46%	44%
Newport		26%	39%

Cigarette Placement



Cigarette Advertising

	1999	2000	2001
Interior – 4 pt. scale	2.0	2.4	2.1
Exterior % w. any	58%	58%	53%
Functional Objects – any	70%	70%	62%
Low-Height – any	56%	38%	39%

Key Control Variables

- **Individual Characteristics**

  > gender, race/ethnicity, grade, etc.

  > family structure, employment status, income

  > community/school environment

- **Other Tobacco Control Policies**

  > Smoke-free air laws, ordinances

  > School and home smoking policies

  > Limits on youth access

  > Purchase, possession and/or use

  > State tobacco control programs

  > others

Statistical Methods

- **Logit/Probit methods**

  > smoking prevalence, cessation

  - **Least Squares Regression**

    > cigarette consumption (conditional demand)

    - **Generalized logistic regression**

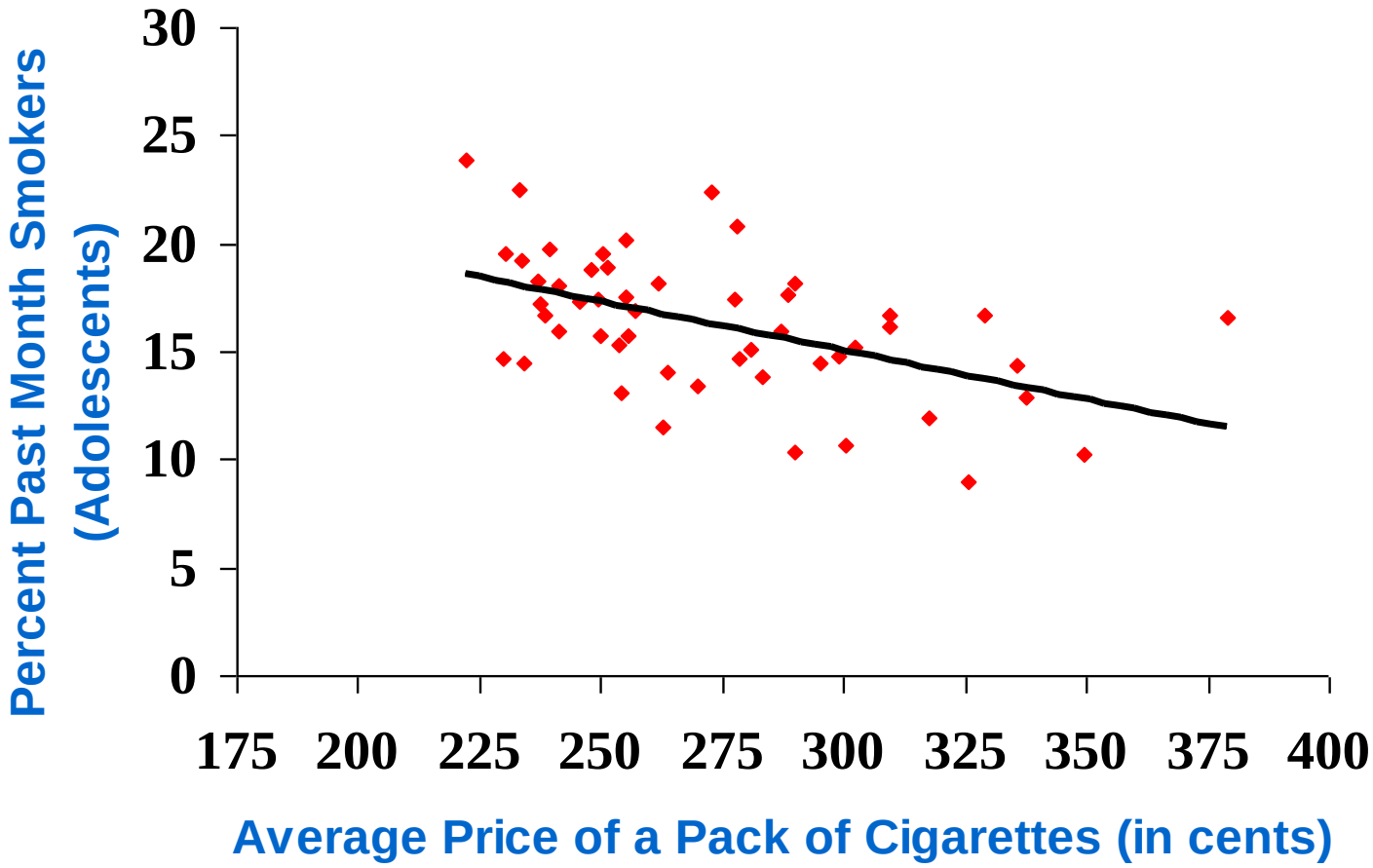
      > smoking uptake, consumption

      - **Hazard/duration methods**

        > initiation, cessation in longitudinal analyses

        - **Multi-level Methods**

Cigarette Smoking Among Youth by the Average Price of a Pack of Cigarettes in 50 States and the District of Columbia, 1999



Data: 1999 NHSDA (12-17 year olds); 1999 *Tax Burden On Tobacco*

Source: Giovino, et al., 2001

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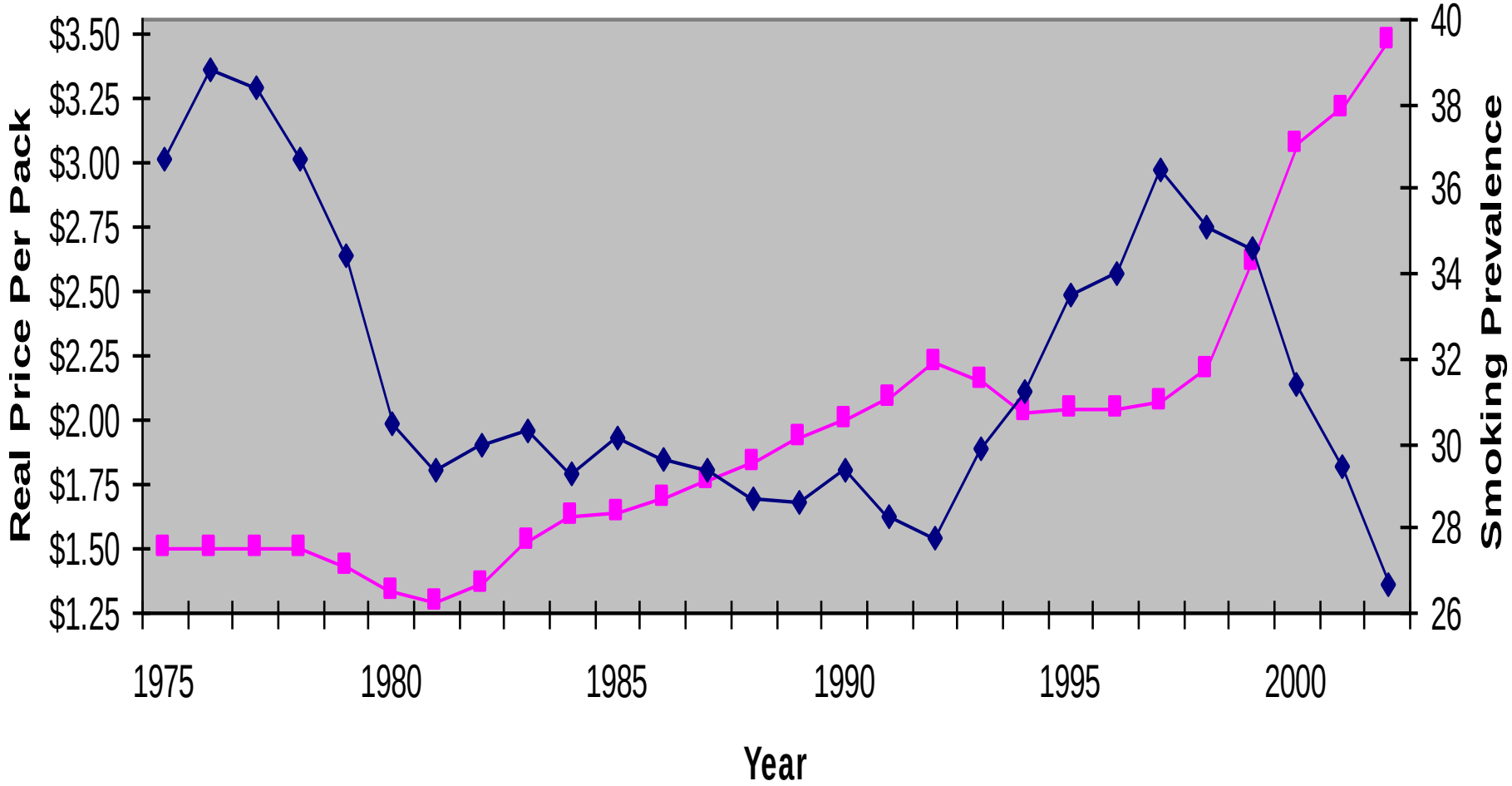
12th Grade 30 Day Smoking Prevalence and Price, 1975-2002



Cigarette Price — 30 Day Smoking Prevalence

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Price and Youth/Young Adult Smoking

- **Consistently find that youth/young adult smoking is highly responsive to cigarette price**
  - > Youth generally 2-3 times more price sensitive than adults
  - > Young adults typically about 2 times more responsive than adults
  - > Estimates based on self-reported price measures suggest youth even more price sensitive
  - > Similar evidence for impact of price on other tobacco use

Direct vs. Indirect Effects of Price

- **Price likely to impact youth smoking directly, but also indirectly**
  - > through peers
  - > through parents
  - > through availability/accessibility
  - > and other mechanisms

- **Estimates imply peer effects account for about one-third of overall price effect**
  - > see similar patterns (somewhat smaller magnitude) with respect to parental influences

Price, Intensity and Uptake

- **Evidence of differential effect of price based on intensity of smoking and stage of smoking uptake**
  - > Impact of price larger as intensity of smoking increases
  - > Price has larger impact on later stages of smoking uptake

Implies price particularly important in preventing transitions to regular, addicted smoking

Price and Smoking Initiation

- **Tauras, et al. (2001)**

> uses longitudinal data from 8th/10th grade MTF cohorts in 1990s

- *significant improvement over other studies based on single cohort from late 1980s*

> Alternative measures of smoking initiation

- any smoking
- daily smoking
- heavy daily smoking

> Find small negative impact of price on initiation of any smoking, but much larger impact on initiation of daily and heavy daily smoking

Price and Smoking Cessation

- **Cessation among young adult smokers**
  > Increased prices lead to significant increase in quit attempts and successful long term cessation among young adults

- **Youth cessation**
  > Potential increases in price lead to significant reductions in likelihood of future smoking
  > Interest in cessation and cessation attempts higher when prices are higher

POP Marketing and Youth Smoking
Limited Models

	Smoking Prevalence	Average use/smoker	Heavy Smoking Prevalence
Intercept	**.336***	**7.04***	**.110***
	(.040)	(1.364)	(.023)
Advertising	-.012	.150	.002
	(.011)	(.256)	(.006)
Promotions	**.042****	.323	**.022****
	(.020)	(.481)	(.011)
Placement	**.099***	**1.44****	**.046***
	(.023)	(.564)	(.013)
Premium	**-.045***	**-.737****	**-.019****
Price	(.017)	(.291)	(.007)
Year 2	.0009	-.089	-.001
	(.013)	(.318)	(.007)
Year 3	-.006	.542	.001
	(.014)	(.337)	(.008)

* p<.001; **p<.05; + p<.10. Standard errors in parentheses

POP Marketing and Youth Smoking

Full Models

	Smoking Prevalence	Average use/smoker	Heavy Smoking Prevalence
Intercept	**.296* (.035)**	**7.12* (.982)**	**.110* (.019)**
Advertising	**-.014+ (.008)**	.045 (.226)	-.002 (.004)
Promotions	.023 (.015)	.192 (.421)	.009 (.008)
Placement	**.058** (.018)**	.550 (.497)	**.022** (.010)**
Premium Price	-.014 (.011)	-.123 (.318)	-.004 (.006)
Year 2	**-.021** (.010)**	**-.556** (.279)**	**-.013** (.005)**
Year 3	**-.030** (.011)**	**-.005 (.306)**	**-.013** (.006)**
Grade 10	**.078* (.009)**	**.826* (.246)**	**.034* (.005)**
Grade 12	**.154* (.009)**	**2.302* (.254)**	**.085* (.005)**
West	**-.056* (.013)**	**-1.158** (.359)**	**-.026* (.007)**
Midwest	-.008 (.010)	.192 (.288)	-.0004 (.006)
Northeast	-.005 (.014)	.451 (.378)	.006 (.007)
Urban	**-.041* .012)**	**-.457 (.333)**	**-.012+ (.007)**
Suburban	**-.021** (.010)**	**-.306 (.274)**	**-.006 (.005)**
Percent Black	**-.176* (.024)**	**-2.637* (.663)**	**-.097* (.013)**
Percent Hispanic	**-.080** (.026)**	**-4.072* (.724)**	**-.089* (.014)**
Percent Asian	-.053 (.070)	1.072 (1.952)	.016 (.038)
Median household	**-.0000007****	**-.00002***	**-.0000008***
Income	(-.0000003)	(.000007)	(.0000001)

* p<.001; **p<.05; + p<.10. Standard errors in parentheses

Conclusions, Limitations, and Next Steps

- **Strong and consistent evidence that higher cigarette and other tobacco product prices:**
  - > Significantly reduce prevalence of youth and young adult tobacco use
    - > Significantly reduce cigarette and other tobacco consumption among youths/young adults
      - > Significantly reduces youth smoking initiation
        - > Significantly reduces smoking uptake and transitions to heavier smoking
          - > Significantly increases interest in quitting, cessation attempts, and successful cessation among youths/young adults

Conclusions, Limitations, and Next Steps

- **Key next steps on price:**
  - > Examine differential impact of small vs. large price increases
  - > Examine relationship between price elasticity and absolute level of price
  - > Further explore effects of price on key population subgroups
  - > Examine interactions between price and other tobacco control efforts

Conclusions, Limitations, and Next Steps

- **Point-of-purchase tobacco marketing appears to have positive and significant impact on youth smoking prevalence and consumption**
  - > Placement and promotions appear particularly important
    - > Much work remains to be done
      - additional years of data
        - more complete measures of local tobacco-related environment
          - application to individual-level data

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