

Smokers' Beliefs and Attitudes about Purchasing Cigarettes on the Internet

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SYNOPSIS

Objectives. Our objectives were to explore qualitatively how smokers find out about Internet cigarette sales and what factors motivate them to purchase cigarettes on-line, and to quantitatively describe the Internet cigarette purchasing behaviors and attitudes of Internet cigarette buyers.

Methods. Qualitative in-depth telephone interviews were conducted with 21 adult smokers who had purchased or contemplated purchasing cigarettes on-line. Findings from the qualitative study were used to develop a survey module on Internet cigarette purchasing behavior that was administered to 187 New Jersey adult smokers.

Results. Smokers who purchased cigarettes on-line were primarily motivated by lower prices, which occur because Internet vendors generally sell cigarettes without paying excise taxes for the destination state. Most Internet cigarette buyers first learned about on-line cigarette sales from interpersonal sources who had purchased on-line. New Jersey adult smokers who purchased cheaper cigarettes from the Internet and other lower-taxed sources significantly increased their consumption over time, compared to smokers who reported paying full-price at traditional bricks-and-mortar retail stores.

Conclusions. Policies that have the effect of equalizing Internet cigarette prices with those at retail stores will likely deter smokers from purchasing cigarettes on-line. Internet cigarette vendors should be required to comply with the same provisions that apply to bricks-and-mortar retail vendors and charge appropriate state and local cigarette excise taxes. In the absence of such policies, the sales of cheaper, tax-free cigarettes on-line will undermine the public health benefit of raising cigarette prices.

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Raising cigarette prices is an evidence-based public health strategy that effectively decreases consumption and prevents initiation.¹⁻³ Price elasticity studies show that a 10% increase in cigarette price is associated with a 4% to 6% decline in consumption among adults and a 7% to 11% decline in consumption among youth.³ Since 2000, more than 40 states have increased their cigarette excise taxes, substantially raising cigarette prices at retail stores.⁴ However, the recent growth in the number of web sites selling untaxed or low tax cigarettes has raised concern that smokers will turn to the Internet instead of quitting or reducing their consumption as cigarette prices rise.^{5,6} The number of web sites selling cigarettes has grown from 88 U.S. sites in 2000⁷ to 775 U.S. and international sites in 2004.⁸ Many sites advertise their cigarettes as tax- or duty-free,^{7,9} most likely to attract smokers residing in high excise tax states. If smokers purchase tax-free cigarettes on-line, this may attenuate the public health benefit of raising cigarette excise taxes.

Historically, relatively few smokers have purchased cigarettes on-line. In 1999, only 0.3% of California adult smokers reported usually purchasing cigarettes from the Internet.¹⁰ In 2001, only 2.0% of adult smokers enrolled in the 10-state Community Intervention Trial for Smoking (COMMIT) study had purchased cigarettes on-line.¹¹ However, smokers residing in high excise tax New York state communities were 11 times more likely to buy cigarettes on-line than were smokers residing in low-tax state communities such as North Carolina.¹¹ More recent studies suggest that the rate of Internet purchasing may be increasing. In 2000, Hrywna and colleagues¹² found that only 1.1% of New Jersey adult smokers had ever purchased tobacco products on-line, but this figure increased to 6.7% in 2002, most likely in response to New Jersey's \$0.70 per pack cigarette excise tax hike in July 2001. Smokers who purchased cigarettes on-line were likely to be older, more nicotine dependent, and less likely to report attempting to quit in the past year.

In order to curb this growing trend, we need to better understand what motivates smokers to purchase cigarettes on-line. In 2002, Hyland and colleagues found that smokers most commonly reported cheaper prices (97.6%) and convenience (73.2%) as reasons for buying cigarettes on-line.¹¹ Smokers residing in high cigarette excise tax states such as New York or New Jersey can save upwards of \$400/year by purchasing cigarettes on-line.¹³ Some marketing researchers argue that on-line shopping may provide advantages such as convenience of shopping from home, greater product selection, and the flexibility to search and comparison shop across multiple stores on-line (i.e.,

lower search costs).¹⁴ But, these benefits might not offset the potential barriers associated with buying cigarettes on-line. Indeed, Emery and colleagues¹⁰ argue that having to purchase cigarettes by the carton (1 carton=10 packs) and waiting for cigarettes to be delivered are inconveniences that might deter smokers from buying cigarettes on-line. Smokers preferring immediate gratification¹⁵ might choose to pay more for their cigarettes at retail stores rather than waiting several days for cheaper cigarettes to be delivered from an Internet vendor. Additionally, having to purchase in large carton volumes might not be attractive to smokers who are trying to limit their tobacco consumption. Researchers argue that consumers who are trying to exert self-control often buy tempting goods in small packages even though the goods are available in larger packages at cheaper per-unit prices.¹⁵ Additionally, some researchers argue that concerns over security of on-line transactions, uncertainty about product quality, or distrust of on-line retailers may deter consumers from purchasing products on-line.¹⁶⁻¹⁸ The extent to which these factors influence or deter smokers from buying cigarettes on-line is largely unknown.

The purpose of this study was to take a multi-method approach to: (1) qualitatively explore smokers' attitudes and experiences of buying cigarettes on-line; and (2) quantitatively assess the relative importance of these factors in predicting Internet cigarette purchasing behavior.

METHODS

Qualitative pilot study

In-depth qualitative telephone interviews were conducted in Summer 2003 with 21 New York City adult current smokers who had purchased or contemplated purchasing cigarettes on-line. Eligibility was restricted to smokers residing in New York City to maximize the likelihood of identifying smokers who had purchased cigarettes on-line. At the time of the study, New York City's combined city and state excise tax of \$3.00/per pack was the highest in the nation. The sample was recruited by posting an ad for the study on New York City's Craigslist, a free-on-line community message board (www.craigslist.com). This is comparable to posting an ad in local newspapers or bulletin boards but targeted specifically to New York City Internet users. Interested participants responded by e-mail and were screened by the first author to ensure that they met the eligibility criteria for the study.

All telephone interviews were conducted by the first author. Interview questions were open-ended and informed by the Diffusion of Innovation Framework.¹⁹

The act of buying cigarettes on-line was conceptualized as an innovation that might supersede the existing practice of buying cigarettes at bricks-and-mortar retail stores. The questions were designed to better understand the innovation-decision process¹⁹ from (1) how smokers first acquire knowledge about Internet cigarette sales; to (2) what smokers perceive about the innovation (e.g., relative advantage of buying cigarettes on-line); and (3) how smokers decide which web site to purchase from, what products to buy, and how they appraise their on-line purchasing experience. Telephone interviews lasted 30 to 60 minutes and were tape-recorded upon receiving participant consent. All participants were paid \$30 incentives via PayPal, an on-line payment system. The interviews were transcribed and then analyzed for emergent themes. The results informed the development of closed-ended survey items for a supplemental follow-up survey on Internet cigarette purchasing behavior that was administered to smokers who completed the 2002 New Jersey Adult Tobacco Survey (NJATS).²⁰

New Jersey smoker follow-up survey

The purpose of the follow-up survey was to assess how New Jersey smokers' cigarette consumption and purchasing patterns changed following the statewide July 2003 cigarette tax increase of \$0.55 per pack. The survey followed up with New Jersey adult smokers who had participated in the previous 2002 NJATS.²⁰

The sample frame was comprised of 878 individuals who (1) had participated in the 2002 NJATS; (2) were current smokers or recent quitters at the time of the 2002 survey; and (3) agreed to be re-contacted for follow-up surveys. Recent quitters were defined as those who had smoked at least 100 cigarettes in their lifetime, but currently do not smoke and have not smoked regularly in the past 12 months. Individuals were re-contacted at their 2002 telephone number. Non-working or business numbers ($n=128$) were excluded, leaving 750 cases eligible for the study. Advance notification letters were mailed to 411 potential respondents for whom mailing addresses could be obtained by reverse matching telephone numbers using the on-line White Pages database.

Up to 15 call attempts were made for each of the 750 eligible cases with working telephone numbers, staggered throughout the week to maximize likelihood of reaching study participants. Computer-assisted-telephone interview surveys were conducted by ORC Macro Inc. in May/June 2004. The average survey length was eight minutes, no monetary incentives were provided, and attempts to convert initial refusals were made. The study was approved by the Institutional

Review Boards at the University of Medicine and Dentistry of New Jersey and the University of North Carolina School of Public Health.

The survey included items on sociodemographics, smoking status, cigarette consumption and purchasing patterns, Internet use and behavior, sources of information about Internet cigarette sales, and Internet cigarette purchasing behaviors and attitudes. Current smokers and recent quitters were asked about their "ever" and "usual" place of cigarette purchase (Internet, neighboring states, New Jersey, or Indian reservations). "Contemplators" of Internet buying were defined as smokers who thought about purchasing cigarettes on-line but had not done so. Survey items on information sources about Internet cigarette sales were developed from the qualitative pilot study results. Measures of Internet use frequency and history of purchasing products on-line were adapted from existing national surveys.^{21,22} Attitudes about purchasing cigarettes on-line were operationalized as the most common perceived benefits and barriers obtained from the qualitative interviews. Perceived benefits were only asked of smokers who had purchased cigarettes on-line, whereas perceived barriers were asked of smokers who had purchased and contemplated purchasing cigarettes on-line. Change in tobacco consumption was computed as a difference in self-reported average daily number of cigarettes smoked from 2002 to 2004.

Of the 878 eligible participants, 187 completed the follow-up survey, yielding a response rate of 21.3%. Non-working/business numbers, refusals, and changed phone numbers accounted for approximately 57% of the total eligible sample. Using baseline demographic data collected in 2002, we found that the 2004 survey respondents were significantly older, more likely to be white, more educated, and less likely to have attempted to quit smoking in the past year, compared to non-respondents.

Overall, the 2004 sample was comprised of mostly females, median age of 47 years, mostly white, with some college education or higher (Table 1). Approximately 77% were still current smokers and smoked an average of 11.5 cigarettes per day. Among current smokers, 47.2% had attempted to quit in the past year. Among current smokers and recent quitters, most reported usually purchasing their cigarettes from retail stores within New Jersey (74.7%). Only 6.3% usually purchased cigarettes on-line, while 12.0% had ever purchased cigarettes on-line and 15.8% had contemplated purchasing cigarettes on-line but had not done so (Table 1). Questions on attitudes about Internet cigarette sales, frequency of Internet use, and history of purchasing any products on-line were asked only of

Table 1. Characteristics of New Jersey follow-up survey respondents (N=187)

	n (percent)
Gender, female	116 (62.0)
Age, median (interquartile range)	47.0
Race/ethnicity	
White	139 (74.3)
Black or African American	19 (10.2)
Hispanic/Latino	18 (9.6)
Other	11 (5.9)
Highest education attained	
High school or less	68 (36.4)
Some college, no degree	55 (29.4)
College degree, or more	64 (34.2)
Smoking status ^a	
Current smoker	144 (77.0)
Recent quitter	14 (7.5)
Former quitter	28 (15.0)
Average number of cigarettes smoked daily in past 30 days, median (interquartile range) ^b	11.5
Attempted to quit in past year ^b	68 (47.2)
Usually purchased cigarettes ^c	
In New Jersey	118 (74.7)
From neighboring states	22 (13.9)
From the Internet	10 (6.3)
From Indian reservations ^d	5 (3.2)
Ever purchased cigarettes on-line ^c	19 (12.0)
Ever contemplated purchasing cigarettes on-line ^c	25 (15.8)
Ever purchased cigarettes from Indian reservations ^d	19 (12.0)

^aRecent quitter=quit smoking within the past year; Former smoker=quit smoking more than a year ago

^bAsked to current smokers only (n=144), since recent quitters have not smoked in the past year

^cAsked to both current smokers and recent quitters (n=158)

^dUsually purchased from Indian reservations (asked as a separate question on usual types of "stores") with non-mutually exclusive categories (e.g., Indian reservations, convenience stores, drug stores, etc); Ever purchased from Indian reservations (asked as, "After the cigarette price increased in New Jersey in 2003, have you ever purchased from an Indian Reservation?")

smokers who had ever purchased (n=19) or contemplated purchasing (n=25) cigarettes on-line. Given the small sample size, we were unable to conduct multivariate analyses and present only descriptive statistics for these variables. To determine how purchasing from the Internet and other low-tax sources was related to consumption, repeated measures analysis of variance and follow up paired-sample *t*-tests were conducted using data on smokers' self-reported daily cigarette consumption in 2002 and 2004. All results should be interpreted with caution as they are not generalizable to the population of New Jersey adult smokers. Data analyses were conducted using SPSS v 11.1.²³

RESULTS

How smokers find out about Internet cigarette sales

Pilot study results revealed that smokers primarily found out about Internet cigarette sales from interpersonal sources such as friends, relatives, co-workers, or strangers who had previously purchased cigarettes on-line:

I had a friend at my old college who I was complaining [to] about cigarette [prices] and she said "Oh, you can go on-line and get them [a carton] for fifteen bucks!" And I checked it out and it was cool.

—Hispanic female, 22 years old, started buying on-line three years ago

Oddly enough I was buying cigarettes at a drugstore and a woman said, You can get those for half the price on the Internet and literally gave me the web address. It was really creepy and I was like, "Okay." I don't spend that much on smoking but my boyfriend smokes like a pack a day so I told him about the site.

—African American female, 22 years old, contemplated purchasing cigarettes on-line

The follow-up survey confirmed that most (78.9%) smokers who had ever purchased cigarettes on-line (n=19), first learned about Internet cigarette sales from interpersonal sources. Survey results also revealed that 46% (n=86) of the entire sample reported seeing ads about Internet cigarette sales from mass-media sources such as local newspapers/magazines (20.9%), spam e-mails (16.0%), banner/pop-up ads (11.2%), and Val-u-pak coupon mailers (11.2%).

Perceived barriers to buying cigarettes on-line

The pilot study results revealed that smokers who contemplated purchasing cigarettes on-line but chose not to were deterred by concerns regarding the security of on-line transactions, the prospect of receiving stale cigarettes, having to wait for cigarettes to be delivered, the legality of buying cigarettes on-line, and the large cash outlay required.

The issue of quality, is it the same cigarettes I smoke, was definitely an issue . . . but there were issues of putting my credit card out to a website, and also, I'm not quite sure how legal it is. I'd have to look into the legality of it.

—White male, 35 years old, contemplated but had not bought on-line

When you buy a carton from them [Internet vendor], you don't know how old they [cigarettes] are and if they come stale you would be very upset. But if you get a carton and they sit around a lot, it gets hard and brittle like and it taste funny. It tastes old . . . and

waiting. I'm just not patient. It's just like sometimes you just want them there, y'know?

—Hispanic female, 23 years old, contemplated but had not bought on-line

You have to sit there and input your credit card and then you have to wait until it's delivered. You go to a convenience store, that's why it's convenient. You say, 'Here's my money,' they give you the cigarettes.

—Hispanic female, 23 years old, contemplated but had not bought on-line

The price is a barrier in that it's a matter of having enough money. Even if it's a better price on-line, I would still need a considerable chunk of money versus \$5.

—White female, 26 years old, contemplated but had not bought on-line

In the follow-up survey, we assessed how concerned smokers were about the most common barriers identified in the pilot study to determine whether “contemplators” (smokers who choose not to buy on-line) have greater levels of concern than smokers who buy cigarettes on-line. Overall, smokers were at most, only “somewhat concerned” about these barriers to buying cigarettes on-line (Table 2). Contemplators appeared to be slightly more concerned than the actual buy-

ers about the security of credit card and personal information on-line, cigarettes being potentially stale, and perhaps smoking more as a result of purchasing cigarettes on-line. Interestingly, the actual buyers were slightly more concerned than the contemplators about the delivery wait and the legality of buying cigarettes on-line, which might reflect their actual purchasing experience. Despite these slight differences, these results were not statistically significant between the purchasers and contemplators, perhaps in part due to small sample sizes. Furthermore, there was no statistically significant difference in the frequency of Internet use between the purchasers vs. the contemplators; however, more purchasers reported prior on-line shopping experience, compared to the contemplators ($\chi^2=6.39$, $p=0.01$).

Perceived benefits of buying cigarettes on-line

In the pilot study, participants described greater product variety, convenience of delivery, and the ease of ordering as benefits of buying cigarettes on-line, but above all, lower prices remained the most important motivation for buying cigarettes on-line.

Pretty much, the only benefit is price. I mean beside that, they will have some brands that they don't have

Table 2. Internet use and attitudes about purchasing cigarettes on-line among New Jersey adult smokers who had ever purchased or contemplated purchasing cigarettes on-line

	Ever purchased cigarettes on-line (n=19)	Contemplated purchasing cigarettes on-line (n=25)	Test of significance
	n (percent)	n (percent)	
Perceived barriers, mean (SD) ^a			
Credit card/personal info is not secure	2.3 (1.2)	2.8 (1.0)	t=-1.20, p=0.24
Cigarettes purchased on-line are stale	1.4 (0.9)	1.8 (1.0)	t=-1.13, p=0.27
Might smoke more if purchase on-line	1.3 (0.5)	1.4 (0.9)	t=-0.55, p=0.60
Delivery takes too long	1.6 (0.9)	1.4 (0.6)	t=-0.98, p=0.34
Concerned that buying on-line is not legal	1.6 (0.9)	1.3 (0.6)	t=-1.14, p=0.27
Frequency of Internet use (percent) ^b			
Daily	8 (42.0)	11 (52.4)	
Less than daily	11 (58.0)	10 (47.6)	$\chi^2= 0.42$, p=0.52
Ever purchased any products on-line ^c	19 (100)	15 (71.4)	$\chi^2= 6.39$, p=0.01
Perceived benefits of purchasing cigarettes on-line ^d			
Cheaper price	14 (100.0)	—	
Convenience	6 (42.9)	—	
Wanted to try it	5 (35.7)	—	
Better service	1 (7.1)	—	

^aLikert scale: 1=not at all concerned; 2=somewhat concerned; 3=very concerned; 4=extremely concerned

^bData only available for n=21 of contemplator group. Proportions were calculated for n=21 as denominator.

^cThe most common types of products purchased on-line included books, CDs, clothing, and household items.

^dOnly asked to smokers who had purchased cigarettes on-line in the past 12 months (n=14)

SD = standard deviation

in the store. That's not much of a selling point for me. It's pretty much an added thing. Pretty much price is the only benefit.

—White male, 24 years old,
only buys cigarettes on-line

These results were also consistent in the follow-up survey. All smokers ($n=14$) who purchased cigarettes on-line in the past 12 months cited cheaper prices as the main benefit of purchasing cigarettes on-line (Table 2). Smokers who usually purchased cigarettes from the Internet reported paying 48% less (\$2.54/pack) than those who purchased their cigarettes at retail bricks-and-mortar stores in New Jersey (\$4.94/pack). All smokers who had purchased cigarettes on-line reported that they would stop buying on-line if Internet cigarette prices were equal to those at retail stores. This was initially evident in the pilot study:

If I found out someone getting back taxed from using that web site, I'd quit. If I got a letter in the mail saying, "We know you've ordered 20 cartons of these cigarettes and we want \$4 for every single pack that you ordered," which would be like \$1,600 or something like that. If I found out something like that I would stop. If it goes like it is now, I'll continue to order until either the cigarettes go down here, which I don't see happening, or they [Internet cigarette vendor] go out of business. I would consider quitting before I would consider spending \$7 a day in cigarettes.

—White male, 24 years old,
only buys cigarettes on-line

Internet cigarette purchasing patterns and effect on consumption

In the pilot study, participants described purchasing from web sites recommended by friends/family members who had already purchased from the same site. They did minimal searches or comparison shopping across multiple web sites. While most smokers purchased their usual brands when buying on-line, some described switching to other brands, oftentimes when they were splitting a carton with friends or spouses. Smokers also described supplementing their Internet cigarette purchases with retail purchases, paying full price at local retail stores in between their on-line deliveries.

Every three months I buy large quantity, like two cartons on the Internet. When my cigarettes run out, I'd have to buy a few packs, until, the next shipment of cigarettes come in.

—Hispanic male, 37 years old,
started buying on-line two years ago

As a result of saving money by purchasing their cigarettes on-line, smokers said they were more likely

to share their cigarettes with friends. Most smokers also described smoking more as a result of purchasing cigarettes by the carton when buying cigarettes on-line.

I think it increased, just because there's no real way to monitor with yourself, because you have so many [cigarettes] in your possession. I think I probably consume more.

—White female, 28 years old,
started purchasing cigarettes on-line one year ago

In the follow-up survey, we examined how switching to a low-tax source such as the Internet was related to smokers' consumption over time. Results of the two-group repeated measures ANOVA indicated that the main effect of time (change in the number of cigarettes smoked daily from 2002 to 2004) was not significant ($F_{df=1}=3.00$, $p=0.08$). Similarly, the main effect of group (switching to a low-tax source or continuously purchasing in New Jersey) was not significant ($F_{df=1}=2.49$, $p=0.11$). However, the interaction of time and group was significant ($F_{df=1}=8.70$, $p=0.004$), indicating that the groups were changing over time in different ways. Given the significant interaction, follow-up paired-sample *t*-tests were conducted for the two groups. Results, shown in Table 3, indicated there was no significant change in daily cigarette consumption among smokers who continuously purchased their cigarettes in New Jersey from 2002 to 2004 ($t=-1.64$, $p=0.10$). However, smokers who switched to usually buying their cigarettes from the Internet and other low-taxed sources significantly increased their daily consumption by an average of 4.7 cigarettes from 2002 to 2004 ($t=2.63$, $p=0.02$).

DISCUSSION

The results of our qualitative and quantitative studies both suggest two major findings. First, a substantial proportion of smokers is aware of Internet cigarette sales and found out about them from both interpersonal and mass-media sources. Second, smokers who purchase cigarettes on-line are primarily motivated by lower prices and may subsequently smoke more as a result of buying cigarettes on-line.

Approximately 40% of all smokers in our study sample reported seeing an advertisement about Internet cigarette sales from both on-line and off-line channels, indicating that Internet cigarette vendors (ICVs) are actively marketing to consumers. Because many of these channels are direct-to-consumer (e.g., Val-u-pak coupon mailer, spam e-mail), these marketing strategies occur under the public radar and should be monitored. Smokers who purchased cigarettes on-line first found out about Internet cigarette sales from interpersonal

Table 3. Change in cigarette consumption by cigarette purchasing behavior (2002–2004)

Group ^a	n	Mean number of cigarettes smoked daily		Mean change from 2002 to 2004	
		2002 Mean (SD)	2004 Mean (SD)	Mean (SD)	t-test, p-value
NJ-NJ	89	14.85 (9.20)	13.63 (7.98)	-1.22 (7.04)	t=-1.64, p=0.10
NJ-low tax	14	15.64 (9.34)	20.36 (12.82)	+4.71 (6.71)	t=2.63, p=0.02

^aNJ-NJ includes smokers who usually purchased cigarettes in New Jersey in 2002 and 2004. NJ-low tax includes smokers who usually purchased cigarettes in New Jersey in 2002, but switched to a low-tax source (Internet or Indian reservations) in 2004. Internet and Indian reservation buyers were combined as "low-tax" to increase statistical power.

SD = standard deviation

rather than mass-media sources. Positive appraisals of the Internet cigarette purchasing experience from interpersonal sources may have attenuated smokers' concerns and influenced them to purchase cigarettes on-line. Other studies have found that interpersonal sources may have a stronger influence than mass media sources at the early stages of the innovation adoption process.²⁴

A second consistent finding across both studies was that despite several perceived barriers to buying cigarettes on-line, smokers were primarily motivated by lower prices. This confirms previous findings¹¹ and suggests that ICVs' tax-free marketing practices might be effective in drawing customers to their site.^{7,25} A recent study on Internet cigarette spam e-mail found that ICVs actively promote lower prices as the main appeal of purchasing cigarettes on-line; 90% of spam e-mails in this study explicitly advertised lower prices in the subject line or e-mail body text while only 33% advertised convenience.²⁶ If ICVs continue to offer lower prices by not charging smokers their appropriate state cigarette excise taxes, more smokers might shift to buying cigarettes on-line instead of quitting or cutting back when cigarette prices increase. Hyland and colleagues²⁷ found that when cigarette prices increase, price-sensitive smokers who are not motivated to quit most commonly seek out lower-priced or tax-free cigarettes, rather than switch to generic brands or use coupons, especially when lower-priced tax-free sources are readily available. Given that the Internet is accessible to approximately 73% of the U.S. population,²⁸ the wide availability of lower-priced cigarettes on-line threatens to undermine the public health benefit of raising cigarette excise taxes.

Potential regulatory strategies

Implementation of regulatory strategies could potentially harmonize on-line cigarette prices with those at traditional bricks-and-mortar retail stores. One strategy

would be to require Internet cigarette vendors to collect the appropriate state cigarette excise tax from the consumer and then remit the collected taxes to the consumer's state revenue department. This way, the excise taxes are added on to the cigarette prices at the point of sale on-line, in the same manner that excise taxes are already paid for and included in the cigarette prices at retail outlets. This strategy is attractive because it intervenes at the distal policy level, makes vendors the targets of intervention, and eliminates the need to educate individual consumers about the illegality of evading cigarette excise taxes when purchasing cigarettes on-line.

Currently the federal Jenkins Act requires all Internet cigarette vendors to remit their list of customers and the amount purchased to the customers' state departments of revenue so that unpaid cigarette excise taxes can be collected directly from the customer.²⁹ The Jenkins Act was enacted in 1949 to require interstate mail-order cigarette vendors to register their business and to file quarterly Jenkins Act reports with their customers' state departments of revenue so that unpaid cigarette excise taxes can be collected.²⁹ The U.S. General Accounting Office (GAO)⁹ concluded that the Jenkins Act also applies to Internet cigarette sales, since ICVs sell and ship cigarettes to customers across state lines. The GAO also concluded that claims of sovereign status or privacy laws do not exempt vendors from complying with the Jenkins Act. As a result, states such as California received Jenkins Act reports from 20 of the 167 ICVs they contacted, and recouped nearly \$1.4 million in back-taxes from consumers who had purchased cigarettes on-line between 1999 and 2001.²⁵ Our study results suggest that successfully recouping back taxes might effectively deter smokers from buying cigarettes on-line since there would be no price advantage to buying on-line. Overall, states have had limited success in ensuring Jenkins Act compliance because few vendors are complying with their report-

ing obligations and when vendors do comply they must undertake the cumbersome process of contacting all purchasers and recouping the back taxes. Although the Federal Bureau of Investigation (FBI) has jurisdiction to enforce the Jenkins Act, they have not vigilantly pursued Jenkins Act violations as these are only misdemeanors and counterterrorism activities have taken greater priority.^{9,30} As a result, there has been limited enforcement of the Jenkins Act at the federal level. In order for the Jenkins Act to be an effective policy strategy for collecting unpaid cigarette excise taxes from consumers who buy cigarettes on-line, stronger legislation and enforcement are needed.

Although several federal legislative bills have been introduced to regulate Internet cigarette sales,³⁰⁻³³ none have passed successfully. In the interim, regulatory strategies that intervene along other points in the distribution process could help deter sales of cigarettes to consumers.⁸ For example, in March 2005, the major credit card companies reached an agreement with 42 state attorneys general and the Bureau of Alcohol, Tobacco, Firearms and Explosives (BATFE) to stop processing credit card payment of Internet cigarette orders, as ICVs were conducting illegal business by not charging appropriate state cigarette excise taxes and not verifying the age of buyers.³⁴ Restricting credit card payment does not entirely prevent all Internet cigarette sales, as vendors can utilize alternative payment methods such as money orders or personal checks; nevertheless, this policy has the potential to severely hamper the Internet cigarette business given that credit cards are the most commonly used payment method offered by ICVs. Additionally, because the policy intervenes at the payment process, this universally affects all ICVs, making it difficult for vendors to argue for exemption based on sovereign status or international location. While the effect of this policy has yet to be assessed, the credit card company agreement is an example of an alternative strategy for restricting Internet cigarette sales in the absence of federal law to mandate tax collection of cigarettes sold on-line.

Study limitations

This study has several limitations. The low response rate limited our ability to analyze differences in Internet cigarette purchasing attitudes and behaviors among New Jersey adult smokers. While re-contacting the 2002 NJATS sample provided a unique opportunity to examine changes in consumption and purchasing patterns over time in a state that experienced a cigarette excise tax increase, the long lag time between re-contact contributed to low response rates. Another possible limitation was that changes in consumption over time

might be due to other factors besides smokers switching to the Internet as their usual purchase source. Because assessing changes in consumption was a post-hoc decision and not a primary objective of the study, these results should be viewed as exploratory. Finally, the sampling frame of the follow-up study limits inferences of generalizability. Therefore, these results should be interpreted as an exploratory analysis of Internet cigarette purchasing attitudes and behaviors and should be replicated with a larger random-probability sample of Internet cigarette buyers. Despite these limitations, a strength of the study is that we utilized both qualitative and quantitative study designs to examine smokers' motivations for purchasing cigarettes on-line.

CONCLUSIONS

Policies should be developed that require Internet cigarette vendors to comply with the same provisions that apply to bricks-and-mortar retail vendors and to charge appropriate state and local cigarette excise taxes. Increasing cigarette prices is an evidence-based approach to reducing consumption and promoting cessation, but these efforts will be hampered if Internet cigarette vendors continue to sell cheaper, tax-free cigarettes to smokers who might otherwise quit or reduce their consumption. While relatively few smokers have been purchasing their cigarettes on-line, preventing greater uptake of Internet cigarette purchasing will require restriction of the marketing activities used by ICVs as well as taxation of Internet cigarette purchases. Until such policies are in place, on-line cigarette sales will undermine the public health benefit of raising cigarette prices.

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