

## RESEARCH PAPER

## Case studies in international tobacco surveillance: cigarette smuggling in Brazil

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**Objective:** This article is the first in a series of international case studies developed by the American Cancer Society to illustrate use of publicly available surveillance data for regional tobacco control.

**Design:** A descriptive analysis of Brazil and Paraguay cigarette production and trade data from official sources.

**Methods:** Per capita cigarette consumption for Brazil and its neighbour was calculated from 1970 to 1998 using data on production, imports, and exports from NATIONS, the National Tobacco Information Online System.

**Results:** A 63% decrease was observed in the estimate of per capita consumption of cigarettes in Brazil between 1986 and 1998 (from 1913 cigarettes per person in 1986 to 714 cigarettes per person in 1998) and a 16-fold increase in Paraguay was observed during the same period (from 678 cigarettes per person in 1986 to 10 929 cigarettes per person in 1998). Following Brazil's 1999 passage of a 150% cigarette export tax, cigarette exports fell 89% and Brazil's estimated per capita consumption rose to 1990 levels (based on preliminary data). Per capita consumption in Paraguay also fell to 1990 levels.

**Conclusions:** These trends coincide with local evidence that large volumes of cigarettes manufactured in Brazil for export to Paraguay are smuggled back and consumed as tax-free contraband in Brazil. It is hoped that this case study will draw wider public attention to the problems that smuggling presents for tobacco control, help identify other countries confronting similar issues, and stimulate effective interventions.

The American Cancer Society's programme in International Tobacco Surveillance collaborates with the World Health Organization, World Bank Group, and Centers for Disease Control and Prevention to monitor data on tobacco production, consumption, and trade in 197 countries and territories. The product of this collaborative effort is available through NATIONS, the National Tobacco Information Online System,\* and through a previously published monograph, the *Tobacco Control Country Profiles*.<sup>1,2</sup>

This is the first report in a series of case studies that illustrate methods for analysis of publicly available tobacco surveillance data and to measure indices of tobacco control in specific countries. These case studies are intended to represent particular aspects of the tobacco pandemic in different geographic regions, in countries across a range of economic development levels, and at various stages of the epidemic.

Brazil can be categorised as a country at stage II in the classic model of the tobacco pandemic.<sup>3</sup> Smoking prevalence is moderately high in both men (38.5%) and women (29.6%) according to 1995 national survey, but lung cancer death rates have only recently begun to increase significantly, particularly in men.<sup>4</sup> In 2001, Brazil's lung cancer mortality rate was estimated at 12.83 per 100 000 men and 5.10 per 100 000 women. Brazil's southern states report the country's highest rates of lung cancer incidence and mortality.<sup>5</sup>

Brazil encompasses half the land area of South America and borders on every other South American country except Chile

and Ecuador, making it the fifth largest country in the world. Its population of 170 million people (December 2001 estimate) also ranks fifth in size, following China, India, USA, and Indonesia.<sup>6</sup>

Brazilian cigarette manufacturing began in 1903 in Rio de Janeiro with the founding of Souza Cruz, the country's first tobacco company.<sup>7</sup> Souza Cruz became a subsidiary of British American Tobacco (BAT) in 1914 and BAT currently owns 75% of the company. Plantations established in the southern states of Rio Grande do Sul, Santa Catarina, and Paraná in the 1920s and 1930s introduced Virginia and Burley cigarette tobacco varieties in the 1950s. In the 1980s, Brazil's tobacco processing facilities were modernised and a genetically manipulated strain of high nicotine tobacco was smuggled into the country by BAT's North American subsidiary, Brown and Williamson Tobacco. The cigarette export sector expanded rapidly and by 1994, Brazil was the world's fourth largest tobacco producer (after China, USA, and India), the world's top exporter of tobacco leaf, and the world's sixth largest cigarette exporter.<sup>8,9</sup>

Souza Cruz is now Brazil's fourth largest company, controlling 84% of the legitimate domestic cigarette market, employing 5046 people, and reporting profits of more than US\$253 million on sales of US\$1.044 billion in 2000.<sup>10,11</sup> Philip Morris International dominates the remainder of Brazil's cigarette market.

Despite tobacco's importance in Brazil's economy, recognition of tobacco's deadly health consequences by Brazilian health authorities has led to some important tobacco control measures. Banned practices include sales of cigarettes to minors (under age 18 years old), radio and television advertising, distribution of free samples, sale of tobacco products in health centres and schools, and smoking in public places (except for reserved and ventilated smoking areas), libraries and public transportation.<sup>1,12</sup> Retailers must publicly display

\*NATIONS, the National Tobacco Information Online System, is a joint project of the World Health Organization, the World Bank, the American Cancer Society, and the Centers for Disease Control and Prevention, to integrate electronically international tobacco surveillance data. Available from: URL: <http://www.cdc.gov/tobacco/nations.htm>

**Table 1** Brazil and Paraguay per capita cigarette consumption 1970 to 2000, based on reported cigarette exports from Brazil and imports to Paraguay

Year	Brazil exports	Brazil, per capita consumption	Paraguay imports	Paraguay, per capita consumption
1970	609	1266	1234	1300
1971	2	1299	1112	1180
1972	2	2328	869	1100
1973	2	2258	779	991
1974	1341	1485	1017	1228
1975	1326	1555	1099	1289
1976	1132	1665	735	912
1977	931	1856	1339	1318
1978	923	1910	1788	1556
1979	712	1858	2542	1925
1980	1	2009	1911	1422
1981	1	1781	1212	1059
1982	2	1663	1018	928
1983	942	1572	250	599
1984	1429	1510	561	710
1985	1673	1687	516	647
1986	15	1913	711	678
1987	3	1794	857	894
1988	11	1715	1741	1944
1989	10926	1610	1632	1839
1990	12435	1674	1788	1136
1991	25774	1514	4032	1930
1992	30375	1369	3747	1747
1993	33848	1112	3668	1344
1994	57818	999	9025	3297
1995	63417	1015	22811	8089
1996	80262	919	33762	11598
1997	87313	845	36937	12267
1998	87169	714	35452	11385
1999	8058	872	35452	10152
2000	842	860	*	*

Cigarette imports and exports in million pieces.

Brazil exports: reported by United Nations Statistics Division.

Paraguay imports: reported by United Nations Food and Agriculture Organization.

Population estimates: reported by United Nations Population Division.

the same health warnings that appear on cigarette packets and in advertisements.<sup>13</sup> More stringent advertising regulations became effective in January 2002, requiring graphic anti-smoking images on cigarette packs and prohibiting the use of deceptive descriptive terms such as "light" and "suave". In 2003, Brazil will ban all sports related cigarette sponsorship. Brazil and Canada exemplify the most advanced cigarette marketing restrictions in the world.<sup>14</sup>

National smoking prevalence surveys in Brazil were conducted in 1989, 1995, and 1999 but because different sampling methods and definitions of smoking were used, the actual trend in adult smoking prevalence is unclear. Two 1989 surveys reported estimates of 32.6% and 23.9% for overall adult smoking prevalence.<sup>15</sup> A 1995 survey estimated Brazil's cigarette smoking prevalence at 38.2% among men and 29.3% among women.<sup>17</sup> A 1999 national survey reported that 37% of men and 24% of females were cigarette smokers.<sup>16</sup> Higher smoking prevalence rates are reported in Brazil's rural areas and among lower income groups.<sup>18</sup> <sup>19</sup>

Recognising Brazil's growing role in the international tobacco market and the high prevalence of smoking among Brazilian adults, we examined publicly available data on cigarette production and trade in Brazil from 1970 to 1998. We developed this report in collaboration with tobacco control experts in Brazil with the goal of assisting local, regional, and international efforts to strengthen tobacco control interventions.

## METHODS

Trade data on cigarette manufacturing, imports, and exports are compiled by the World Health Organization and the United Nations Statistics Division and disseminated through

NATIONS.<sup>19</sup> Per capita cigarette consumption was estimated for Brazil and neighbouring countries from 1970 to 1998 using the following formula:

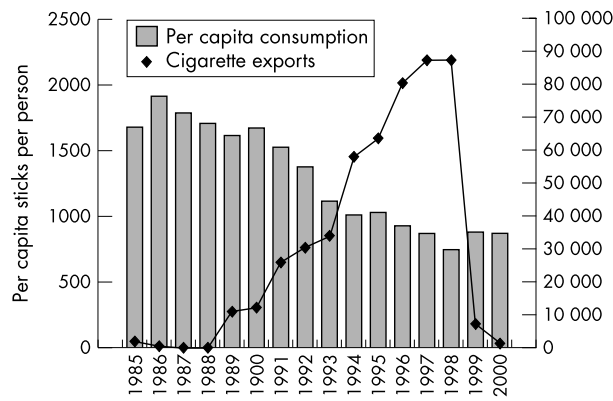
$$\text{Per capita cigarette consumption} = \frac{[\text{annual cigarette production} + \text{imports} - \text{exports}]}{\text{population age 15 years and older}}$$

## RESULTS

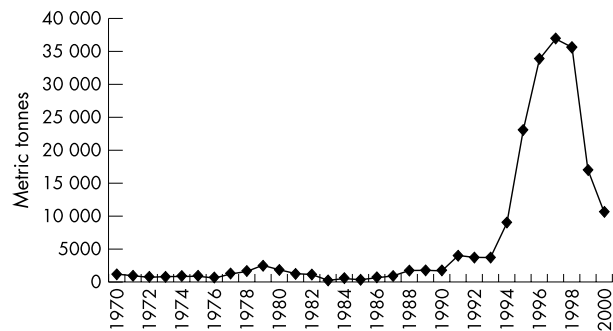
From 1970 to 1986, per capita cigarette consumption in Brazil fluctuated between 1266 and 2328 cigarettes (table 1). During the 13 year interval from 1986 to 1998, Brazil's estimated per capita consumption of cigarettes, as derived from production and trade data, decreased by 63% whereas the estimate of per capita cigarette consumption in Paraguay increased over 16-fold.

Most of the apparent decrease in Brazil's per capita consumption during the same interval reflects the more than 8000-fold increase in Brazil's cigarette exports between 1988 (when exports represented less than 1% of cigarette production) and 1998 (when exports represented more than 51% of production) (fig 1). Brazil's exports of cigarettes increased from 11 metric tonnes in 1988 to over 87 000 metric tonnes in 1998. The principal destinations for Brazil's cigarette exports were Belgium and Paraguay, but the final destination where the cigarettes are ultimately consumed cannot be determined from publicly available data.

Figure 2 depicts the large increase in cigarette imports into the neighbouring country of Paraguay during the 1990s. If those imports were, in fact, consumed in Paraguay, the estimated per capita consumption of cigarettes would have increased from 678 in 1986 to an astounding 10 929 in 1998



**Figure 1** Brazil cigarette consumption and exports, 1985 to 2000. Source: NATIONS.<sup>1</sup>



**Figure 2** Paraguay cigarette imports, 1970 to 2000. Source: NATIONS.<sup>1</sup> FAO data 1970–87, COMTRADE data 1985–2000.

(table 1). (In comparison, estimated per capita cigarette consumption was 1748 in the UK, 2255 in the USA, and 2403 in Japan in 1998.) An alternative explanation for Paraguay's anomalously large volume of cigarette imports is that imported cigarettes have been diverted illegally to other countries, including back to Brazil. This large scale cigarette smuggling could account for the large anomalous fluctuations in Brazil and Paraguay's per capita consumption, as derived from official trade data.

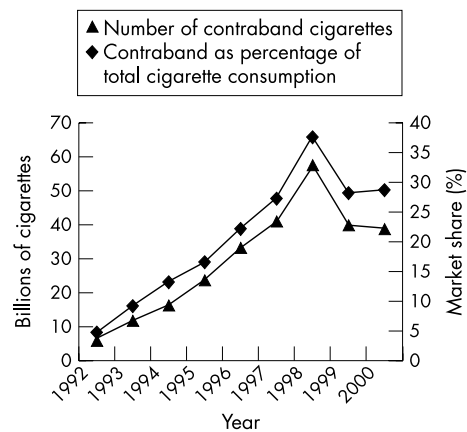
Figure 3 illustrates the explosive growth in consumption of contraband cigarettes in Brazil between 1992 and 2000 as estimated by the Federal Tax Bureau of the Brazil government. Peaking at 58 billion cigarettes, smuggled contraband captured 37% of the domestic cigarette market in 1998.

## DISCUSSION

In 1988, less than 1% of Brazil's domestic cigarette production was exported. By 1998, official statistics reported that 51% of Brazil's cigarette production was being exported.

This large apparent increase in Brazil's cigarette exports during the 1990s created an appearance of declining domestic consumption. Strong evidence suggests that the bulk of Brazilian cigarettes ostensibly exported to Paraguay in the 1990s were either never exported or were smuggled out of Paraguay to neighbouring countries, including back into Brazil. This circuitous trade represented a successful effort to evade Brazil's domestic cigarette excise taxes and undermine national tobacco control efforts.<sup>20–22</sup>

Estimates of Brazil's contraband cigarette trade range from 31–37% of the domestic market for the peak year 1998. At least 45 billion illegal and contraband cigarettes were consumed in Brazil in 1999 representing about one third of the Brazilian domestic market of 145 billion cigarettes per year. The main source for Brazil's contraband cigarettes appears to be neighbouring Paraguay. In some cases, it is suspected that cigarettes



**Figure 3** Consumption of contraband cigarettes, Brazil 1992 to 2000. Source: Brazil Federal Tax Bureau.

ostensibly exported to Paraguay never left Brazil. In other cases, smugglers exploited differential excise taxes, buying Brazilian cigarettes in Paraguay where taxes are under 20%, compared with Brazil's 70% tax in 1999. Legal cigarettes, upon which all taxes have been paid, sold for 1.20 Brazilian real (US\$0.56) per pack while an illegal pack could be purchased for a 25–58% discount in 2001, between 0.50 and 0.90 Brazilian real (US\$0.24–0.42).<sup>23</sup>

In 1999, Brazil collected US\$5.5 billion in tobacco taxes. Brazilian tobacco exports and tobacco products totalled US\$ 1 billion, representing 2.5% of total Brazilian exports.<sup>24</sup> Brazilian cigarettes falsely exported to Paraguay and smuggled back to Brazil remained inexpensive to Brazilian consumers. This large scale illegal trade deprived the Brazilian government of vital revenues estimated at \$500 million in 1998 alone.<sup>25</sup> Excess deaths and other health costs attributable to the adverse health effects of lower price, smuggled cigarettes on smoking initiation, intensity and duration in Brazil have not been fully calculated.

To address the large scale smuggling problem, Brazil imposed a 150% export tax in December 1999 to prevent the false export of cigarettes to Paraguay and their subsequent re-sale in Brazil.<sup>25</sup> This new tax structure resulted in an 89% drop in reported Brazilian cigarette exports from 6.3 billion sticks in 1999 to 700 million sticks in 2000.<sup>26</sup>

The pernicious health effects of cigarette smuggling continue, however, because multinational tobacco companies accelerated the construction of cigarette manufacturing plants in Paraguay and other neighbouring countries, thereby circumventing Brazil's 1999 cigarette export tax. Paraguay had only two cigarette manufacturing plants in 1995, but within four years an additional 17 were constructed. Paraguay currently boasts 22 cigarette manufacturing plants with seven more under construction.<sup>27</sup> Brazilian tax authorities suspect that a significant proportion of Paraguay's cigarette production is smuggled across the border and consumed in Brazil.

In October 2000, Brazil extended its 150% export tax to raw tobacco leaf used by cigarette manufacturing plants in neighbouring Paraguay and Uruguay, but not to tobacco leaf exported to Argentina, Chile, and Ecuador. In March 2001, Uruguay's Monte Paz S/A tobacco company encouraged the Uruguay government to object to Brazil's differential export tax on tobacco leaf under the common tariff terms of the regional MERCOSUL customs union. In October 2001, a MERCOSUL adjudication panel upheld Uruguay's complaint against Brazil's export tax policy for raw tobacco, but Brazil has promised to appeal the decision to an international arbitration forum.<sup>28</sup> Brazil argues that public health imperatives to control the illegal cigarette trade take precedence over the tobacco industry's attempts to evade regulation under cover of the MERCOSUL customs agreement.<sup>29</sup>

This descriptive study is limited by an exclusive reliance on readily available trade statistics to calculate per capita consumption trends. Surveillance data available for the most recent two or three years are generally preliminary and/or unpublished because of the time required to compile and disseminate the data. These preliminary data may not be comparable with more complete data on production and trade from earlier years.

International surveillance efforts, working closely with national or regional partners, can help to evaluate and publicise a particular regional issue of global significance, such as cigarette smuggling, to stimulate communication between countries with similar problems, and to accelerate the development of effective interventions. Illegal trade practices such as smuggling and tax evasion may be detected through analyses of cigarette trade data.<sup>30,31</sup> Addressing the health problems arising from smuggling and other illegal trade practices requires international attention and systematic cooperation under formal agreements, such as the Framework Convention on Tobacco Control.

Anomalous patterns in trade data are also observed in many other countries and these trade patterns also deserve further study. Taiwan, Cyprus, United Arab Emirates, Lebanon, Brunei Darussalam, Bosnia and Herzegovina, Republic of Korea, and Croatia, among other countries, report trade data where imports far exceed the demand of local markets indicating that cigarettes are transiting to other markets without proper controls. Investigators and law enforcement agencies have identified extensive international cigarette smuggling networks providing evidence that cigarette smuggling is an organised, pervasive, and widespread industry practice.<sup>32–35</sup>

### Recommendations

Cigarette smuggling poses a global problem for tobacco control that must be addressed by international agreements that effectively regulate the international cigarette trade. Smuggled cigarettes are estimated to account for 6–8.5% of total cigarette consumption.<sup>30</sup> Cigarette smuggling undermines public health and efforts to control tobacco consumption by reducing prices, increasing demand, and evading distribution restrictions and government taxes. Smuggled cigarettes compete with legal cigarettes, lowering the price and encouraging consumption. Youth and low income groups are disproportionately affected because cigarettes are particularly price sensitive among those groups.<sup>36</sup>

International effort is required to eradicate cigarette smuggling.<sup>37–39</sup> Proposed measures include the following:

- Ban duty-free cigarette sales
- Harmonise cigarette tax rates between neighbouring countries and devise effective penalties to negate financial incentives for cigarette smuggling
- Secure the distribution chain and require accountability; producers and distributors should be held accountable for sales to legitimate dealers
- Require records for every transaction in the wholesale distribution chain; a clear chain of custody should be

†MERCOSUL, the “Southern Common Market”, is a regional customs union between Argentina, Brazil, Paraguay and Uruguay established following the Treaty of Asuncion, signed on 26 March 1991. “Four-plus-one” free trade agreements between the MERCOSUL countries and Chile and Bolivia took effect 1 October 1996, and 1 April 1997, respectively. MERCOSUL is currently negotiating association arrangements with other Andean countries and with Mexico, and MERCOSUL members are participating as one body in negotiations over a free trade area of the Americas. MERCOSUL’s goal is the elimination of customs duties and non-tariff restrictions on the movement of goods between member states, the adoption of a common strategy for external trade, and the coordination of macroeconomic policies. URL: <http://www.ers.usda.gov/briefing/argentina/policy.html>

### What this paper adds

Cigarette smuggling is a widespread problem undermining tobacco control efforts by providing cheap unregulated cigarettes that stimulate demand while simultaneously decreasing tax revenues needed for tobacco control and health promotion. Globally, smuggled cigarettes are estimated to account for 6–8.5% of total consumption, but in Brazil smuggled cigarettes were recently estimated to account for 31–37% of the total market. This examination of Brazil and Paraguay’s 1970 to 1998 cigarette trade data and recent legislative and market changes highlights the importance of international cooperation to control cigarette smuggling.

established at every wholesale transaction to prevent large scale diversion to illegal markets

- Label the origin (manufacturing plant) and destination (country) on every pack
- Require health warnings in the language(s) of the destination market
- Require international cooperation between law enforcement authorities prosecuting organised smuggling and money laundering operations.

Tobacco control is an indispensable tool in the control of cancer. Brazil has made significant strides in curtailing deceptive marketing practices, restricting youth access, and promoting cessation, but the deleterious effects of cigarette smuggling require international attention for effective control. This analysis suggests that strict international controls are required within the Framework Convention For Tobacco Control to prevent multinational tobacco companies from circumventing national tobacco control efforts by engaging in large scale international cigarette smuggling.

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