

# Tobacco returns for the 2005 calendar year

## Report to the Ministry of Health

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### Summary

<b>Aim</b>	To analyse and report on tobacco product manufacturers and importers' returns for the 2005 year, returns that are required by the Smoke-free Environments Act 1990.
<b>Method</b>	The returns for 2005 to the New Zealand Ministry of Health were compared with previous returns, correlated with other data from Statistics New Zealand, and analysed on Excel spreadsheets. Duty-free sales were not counted. Manufacturers' machine smoke tests on their own products were reported as received and not independently audited.
<b>Setting</b>	National data was obtained from tobacco product manufacturers and importers.
<b>Results</b>	Fourteen companies supplied data. The results are given in tables in the body of this report, and in 24 additional tables (listed in Table 1 below), appended.

#### **Tobacco products released and sold.**

From 2004 to 2005, tax paid releases per adult to the domestic market increased 3.8%. Reported volume sales of tobacco products per adult increased 0.6%. (Table B2) Since 1999 smoking tobacco products per adult released decreased 21% - associated with a rise in sales of hand-rolling tobacco.

#### **Tobacco usage.**

Tobacco per manufactured cigarette averaged 0.69 g, the lowest on record. Total tobacco used in manufacture on a per adult basis decreased 1.6 percent, from 793 g in 2004 to 780 g in 2005, and by 26% since 1999. (Table B2) Tobacco used in manufacture more than halved (-54%) since 1990. (Table B2)

Counting 1 gram of loose tobacco as one cigarette – reflecting how excise is estimated, - tobacco products per adult, including cigars, totalled 1038 sticks in 2005, above the Ministry of Health's policy target of 1000 sticks set in 1985 and achieved in 2004. Year on year trends are uneven.

**Manufactured cigarettes.** From 2004 to 2005 tobacco tonnage used decreased 0.6%. (Table C), and from 1999 to 2005, decreased by 29%.

**Hand-rolled cigarette tobacco** From 2004 to 2005 tobacco used in RYO (roll-your-own) increased 1%. (Tables D1), and from 1990 to 2005, RYO tobacco used increased 37%.

**Pipe tobacco.** Use declined. Pipe tobacco accounting for only 0.2% of all tobacco used. (Table D2, E1).

**Cigars.** Tobacco used in cigars increased 2% in 2005, and accounted for 0.7% of all tobacco used. (Table B1, E1).

#### **Reported sales**

Reported manufactured cigarette sales increased by 4 million, and hand-rolled tobacco sales increased by 31 tonnes in 2004 to 2005. (Table G and H2).

#### **Manufactured cigarettes**

- Reported sales rose 4 million from 2331 million in 2004 to 2335 million in 2005. (Tables A1, G).
- From 2003 to 2005, Winfield, Dunhill, and John Brandon brands increased sales: the other top ten brands lost sales volume. The top ten brands accounted for 94% of total volume sales.
- The leading cigarette brand group, Holiday, in 2005 accounted for 29% of manufactured cigarettes sold - and for 10% of hand-rolled cigarette tobacco.

**Cigarette hand-rolling tobacco.** From 2004 to 2005:

- Tax paid data on loose tobacco (almost all for hand rolling) increased 48 tonnes.
- Tobacco used in manufacture for hand-rolled rose from 803 to 812 tonnes.
- Reported sales of hand-rolled cigarette tobacco increased from 803 to 833 tonnes.

BAT increased sales, Imperial sales reduced sales and Philip Morris ceased sales of hand-rolled tobacco. In 2005, the most popular brand, Port Royal increased its sales to account for 37% of the total market. The second most popular, Park Drive comprised 31% of the total market. Horizon and Holiday gained slightly, but other main brands lost volume sales in 2005. (Table 6). Average retail price was 59 cents per gram, a total value at retail of \$490 million. (Table I.1)

**Pipe tobacco.** Sales further decreased in 2005, to 6.3 tonnes.

**Cigars.** Brands and weights varied greatly. Tobacco used in manufacture was 16.8 tonnes.

### Smoke tests

**Tar.** Sales-weighted yields were 11.0 mg in 2005, down from 12.4 mg per cigarette in 2001. **Nicotine** remained fairly stable: 1.1 mg per cigarette in 2001, 1.0 mg in 2002 1.05 in 2003, and 1.0 in 2004, 0.97 mg in 2005.

**Carbon monoxide** remained fairly stable, varying from 12.1mg per cigarette in 2001 to 11.8 mg in 2002 to 11.5 mg in 2003 to 11.0 in 2004 to 11.7 mg in 2005.

**The tar to nicotine ratio** changed slightly from 11.0 in 2001 to 11.3 in 2002 to 11.1 in 2003, to 10.4 in 2004 to 10.8 in 2005.

### Conclusion

**Type of tobacco consumed.** Ever since 1990, the manufactured or hand-rolled cigarette, the tobacco product most dangerous to the user, has consistently accounted for 99% of tobacco used. (Table E1) - in contrast to Sweden, where nearly half the tobacco consumed is oral snuff, a reduced-harm product. (Fagerstrom 2005).

**Rate of decline in consumption.** Dry weight of tobacco used in manufacture for sale in New Zealand declined 26.3% per adult age 15 and over between 1999 and 2005, an average annual decline of 4.4%, similar to the 4.3% rate of decline in 1990-99. (from Table B2).

**Revenue declining in real terms.** In real terms estimated tobacco excise revenue has declined 11% since 2000, (the year of the last Budget excise increase) a decrease of \$94 million for 2005 when measured in 1995 dollars.

**Tax paid tobacco products per adult** in 2004 finally decreased to 1000 g per adult, the target set by the Comprehensive Tobacco Control Policy in 1985, but rose again in 2005 to 1038 g per adult; and thus after 20 years consumption it still exceeded the 1985 target.

**Tar.** The low tar yields reported do not necessarily imply lower tar inhalation - most New Zealand low tar brands have ventilated filters and low nicotine-low tar emissions, which when combined in the same cigarette, encourage higher inhaled volumes of smoke.

### Introduction

This report should be read in conjunction with the additional detailed tables A to I, listed in Table 1.

### Background

Since 1991, the Smoke-free Environments Act 1990 has required New Zealand tobacco manufacturers and importers to report to the Ministry of Health for the previous calendar year on tobacco and additives used, and on tar and nicotine in cigarette smoke. Price and sales by brand also required by the Act, were reported by manufacturers from 1994 onwards. This report, for calendar year 2005, again reviews the quantities of tobacco products used, focusing on tobacco, additives, tar and nicotine yields in smoke, and on tobacco product sales.

## Method

The returns of the tobacco manufacturers to the Ministry of Health were analysed on Excel spreadsheets, and collated with tax-paid releases of cigarettes and loose tobacco from Statistics New Zealand.

### Table 1. 24 Additional tables.

#### Tobacco use tables

A	Firms' tobacco use and sales, by tobacco product class, 2005
A.1	Tobacco used and cigarette sales, by all firms reporting
A.2	Sales in millions of sticks or tonnes, by firms
A.3	Tobacco used, by firms; tonnes.
B.1	Tobacco used in cigars, 1990-2005
B.2	Tobacco in all products 1990-2005
C	Tobacco used in manufactured cigarettes 1990-2005
D	Tobacco used in RYO cigarette and pipe tobaccos 1990-2005
D.1	Cigarette RYO tobacco
D.2	Pipe tobacco and all loose tobacco
E	Firms' market share of tobacco used.
E.1	Tobacco product classes by tobacco usage 1990-2005
E.2	Tobacco used, by firm; tonnes, 1990-2005
E.3	Firms' manufactured cigarette volume sales
E.4	Firms' share by volume of manufactured cigarettes sold
E.5	Firms' share of weight, of dry tobacco used

#### Additives

F	Weight of additives used, 1990-2005
F.1	Additives in all tobacco products, and in manufactured cigarettes.
F.2	Additives in cigarette tobaccos.
F.3	Additives in pipe tobacco
F.4	Additives in cigars

#### Tobacco product sales

G	Manufactured cigarettes 2005, smoke tests, price, volume, \$ sales, by brand
H	Cigarette prices, sales, and taxation, 1990-2005
H.1	Manufactured cigarettes
H.2	Hand-rolled cigarettes
H.3	The total cigarette market 1990-05, in current dollars
H.4	The total cigarette market 1990-05, in constant (1995) dollars.
I	Hand-rolling tobacco and pipe tobacco sales, 2005
1.1	Cigarette tobacco sales
1.2	Pipe tobacco sales

**Tobacco and additives use.** Each manufacturer or importer reported moist tonnage of tobacco and additives used by product category. To calculate total tobacco used (assuming zero moisture), 13.5 percent moisture was subtracted for manufactured cigarettes, 20 percent for cigarette tobacco, 19 percent for pipe tobacco, and 12 percent for cigars from moist weights. Additives are presented as comprising part of the weight of tobacco used in manufacture, and when this is done, the value can be reconciled with sales data. Cigar numbers were estimated based on 1 cigar per 2 g tobacco. Manufacturers are not required to report moisture. The moisture percentages were those supplied by BAT.

**Tobacco product sales.** For each brand variant, all firms reported quantity sold and the manufacturer-recommended packet price in December. The average of prices in consecutive Decembers (the excise rate is adjusted annually for inflation each December 1<sup>st</sup>) was used to calculate the mean monthly manufacturer-recommended retail price per cigarette during the calendar year. No allowance was made for trade variations above or below these recommended retail prices. To calculate total tobacco products sold, a million manufactured cigarettes were equated with one metric tonne of manufactured loose tobacco or cigars.

**Smoke tests.** Tobacco product manufacturers and importers reported smoke machine yields of tar and nicotine from their own laboratories as mg per manufactured cigarette, as specified in the regulations and schedules of the Act, that is, based on the ISO machine test method. Carbon monoxide (CO) reporting was required this year for the fourth consecutive year, and all except minor importers reported on CO. In 2005, no testing was required of other tobacco product classes. The test results were not audited independently of firms reporting.

**Brands sold.** The number of manufactured cigarette brand variants on sale, including different pack sizes, as judged from the number for which 2005 prices were supplied, (excluding duty free brands)

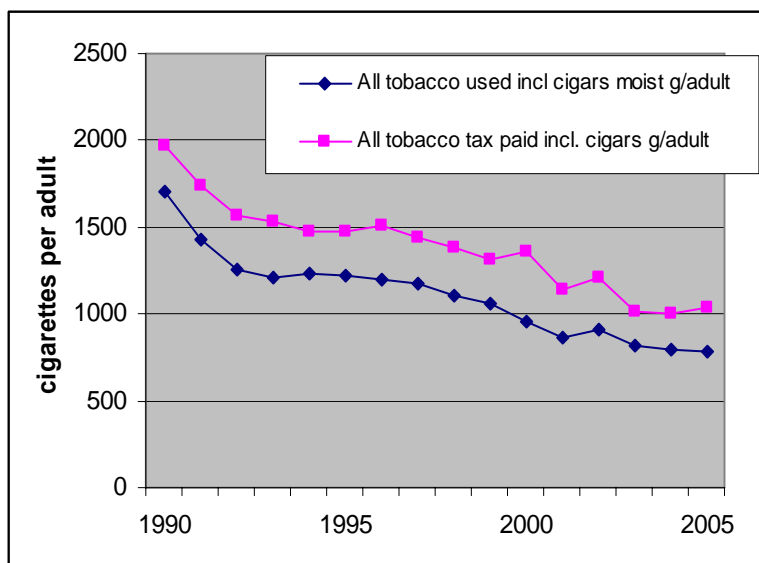
## Results

**Errata.** Tables A1 and G for 2005 correct discrepancies in numbers of cigarettes sold between Tables A1 and G of the 2004 report. Table A2 for 2004 has also been corrected.

The two firms manufacturing in New Zealand (which also imported) and 11 importer-only firms, reported tax paid sales for the 2005 calendar year (Table A.1). Approximately 94% of cigarettes, and 99% of RYO tobacco sold originated from BAT or Imperial which operated factories at Napier (BAT) and Petone (Imperial). In 2005, Philip Morris was the main cigarette importer.

## Tobacco used in tobacco products

**Figure 1. Tobacco products and total tobacco consumption 1990-2005, per adult**



Cigars included.

Source: Statistics New Zealand; Manufacturers' returns to the Ministry of Health. (Table B2).

Both graphs show a downward trend, rapid in 1990-92, gradual until 1999, then decreasing more rapidly, but slowing since 2003.

The upper plot, based on tax data, counts each cigarette as one unit, the unit for taxation. (Statistics NZ).

The lower plot is based on the actual weight of tobacco used in manufacture, before release for sale and smoking. (The average moist weight of tobacco per cigarette is 0.69 g.) (Manufacturers' returns, Table C).

Both graphs include loose tobacco estimated by actual weight.

Cigarettes per adult includes all adults, whether currently smokers or not.

**Tobacco used: trend.** The total (dry weight) of tobacco used in tobacco products (Table 2, right hand column) fell by 44 percent in the 15 years following the Smoke-free Environments Act 1990. Moist tobacco used per adult decreased 54 percent in this period. (Table B2) Most of the decrease was due to a halving of the number of manufactured cigarettes sold, and partly due to 18% less tobacco used per cigarette. Tobacco manufacturers reported increased sales of hand-rolled tobacco and cigars during this period. (Table 2).

**Validity.** Manufactured cigarette and hand-rolled tobacco releases, sales and usage in manufacture within each product class, were in approximate agreement.

**Tobacco use: by product class.** In 2005, of all tobacco (dry weight) used, 68.5 percent went into manufactured cigarettes, 30.6 percent into hand-rolled cigarette tobacco, 0.7 percent into cigars, and 0.2 percent into pipe tobacco. (Tables A3 and E.1)

**Table 2. Tobacco used in tobacco products sold within New Zealand, 1990-2001, moist weight**

Year	Manufactured cigarettes released (Statistics NZ)	Tobacco used in manufactured. cigarettes	Tobacco used per manu- factured. cigarette	Tobacco used making hand-rolled cigarettes	Tobacco used in pipe tobacco	Tobacco used in cigars	Total tobacco used (dry weight)
	millions	tonnes	grams (moist)	Tonnes	tonnes	tonnes	tonnes
1990	4489	3770	0.84	591	27	3	3758
1999	3119	2358	0.76	727	12	18	2647
2000	3152	2092	0.66	721	9	24	2407
2002	2817	1988	0.71	742	9	16	2334
2003	2367	1720	0.73	799	8	13	2144
2004	2320	1689	0.73	803	7	16	2143
2005	2436	1679	0.69	812	6	17	2122
<i>% change</i>							
1990-99	-31	-37	-10	23	-56	500	-30
1999-05	-22	-29	-9	12	-50	-6	-20
1990-05	-46	-56	-18	37	-78	467*	-44
Source	Table C	Table C.	Table C.	Table D.1	Table D.2	Table B.1	Table B2

\*The apparent five fold increase in cigar usage since 1990 may be partly due to incomplete reporting in 1990.

## Additives

Manufacturers used 126 tonnes of additives in tobacco products sold in 2005, of which 111 tonnes (88%) were in hand-rolled tobacco. Additives in 2005 constituted 0.7% by weight of manufactured cigarette tobacco weight, 13 percent of hand-rolled cigarette tobacco weight, 13 percent of pipe tobacco, 4.6 percent of cigar tobacco weight, and 5.9% of all tobacco product moist weight. This is a fairly consistent pattern over the years.

In reporting on 1999-2005 sales, most tobacco companies participated in supplying a common list of over 350 additives for cigarettes, with a maximum a percentage by weight (of unburnt product) supplied for each substance, one maximum for all brands. BAT, Imperial and Japan Tobacco International continue such a combined list. Lists for other product classes were also supplied. Philip Morris supplied data in hard copy of the names of ingredients used per brand, and the quantity not exceeded (QNE) limits for each ingredient and each brand, displayed at [www.pmintl-technical-product-information.com](http://www.pmintl-technical-product-information.com) and in PM's 2005 returns.

**Sugars.** Sugar, whether as sucrose or natural fruit sugars could be expected to make the harsh taste of tobacco more palatable and thus more inhalable. Depth of inhalation of smoke is related to the risk of lung cancer.

Following the display of much of the data at their website April 2001, Sugars added were listed as totalling up to 5.2% of moist tobacco weight in a brand. This may reflect the greater use of ingredients in American blend cigarettes, such as Marlboro.

**Weight of tobacco per cigarette.** Philip Morris did not furnish tobacco weight per cigarette brand. In contrast to 2004, BAT in 2005 did not provide tobacco weight per cigarette by brand on its website, [www.batnz.com](http://www.batnz.com) We reported in 2004 that tobacco weight per cigarette varied between brand variants– from 0.60 g to 0.82 g,

and even within brand families. For example, in 2004, Benson and Hedges special filter contained 0.75g, while its extra-mild variant contained 0.60 g. Most mild or super-mild variants contained 0.62 to 0.63 g of tobacco. In 2005 average tobacco content per manufactured cigarette fell below 0.70 g for the first time.

## Smoke machine tests

**Manufactured cigarettes.** In 2005, the Ministry of Health did not use Section 34 of the Smoke-free Environments Act to require companies to test their cigarettes in an independent laboratory at the manufacturers' expense. The Ministry of Health paid for two brands to be emission-tested in 2002 for a range of priority toxicants, and reported these results in 2003. No brand emission test results were published in 2005. Manufacturers or importers, as required by law, tested tar, nicotine and carbon monoxide in the smoke of manufactured cigarette brands which they sold. The test results for the brands tested are displayed in Table G.

**Table 3. Average sales-weighted yields of tar, nicotine and carbon monoxide; and tar/nicotine ratios, 2001-2005.**

Year	2001	2002	2003	2004	2005
Tar mg/cigarette	12.4	11.5	11.7	10.8	11.0
Nicotine mg/cigarette	1.1	1.0	1.05	1.0	0.97
CO mg/cigarette	12.1	11.8	11.5	11.0	11.75
Tar /nicotine ratio	11.0	11.3	11.1	10.4	10.8

**Cigarette tobacco, pipe tobacco and cigars:** No smoke tests were required by the Ministry of Health, and none was reported by the companies.

## Manufactured cigarettes

### Sales trends by brand groups (Table 4)

**Table 4. Volume sales by brand groups, manufactured cigarettes 2003-2005**

Brand	2005 Sales millions	2004 Sales millions	2003 Sales millions	Rank by sales in 2005	2003-2005; % change
Holiday	681	716	703	1	-3
Benson & Hedges	329	335	333	2	-1
Winfield	289	288	283	3	2
Horizon	276	297	303	4	-9
Pall Mall	175	167	207	5	-15
Rothmans	157	159	166	6	-5
Dunhill	117	108	104	7	13
Marlboro	97	65	103	8	-6
John Brandon	54	31	34	9	59
Peter Stuyvesant	31	34	32	10	-3
Total all 10 brands	2206	2197	2268		-3
Total all brands reported	2335	2331	2398		-2
Top 10 as % of total	94	94	95		

Source: Table G.

The top ten brands accounted for 94% of total sales. From 2003 to 2005, Winfield, Dunhill, and John Brandon groups increased sales: the other top ten brands lost sales volume.

### Sales trends by brand variant type (packet descriptor).

Mild variants, shown in bold, occupied rankings 6<sup>th</sup>, 8<sup>th</sup> and 10<sup>th</sup>. (Table 5).

**Table 5. Most popular brand variants of manufactured cigarettes, 2004-2005 – volumes sold.**

Brand	Variant	2005 sales volumes millions	2004 sales volumes millions	Rank, 2005
Holiday	Special filter	419	458	1

Benson & Hedges	Special filter	250	251	2
Winfield	Special filter	186	187	3
Horizon	Special filter	150	160	4
Rothmans	Special filter	156	158	5
<b>Holiday</b>	<b>Menthol Mild</b>	123	125	6
Pall Mall	Filter	106	99	7
<b>Holiday</b>	<b>Extra-mild</b>	94	98	8
Dunhill	Special filter	70	71	9
<b>B &amp; H Golden Mild</b>	<b>Special filter</b>	64	69	10
Total top 10 brand variants		1618	1676	
Total all cigarettes sold		2335	2331	
Top 10 as % of total		69	72	

Source: Table G. Seven of the top ten brand variants were regular cigarettes.

### Number of brands on sale

The number of brand variants on sale was 152 in 2002, 149 in 2003, and 182 in 2004, 177 in 2005. Included in this number were a small number of sales packages of up to 40 or 50 cigarettes. (Table G).

### Cigarette tobacco

**Table 6. Volume sales trends, by brand of hand-rolling tobacco, 2002-2005**

<i>Brand group</i>	<i>2005 Sales, tonnes</i>	<i>2004 Sales, tonnes</i>	<i>2003 Sales, tonnes</i>	<i>2002 Sales, tonnes</i>	<i>Rank by Sales,2005</i>	<i>2004-2005; % change in sales</i>
Port Royal	310	291	264	236	1	7
Park Drive	259	259	254	250	2	0
Horizon	99	63	64	52	3	57
Holiday	86	83	88	88	4	4
Drum	27	57	65	66	5	-53
Pocket edition	22	42	51	50	6	-48
Total all 6 brands	803	795	786	742		1
Total all brands reported	834	837	803	775		-0.5
Top 6 as % of total	96	95	98	96		

#### Reported sales

- The most popular brand, Port Royal increased its sales to account for 37% of the total market in 2005. Philip Morris ceased sales of hand-rolled cigarette tobacco during the year. The second most popular, Park Drive accounted for 31% of the total market. Horizon increased and Drum and Pocket Edition lost market share.
- Average retail price was 59 cents per gram, a total value at retail of \$490 million. (Table 6)

### Pipe tobacco

#### Reported sales

Declining sales (6.3 tonnes total) of pipe tobacco were dominated by Erinmore brand (2.7 tonnes), sold by British American Tobacco. Pipe tobacco sold at a recommended retail price of 61 cents per gram, with a total value at retail of \$3.9 million.

### Cigars

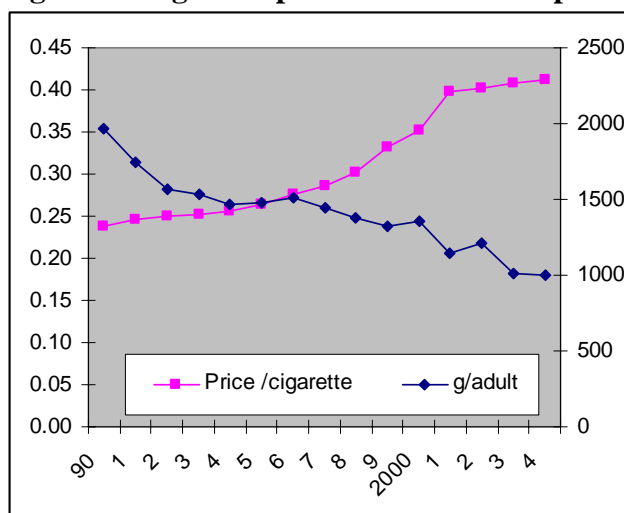
## Reported sales

Six importers reported tax paid sales. Brand variants were multitudinous, and weight per cigar varied from cigarillos of about 1 gram tobacco to the largest cigars sold singly. Packet sizes varied. Totals of tobacco and cigars sold during the year were in many cases omitted. Tobacco was estimated at 16.8 tonnes imported as cigars, comprising 0.7% of total tobacco used in tobacco products for sale.

## Tobacco trade: gross sales of manufactured cigarettes and cigarette tobacco

### Consumer expenditure and revenue from sale of cigarettes and tobacco in current dollars

**Figure 2. Cigarette price versus consumption per adult, 1990-2005**



As the real price of cigarettes rose, their consumption decreased.

Price has been maintained in that each year from 1990, usually on December 1, the excise rate has been automatically adjusted annually for inflation (Customs Act).

Then in 1998 and 2000, cigarette prices rose steeply in real terms due to Budget tax increases.

Price is estimated using the tobacco price index adjusted to 1995\$ prices, and taking 45.4 cents as the price for 2005

Hand-rolled cigarettes are included.

The price is shown in constant 1995 \$.

Source: Consumption: Table B2. Price for 2005: Table G. Tobacco price index: Statistics NZ.

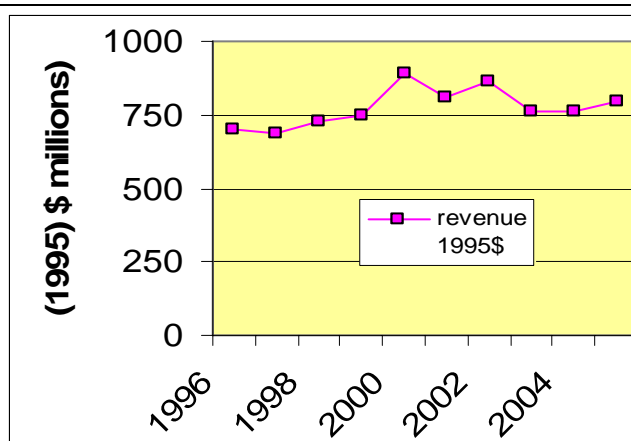
**Total consumer expenditure on cigarettes and RYO tobacco.** Based on manufacturers' reported volume sales, and the reported average recommended retail price through 2005, total manufactured cigarette sales in 2005 were estimated at \$1081 million (Table G); hand-rolled cigarette tobacco sales added \$491 million (Table I.1), making a total cigarette market of \$1.584 billion. (Table H.3) For comparison, estimating from tax-paid releases, and recommend retail price, consumer expenditure was \$1651 million. (Table H.3)

**Price versus consumption.** From 1990 to 2005, cigarette consumption (including RYO) per adult decreased 47% per adult (Table B2.) whereas the real price of cigarettes increased 74%. (Table H4.) This equates to a (high) price sensitivity of  $47/74 = 0.64$ , meaning that a 10% price rise would lead to a 6.4% fall in consumption (ignoring other factors). (Figure 2).

### Government excise revenue from the sale of cigarettes and tobacco in constant dollars

**Government share of the price.** Based on recommended retail prices, companies would have paid \$961 million in tobacco tax in current dollars (including import duty as well as excise but not including GST) for the calendar year 2005 (Table H3) Excise increased 21 percent in real terms from 1990 to 2005. Since 2001 the government's per cigarette revenue in real terms has increased two cents. (Table H4). The excise and GST as a percentage of recommended packet price varies between brands – above the average for budget brands, over for premium priced brands such as Dunhill, all brands averaging close to 70% of packet price since 1998. (Table H3).

**Figure 3. Estimated tobacco excise revenue (constant dollars) 1996-2005**



Revenue estimated from the tax rate and cigarettes sold, decreased since 2000, by over \$94 million in real terms.

Excise rates were raised above the level of inflation in 1991, 1995, 1998, and 2000.

Source: Manufacturers' returns for 2005, Report, at Table H.4

**Revenue.** In real terms estimated tobacco excise revenue has declined 11% since 2000. (Figure 3), when a budget tax increase along with a company price increase raised the cigarette price 20%. In real terms (1995 constant dollars), revenue declined by \$94 million, from \$890 million in 2000 to \$795 million in 2005. (Table H.4).

**Trade share and receipts.** The trade share of the price decreased 5 percentage points from 36% to 31% between 1990 and 2005. (Table H3.) The trade's estimated revenue, despite some of the most stringent tobacco control measures in any country, from 1990 to 2005 decreased only 2 percent in real terms (Table H4.) whereas excise receipts increased 21%. (Table H4).

**Table 7. Summary table of trends in taxes, prices, expenditure revenue and consumption of manufactured and hand-rolled cigarettes, 1990-2005**

1995 NZ dollars	1990	2005	% change
Tobacco excise \$ per cigarette or gram	0.13	0.25	91
Excise + GST \$ per cigarette or gram	0.16	0.30	88
Excise +GST as % of packet price	64	69	8
Estimated excise \$ millions	659	796	21
Price \$ per gram of product	0.24	0.42	74
Consumer expenditure estimated \$ millions	1240	1368	10
Trade revenue \$ per gram of product	0.087	0.13	50
Trade revenue \$ millions	443	433	-2
Consumption tonnes, dry tobacco (Table 1)	3758	2122	-44

Source: Tables B2, and H4, based on the average cigarette in each year (RYO or manufactured).

## Discussion

**Advertising bans effects on marketing.** The banning of advertising in 1990 did not stop the introduction of new tobacco product brands for sale. Today, Marlboro is one brand still receiving some promotion – through newscasts of Formula One races. Most countries have now ratified the Framework Convention on Tobacco Control, so these sponsorships should gradually cease in the coming decade.

**Holiday brand.** In 2005 the Holiday brand group accounted for 29 percent of all manufactured cigarette sales. It is a low cost brand with its regular brand variants (1.1 mg nicotine yield), in the high nicotine category while its other brand variants yield less on ISO machine testing. This is a brand that started in

Australia and New Zealand. During 2004 Holiday further changed its front face pack design to depict a colourful, carefree stylised beach and holiday scene. Overall Holiday cigarettes slightly increased their sales from 2003 to 2004, but sales decreased from 2004 to 2005. This graphic seemed to be powerful enough to distract from or attenuate the dire warnings that *Smoking kills* in 2004; in 2005 perhaps it lost its novelty.

### **Hazard monitoring:**

**Range of products tested: manufactured cigarettes tested but not hand-rolled cigarettes.** Only manufactured cigarettes were tested. In 2005 however, nearly one-third (31%) of the tobacco smoked was in hand-rolled cigarettes. Hand-rolled cigarette emissions are not monitored in any way.

**Range of tests performed.** Government, public health agencies and smokers do not know if one brand is more harmful than another, though many smokers mistakenly believe that very low tar cigarettes are less harmful. The present system of testing all superficially and only one or two in depth, does not permit rational decisions, as to which cigarette a smoker wishing to keep smoking should choose, or by the Ministry wishing to regulate the highest emission cigarettes off the market. With ¾ million adults continuing to smoke despite widespread publicity to quit, this is no small matter. It indicates the difficulty of regulating inherently very dangerous product.

Currently, measurement of tar, nicotine and carbon monoxide only is required. This relies on the ISO machine smoking test, carried out in the manufacturers' own laboratories, without government audit, and only testing manufactured cigarette brands. Information available does not monitor inter-brand, year-on-year, or inter-batch variation or total carcinogen emission levels, as suggested by Ministry of Health commissioned research reported at [www.ndp.govt.nz](http://www.ndp.govt.nz)

The Smoke-free Environments Act provides adequate powers for surveillance of harmful constituents in tobacco and tobacco smoke, but only tar and nicotine yields of smoke are as yet named for testing purposes. For the control of other substances, including major carcinogens, harmful constituents have to be named in regulations under the Act, yet to be written.

**Tar.** Tar as reported in Table G, is a proxy measure for the 19% of total cigarette smoke toxic emissions derived from smoke solids, and does not measure the 80% of emissions toxicity in the gas phase of smoke, nor the major gas phase carcinogens such as butadiene. There is a strong case for not only not requiring tar testing, and tar labelling on packets, but banning tar ratings altogether. Addicted smokers, lacking reliable information, have to use tar ratings, along with descriptors such as mild or low tar, to gauge smoke toxicity.

**Carbon monoxide.** Measurement of CO as reported in Table G, is routine in many jurisdictions. This gas, however, accounts for only a few percent of total cigarette smoke toxicity. (Tobacco regulation Editorial NZMJ 15 April 2005). The present reliance on testing CO as a representative measure of gas phase toxicity would appear misplaced, although CO could be continued as a minor component of a wider set of routine measures of more powerful toxicants.

**Tobacco weight** is the main determinant of the volume of sidestream smoke, and after controlling for puffing intensity and cigarette design, may also affect the volume of mainstream smoke. There is thus a strong case for regulating to require no more than 0.65 g of tobacco per cigarette.

**Gas phase carcinogens.** The current data collected in these returns do not inform New Zealand smokers as to their own brand's emissions, or how hand-rolled variants compare, nor which brand to turn to, if one brand is shown to be more toxic. There is a case for regular and random testing for major toxicants, beginning with the top selling brands.

**Nicotine.** Nicotine yield as reported in Table G does not indicate nicotine absorption. It accounts for less than 1% of the variance in nicotine absorption between brands, according to official surveys undertaken by Jarvis et al in the UK (Editorial NZMJ 15 April 2005). This is due to low yield (low tar and low nicotine) brands, causing smokers to seek more nicotine by inhaling more smoke, a human characteristic not detected by the smoke tests used.

In contrast, the nicotine content in (unburnt) cigarettes sold, is a reliable and simple test, which can be audited by any chemical laboratory within New Zealand, without the need of any expensive smoke machine testing overseas. Such a test can then detect variation between brands and from month to month. There is a case for replacing the monitoring of nicotine yield by regular and random checks of nicotine content.

**Cigarette-design-related factors; reporting not required.** In 1990 the importance of cigarette design as it affected smoke intake was not understood within the then Department of Health. Consequently manufacturers were not required by the Act to report on cigarette engineering design details used in each brand, factors which importantly affect the delivery of toxicants, and which may merit inclusion at the next legislative opportunity to review section 31 of the Smoke-free Environments Act 1990.

## Conclusion

Between 2004 and 2005, reported sales of smoking tobacco products increased 0.5% per adult, from 991 to 997 cigarettes per adult (Table B2) in comparison with data from Statistics NZ – which estimated an increase of 3.8% per adult. Table H5. No non-smoking tobacco products were sold.

Although a legislated smoking ban was in force in all offices since 1991, the industry's own 2004-2005 data show that the legislated ban on indoor smoking in all workplaces and hospitality venues from December 2004, did not result in any decrease of sales of cigarette smoking products. This may reassure the tobacco trade in countries where such bans are not yet in place.

Electronic reporting on a template could assist the reporting companies, and help standardise and speed up the annual collation of the results. This is especially true for cigar sales reporting.

## Acknowledgements

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## Glossary

<b>Additive.</b>	Non-tobacco content of the cigarette. Includes menthol.
<b>BAT</b>	British American Tobacco, a multinational tobacco company.
<b>Brand variant</b>	A brand subtype differing by some descriptor such as filter, pack size, flavour, packaging.
<b>CO</b>	Carbon monoxide, a constituent of cigarette smoke.
<b>GST</b>	Goods and services tax.
<b>ISO</b>	International Standards Organisation method of testing cigarette emissions from machine smoking.
<b>Loose tobacco</b>	Pipe and RYO manufactured tobacco.
<b>Nicotine</b>	The main addictive agent in cigarette tobacco and tobacco smoke.
<b>PM</b>	Philip Morris, a multinational cigarette company.
<b>RYO</b>	Roll your own or hand-rolled tobacco smoked as a cigarette.
<b>Sticks</b>	One cigarette or one cigar counts as one stick.
<b>Swedish Match</b>	A Swedish manufacturer of pipe tobacco, cigars, and snuff.
<b>Tar</b>	The solids collected on filter paper when smoke passes through a smoking machine.
<b>Yield</b>	Smoke constituent as measured by smoke machine (not the same as amount inhaled).