

Tobacco returns for the 2014 calendar year

Analysis of Manufacturers' Returns on Tobacco.

Report to the Ministry of Health for 2014

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30 September 2015

Executive Summary

Aim Tobacco product manufacturers and importers' returns are required annually by the Smoke-free Environments Act 1990, and this report analyses those returns for calendar year 2014.

Method The returns to the New Zealand Ministry of Health provide data on tobacco used in manufacture and firms' sales dating back to 1990. Since 2010 it became necessary to rely on manufacturers' reports of their sales without the back-up from Statistics NZ. Since 2014 it has been possible to obtain Treasury data on total revenue only, as no breakdown by imported and domestically obtainable tobacco is published for this year. All these changes were adopted to protect the data of the remaining tobacco products producer in New Zealand.

Unless stated otherwise, the traditional method of counting one cigarette to equal one gram of cigarette tobacco was used. The data are analysed on Excel spreadsheets (Tables A to I, attached). Duty-free sales were only counted for 2 complete years up to 2013, and were discontinued late in 2014, and are not recorded here for 2014.

Manufacturers' returns and machine smoke tests on their own products were reported as received and not independently audited. The prices used in estimations were the firms' reported recommended retail prices, and retail price discounting is not reported.

Setting Manufacturers and importers supplied data to the Ministry of Health for calendar year 2014, and their data were downloaded from the Ministry website.

Results Smokers have responded to price by decreasing their smoking, though reportedly not always by the same amount each year. This report highlights the increased rate of cigarettes sales reduction in recent years, due to increasing excise.

Representative counting by weight (RYO =1g). During 2013-14 cigarettes and tobacco sales overall declined from 2469 g to 2428 g, a decline of 2%.

Counting standard (1g= 0.7g tobacco) cigarettes, manufactured cigarette consumption decreased 1.5%, and roll-your-own cigarettes decreased 2.3%. (Table E6) and overall, sales declined 1.7%.

Cigarette and tobacco sales per adult declined overall by 3.7% in traditional counting and by 3.8% counting in standard cigarettes. Overall, in the 2010-2014 period, cigarette and tobacco

consumption per adult declined at an average rate of 6.3% per year to an all time low of 733.7 standard cigarettes (or 667 traditionally-counted cigarettes) per adult in 2014.

In the preceding 10 years (2000-2010) the rate per adult decreased 2.4 percent annually on average. The increase in decline in 2010 to 2014 due to the annual 10 percent real excise increases from 2010 onwards - which is legislated through to 2016. These increases coincide with the calendar year returns of tobacco manufacturers to the Ministry of Health.

As in past years, 99 percent of tobacco consumption was due to cigarettes, with 30% of all tobacco smoked as RYOs. Eleven firms supplied returns. The results are analysed in seven tables and three figures in the body of this report, and in 28 additional tables (listed in Table 2 below), attached. Trends for a given year varied slightly between tobacco weight used, tax-paid tobacco releases, and tobacco product sales for a given year.

For the years 2010 to 2014, standard cigarette and tobacco consumption per adult decreased on average by 6.3% annually.

In 2013-14, overall sales of standard cigarettes and tobacco decreased by 3.8% per adult (Table E6.) from 762 to 733 cigarettes per adult. In 2000-2010 cigarette price increased 0.31% on average annually in real terms (Table 9) and standard cigarettes smoked per adult also decreased 0.24% annually on average (Table E6).

Manufactured cigarette sales. From 2013 to 2014 manufactured cigarettes sales volumes per adult decreased 3.5% per adult, and for roll-your-owns by 4.3% per adult (Tables B2, C, and E6).

Brand sales. The most popular brand is now Pall Mall which doubled its sales 2007-2014. Holiday sales fell but sales of Imperial's low priced John Player brand, now the third most popular, rose from 3.5 million to 210 million in 7 years.

Recent trend, 2010-4 Number of cigarettes released for sale per adult

Table 1. Cigarettes released per adult 2010 to 2014 compared, assuming RYO cigarettes contained 0.7 g tobacco.

	Manufactured cigarettes per adult (Table C, col. i or Table E6)	Roll-your own cigarettes, per adult 1 RYO=0.7 g (Table D2)	Total cigarettes smoked, including standard 0.7 g sticks per adult Table E6	RYO as % of total sticks sold
	A	B	C	D
2010	639 sticks	319	958	33
2012	569 sticks	239	808	30
2013	526 sticks	234	760	31
2014	501 sticks	223.5	733.7	30

Source: Table E6.

Pack size sales The smallest permitted pack size is 20 cigarettes. Packs of 20s increased their share of sales from 49% in 2010, to 53% in 2011, to 52% in 2013, and to 64% in 2014.

Roll-your-own cigarette tobacco sales decreased from 583 tonnes to 570 tonnes in 2013-14 and per standard cigarette decreased from 234 to 224 standard cigarettes. (Table E6).

All cigarettes in standard terms (1 RYO=0.7 g): The 734 standard cigarettes per adult (Table E6) equated to 2673 billion standard cigarettes of 0.7 g tobacco smoked in 2014. (Table A2). The total number of standard cigarettes smoked per adult reduced 64% in 24 years since the Smoke-free Environments Act 1990 (Table E6). RYOs still contribute 32% of the market counting each cigarette as containing 0.7 g of tobacco.

Trend in revenue in calendar years 2009-14: Tobacco excise revenue increased from \$1096 million in 2009, to \$1149 million in 2010, to \$1269 million in 2011, to \$1251 in 2012 and to \$1325 million in 2013. (Table H4, taken from www.treasury.govt.nz (tax outturn data). For 2014 the total revenue from tobacco excise was estimated at \$1422 million dollars in 2014 dollars (excise x volumes sold, and discounting customs duty contribution).

Tobacco used in the manufacture of smoking (combustible) tobacco products

Manufactured cigarettes Dry weight of tobacco used in manufacture for sale of cigarettes in New Zealand declined 70% per adult age 15 years and over between 1990 and 2014, an average annual decline of 3% (Table B2, col. c).

Cigarette hand-rolling tobacco. For 2014, tobacco used for RYO (roll-your-own) cigarette manufacture totalled 553 tonnes. Use of tobacco as in RYO cigarettes reduced markedly due to increased excise on RYO cigarettes from May 2010. (Table H5.)

Pipe tobacco. Use of pipe tobacco decreased further to 3.7 tonnes. Pipe tobacco accounted for 0.2% of all tobacco used. (Table D2, E1).

Cigars. Tobacco used in cigars remained close to 9 tonnes, and accounted for 0.5 % of all tobacco used in 2014. (Table B1, E1).

Reported sales of smoking tobacco products (FM, RYO)

Reported volume sales of smoking tobacco products based on Tables G and I, decreased 3.8% from 762g in 2013 to 733 per adult in 2014 based on standard RYO cigarettes of 0.7 g each.

Manufactured cigarettes

From 2013 to 2014, reported manufactured cigarette sales decreased from 1886 million to 1858.5 million, a decrease of 1.5%. (Tables E6, col. a, col. e.), to a total of \$1543 million dollars (\$0.83 per cigarette).

Cigarette hand-rolling tobacco

From 2013 to 2014 hand-rolled tobacco sales decreased from 583 tonnes to 570 tonnes. Average recommended retail price was \$1.27 per gram, a total value at retail of \$749 million assuming no discounting. (Table I.1)

Pipe tobacco. Sales were 2.2 tonnes in 2014. (Table D2)

Cigars. Brands and weights varied greatly. Sales were 10.9 tonnes in 2014. (Table A1, I3).

Smoke tests (manufactured cigarettes only) (Table G, final summary totals)

These are smoke machine tests only, not of human smoking.

In 2014, sales weighted yield of tar was 10.6 mg, and for nicotine 1.1 mg.

Carbon monoxide measurements at 15.6 mg were complete only for the three largest manufacturers. Tar to nicotine ratio was 9.7.

Conclusions *Type of tobacco product smoked.* The cigarette (whether FM or RYO) is the tobacco product class most popular and dangerous to the user, producing toxic smoke, inhaled some 200 times daily for decades. In New Zealand the cigarette since 1990 has accounted for 99% of tobacco used (Table E1). Cigars and pipes accounted for the remaining 1%. RYOs accounted for 12.5% of tobacco used in 1990, and for 28% in 2014, after peaking at 31% in 2009.

Measuring the harm caused. In recent years the average hand-rolled cigarette contained close to 0.5 g tobacco, but for tax purposes the average RYO cigarette is now assumed to contain 0.7 g tobacco to approximate the tobacco content of a factory-made cigarette (0.7 g). Table 1 is thus an underestimate of the number of RYO cigarettes smoked, especially when the excise rate is high, as now RYO cigarettes can be rolled to contain less tobacco.¹

Introduction

This report should be read in conjunction with the attached Detailed Tables A to I, listed in Table 2, which contains back data from 1990. Analysis was not commissioned by Ministry of Health for 2008.

Background

From 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 2014, again reviews the quantities of tobacco products sold, tobacco, additives used, tar and nicotine yields in smoke, and on tobacco product sales, and the tables enable a review of past years.

Method

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

Recommended retail price (RRP). For all firms we used the most relevant RRP. To calculate total tobacco products sold, a million manufactured cigarettes were equated with one metric tonne of manufactured loose tobacco or cigars, as traditionally estimated in previous reports.

For calculations of number of the new standard 0.7 g RYO tobacco cigarettes, one tonne of RYO cigarette tobacco = 1.4286 million RYO cigarettes, and one million factory made cigarettes contained 667 kg of tobacco in 2009, and the tax on either type was equalised from May 2010 as shown in Table H5.

Dry tobacco used was estimated (assuming zero moisture), after 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.

Cigar numbers were estimated almost entirely from weights supplied. Manufacturers are not required to report moisture. The moisture percentages were those supplied by BAT.

Smoke tests. Manufacturers and importers reported smoke machine yields of tar and nicotine from their own laboratories as mg per manufactured cigarette, as required by regulations and schedules of the Act, based on the ISO machine test method. The test results were not audited independently of firms reporting. These machine methods report yield, but humans extract about twice as much

smoke as does the machine, as BAT scientists have shown (Mariner 2010). Indeed from 2007, these data are banned from appearing on the packets, to avoid misleading consumers.

Tobacco and additives use. Major manufacturers and importers reported moist tonnage of tobacco and additives used by product category. (Tables F)

Number of brands sold. The number of manufactured cigarette brand variants on sale, including different pack sizes, was based on reported sales for 2014, excluding duty free brands. (Table G, at the end of that table).

Cigar reporting. Sales and usage reports were entered to estimate usage or sales in Tables A3 and I3.

Table 2. Additional tables

Tobacco use tables

A Firms' tobacco use and sales, by tobacco product class, 2014

- 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, C D Tobacco used by tobacco product class 1990-2014

- B.1 Tobacco used in cigars, 1990-2014
- B.2 Tobacco in all products 1990-2014
- C Tobacco used in manufactured cigarettes 1990-2014
- 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 1990-2014
- E.2 Tobacco used, by firm; tonnes, 1990-2014
- 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 use
- E.6 Manufacturers' reported sales of standard cigarettes

Additives

F Weight of additives used, 1990-2014

- 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 2014

Smoke tests, price, volume, brand \$ sales

H Cigarette prices, sales, and taxation, 1990-2014

- H.1 Manufactured cigarettes
- H.2 Hand-rolled cigarettes
- H.3 The total cigarette market 1990-13, in current dollars
- H.4 The total cigarette market 1990-13, in constant (2011) dollars.
- H.5 Tobacco excise rate changes

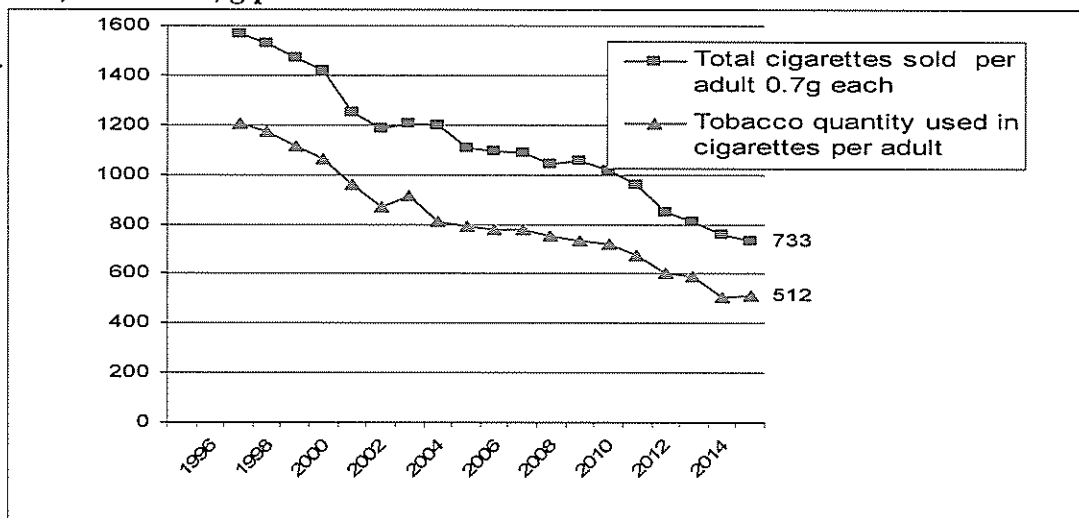
I Hand-rolling tobacco, pipe and cigar sales, 2014

- 1.1 Cigarette tobacco sales
- 1.2 Pipe tobacco sales
- 1.3 Cigar and cigarillo sales

Results

Manufactured cigarette and hand-rolled tobacco releases, sales, and usage in manufacture within each product class, show similar trends, although measured in different ways. Consumption and usage of tobacco have declined more steeply since 2010 when excise was increased.

Figure 1. Combustible tobacco products: firms' reported sales, and firms' reports of tobacco used, 1990-2014, g per adult.



Data source: Tables B2 and E6

Source: Statistics New Zealand; Manufacturers' returns.

Missing 2008 data for the two lower plots have been interpolated.

Table 3. Tobacco used in tobacco products sold within New Zealand, 1990-2014

Year	Manufactured cigarette releases Millions	Tobacco used in manufactured Cigarettes Tonnes	Tobacco used per manufactured Cigarette g (moist)	Tobacco used making RYO cigarettes Tonnes	Tobacco used in pipe tobacco Tonnes	Tobacco used in cigars Tonnes	Total tobacco Used (dry weight) Tonnes
Source	Table C	Table C.	Table C.	Table D.1	Table D.2	Table B.1	Table A3.
1990	4489	3770	0.84	591	27	3	3758
2000	3152	2092	0.66	721	9	24	2407
2010	2220	1468	0.66	735	4	15	1978
2011	2083	1464	0.70	641	4	19	1797
2012	2017	1466	0.73	632	2	16	1765
2013	1886	1333	0.71	582	6	14	1524
2014	1859	1300	0.70	553	2	11	1578**
1990-14 %	-10	-3	-1	-5	-92	-33*	3.5

*Cigars were underreported in 1990. Tobacco is measured by moist weight except for the right-hand column. ** From Table A3.

Tobacco use: by product class. In 2014, of all tobacco (dry weight) used, 71 percent went into manufactured cigarettes, 28 percent into hand-rolled cigarette tobacco, 0.5 percent into cigars, and 0.2 percent into pipe tobacco. (Tables A3 and E.1)

Tobacco used: trend. The total (dry weight) of tobacco used in tobacco products per adult (Table B2, col. c), and Table 4, right hand column) decreased 70 percent per adult from 1990 to 2014. Moist tobacco used per adult decreased also by 70% in this period. (Table B2, col. d) Most of the decrease was due to a decrease in the number of manufactured cigarettes sold per adult, (Tables C, and 4) aided by less tobacco used per manufactured cigarette.

Imports versus local production. Of the major tobacco companies, only Imperial now has a factory in New Zealand. Thus most (80%) of raw smoking tobacco products is imported by Imperial. BAT moved its manufacturing from Napier to Sydney in 2006, then to Asia, and is now the leading importer, followed by Philip Morris.

Interpretation. Decreases in consumption have been greater than the rate of population increase. The decreases are smaller in Table 3 than for most of the other tables because this table states tonnage and national consumption, and does not give per adult values which could allow for the near 40 percent increase in the adult population 1990-2014. All types of tobacco products usage and sales are in decline.

Additives

Nicotine Additives or ingredients are reported according to industry definitions which generally do not report the content of the most weighty and lethal substance in the cigarette (the tobacco), or the amount of its most addictive ingredient, nicotine.

Nicotine content of cigarettes is not stated by any manufacturer for any brand.
The amount of nicotine used indicates the degree of addiction likely to result.

Other additives Manufacturers reported using 81 tonnes of additives in tobacco products sold in 2014 (4.3%), of which 71 tonnes was used in making hand-rolled tobacco (From Table A3). Additives in 2014 constituted 0.67% by weight of the moist tobacco in manufactured cigarettes, 13% of hand-rolled cigarette tobacco weight, and is underreported for pipe tobacco. For cigars additives data as a proportion of total tobacco weight are noted in Table I.3.

In reporting on 1999-2014 sales, most tobacco companies participated in supplying a common list of several hundreds of additives for cigarettes, with a maximum percentage by weight (of unburnt product) supplied for each ingredient or flavour, one maximum for all brands. BAT, Imperial, and Scandinavian attached combined lists of this type for various product classes. These Quantities Not Exceeded (QNE), or maximum use level for each ingredient and each brand, do not disclose actual amounts used. In particular, menthol is specified as not more than 0.5% of the tobacco weight, but much smaller amounts may be added to non-menthol cigarettes.

The main additives are water and sugars. Only some Chinese brands revealed sugar content – over 20 percent, but how much was natural and how much added was not disclosed.

Imperial Tobacco lists QNE values at 25% water, 11.9% honey, 5.9% inverted sugar, 5.0% propylene glycol, and 4.4% glycerol. Permission to use these sugars is assumed (no law prevents it) in addition to the natural sugars in tobacco (up to 15%). Menthol is 0.5%.

British American Tobacco (BAT) do not talk about additives so much as ingredients. In a New Zealand RYO Domestic Ingredients Report for June 2010 to May 2011, (www.bat.co.nz) BATNZ reports that cigarette ingredients for Holiday Red in descending order of weight are tobacco (including reconstituted tobacco), water, glycerol, propylene glycol, sugars, cellulose fibre, potassium sorbate, calcium carbonate and lactic acid.

In 2013, BAT NZ website for RYOs ranks the QNE in descending order at propylene glycol 5.9%, glycerol 4.4% menthol 0.5%, and invert sugar 1.1%. BATNZ shows no brand specific quantities for manufactured cigarettes, but the listed ingredients are roughly similar to RYO tobacco. For pipe tobacco QNEs for sugars and syrups total 30% of the weight.

Philip Morris displays tobacco and other additives by brand. The specific brand information is at www.pmintl-technical-product-information.com in 2015 and for Marlboro Red (accessed May 2012) shows sugar or invert sugar is the main additive (3.2%), other additives are 3.6%. 63.6% of the cigarette weight is tobacco and 9% is water. 4.4% is cigarette paper. the constituents of the cigarette which are destined to be destroyed by combustion to form smoke; 16.5% is allowed for the weight of filter and its wraps, inks and glue which will not be burnt. Considerable effort has gone into specifying very low percentage levels of flavours.

The noxious gas emissions are not reported, nor have they ever been required.

Menthol weight QNE is reported as 1% for the filter, and 0.8% for the cigarette. Although some brand specific information is recorded, information on nicotine content is strikingly absent in all returns made, even though nicotine is the active ingredient most responsible for fostering and maintaining addiction to tobacco smoking. Nicotine is no doubt considered by tobacco companies as an inherent part of tobacco rather than an additive.

Nicotine content of cigarettes has not been listed.

Smoke machine tests

Manufacturers or importers, as required by Section 35 of the Smoke-free Environments Act have reported smoke-machine-tested tar, nicotine and carbon monoxide in the smoke of manufactured cigarette brands using the ISO method. Results for the brands tested by the manufacturer are displayed in Table G, but were not verified by any independent laboratory.

Table 4. Average sales-weighted yields of tar, nicotine and carbon monoxide; and tar/nicotine ratios, 2001-2014

Year	2001	2003	2004	2005	2006	2007	2009	2010	2011	2012	2013	2014
Tar mg/cigarette	12.4	11.7	10.8	11.0	11.0	10.5	10.0	11.3	11.6	11.3	11.1	10.3
Nicotine mg/cigarette	1.1	1.05	1.0	0.97	1.0	0.94	0.85	1.02	0.97	0.95	1.0	1.07
CO mg/cigarette	12.1	11.5	11.0	11.75	11.3	10.3	10.6	13.4	13.7	13.4	-	11.26
Tar /nicotine	11.0	11.1	10.4	10.8	11.1	10.9	10.2	11.2	11.9	12.1	11.1	9.64

Cigarette tobacco, pipe tobacco and cigars: No smoke tests were required by the Ministry of Health, and none was reported by the companies. In particular, nicotine content per cigarette or per gram of RYO tobacco was not required or tested.

Manufactured cigarettes

Sales trends by brand groups.

The top ten brand groups accounted for 86% of total sales in 2014. (Table 6).
Manufactured cigarettes declined 1.5% in 2014, and per capita declined 3.5%.

Table 5. Volume sales by brand groups, manufactured cigarettes 2005-2014

Brand sales in millions	2014	2013	2012	2011	2010	2009	2007	2006	2005	Rank on volume sales 2014
Pall Mall	403	440	468	500	440	341	199	189	175	1
Holiday	316	353	411	407	485	578	659	668	681	2
John Player	213	186	190	198	132	46	3.5			3
Freedom	152	169	136	96	101	51	35	34	22	4
Benson & Hedges	134	137	149	165	212	247	292	317	329	5
Winfield	109	112	129	149	175	218	288	289	289	6
Horizon	84	108	128	139	160	208	269	265	276	7
Marlboro	74	76	76	86	98	106	106	103	97	8
West	72	9								9
Dunhill	71	89	89	93	104	127	121	120	117	10
Total top ten brands	1628	1723	1836	1906	1993	2087	2185	2200	2206	
Total all brands	1858.5	1895	2017	2083	2220	2305	2334	2345	2335	
Top ten as % of total	88	91	91	91	90	91	94	94	94	

Source: Table G.

Sales trends by brand variants

The most popular brand is now Pall Mall which has doubled its sales from 2007. In 2014 of the top ten brands, budget brands such as West and John Player increased sales.
In 2014 almost all brands showed a decline in sales since 2013.

Number of manufactured cigarette brands on sale

Method. Separate pack sizes are counted as separate variants, and include a small number of sales packages of 40 to 50 cigarettes. (Table G).

Results. The number of brand variants on sale was 152 in 2002, 149 in 2003, and 182 in 2004, 177 in 2005, 184 in 2006, 190 in 2007, 213 in 2009, 218 in 2010, 213 in 2011 (corrected), 224 in 2012, 195 in 2013, and in 2014, 189.

Duty-free cigarette sales.

In 2013, the excise not paid for 46 million manufactured cigarettes because of the existing concession, was matched by 34 million RYO cigarettes on which excise was not paid. In 2014, the totals were not measured due to the end of the concession during that year, resulting in near to zero concessions in future.

Cigarette tobacco

Reported sales of RYO cigarette tobacco

Method. Sales reported by the manufacturers are displayed in Table I.1.

Results. Volume sales decreased 2.3% and per adult decreased 4.3%. (Table E6)

Brand volume changes (Table 6). Port Royal remained the most popular RYO brand.

RRP and dollar sales. In 2014 RRP was \$1.27 per gram, a total value at retail of \$724 million (Table I1) assuming no price discounting.

Number of brands. Sales were reported for 78 RYO brand variants in 2014. (See end of table I1.).

Table 6. Volume sales trends, by brand of hand-rolling tobacco, 2004-2014

Brand group	2014 Sales, Tonnes	2013 Sales, Tonnes	2012 Sales, Tonnes	2011 Sales, tonnes	2010 Sales, tonnes	2009 Sales, Tonnes	2007 Sales, tonnes	2006 Sales, Tonnes	2005 Sales, Tonnes	2004 Sales, tonnes	Rank by Sales, 2014
Port Royal	144	157	174	176	251	293	305	313	310	291	1
Park Drive	116	114	139	161	202	228	237	252	259	259	2
Riverstone	71	63	52	46	34	31	20				3
Winfield	65	76	76	86	98	106	106	103	97		4
John Player Special	48	43	33	39	33	16					5
Total top 5	444	490	515	546	659	740	762	795	803	795	
Total all brands	570	550	587	631	771	825	813	836	834	837	
Top 5 as % of all	78	89	88	87	85	90	94	95	96	95	

Pipe tobacco: Reported sales

Results Sales (3.7 tonnes) of pipe tobacco were dominated by Scandinavian Tobacco Group (formerly Swedish Match). Pipe tobacco sold at an average estimated retail price of \$1.39 per gram, with a total estimated retail value at this price of \$3.0 million. 13 brand variants were sold.

Cigars: Reported sales

Results The leading importing company was Scandinavian Tobacco Group. Brand variants were multitudinous, and weight per cigar varied from cigarillos of about 0.7 grams tobacco to the largest cigars sold singly. Cigarillos dominated. Packet sizes varied. Tobacco was estimated at 10.96 tonnes imported as cigars, comprising 0.6% of total moist weight of tobacco used in overall tobacco products for sale. (Table E1, I3).

Tobacco trade: gross sales of manufactured cigarettes and cigarette tobacco

Total consumer expenditure on cigarettes and RYO tobacco.

Method. Manufacturers' reported volume sales and RRP in 2014 (Table H3).

Results Sales in 2014, based on RRP, were estimated at \$1,543 billion (Table G and H1); hand-rolled cigarette tobacco sales added \$724 million dollars (Table I.1), making a total cigarette market of \$2.267 billion (Table H.3) in 2014, assuming the recommended retail price was not discounted.

Prices, consumption and revenue from sale of cigarettes and tobacco

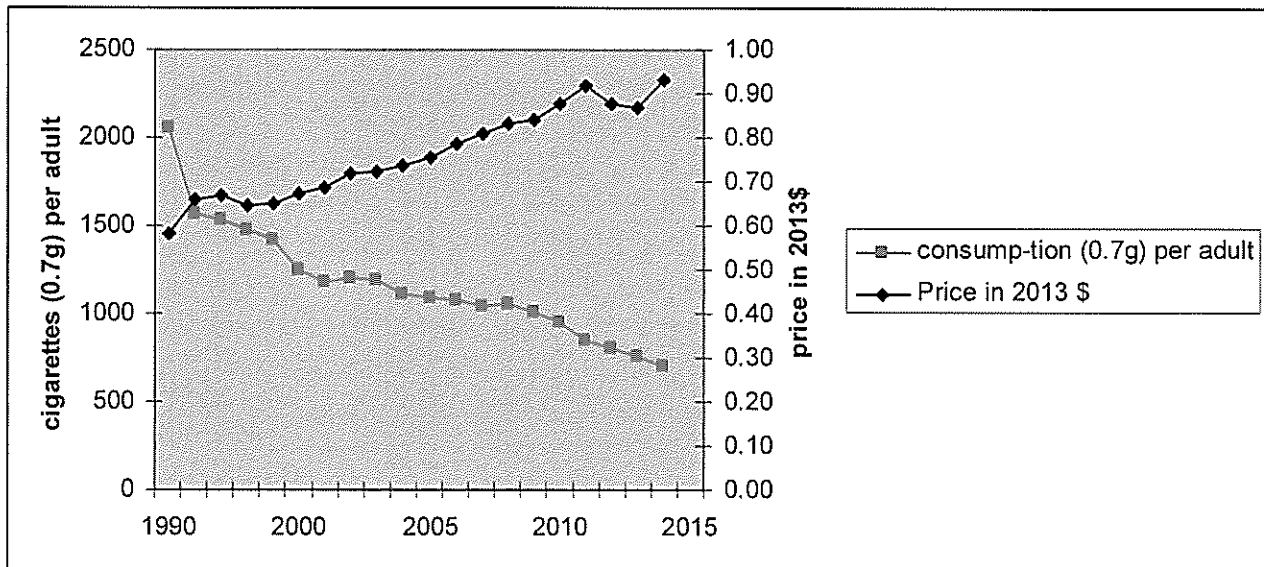
Method. In Figure 2, price is derived from Table H4 in constant 2013 dollars. Total cigarettes, manufactured and hand-rolled per adult are from Table E6.

Results. As the real price of cigarettes increased the manufacturers reported fewer cigarettes sold per adult. The real price of cigarettes was maintained by annual inflation adjustments since 1990. (Table H.5) Superimposed on this annual adjustment, in 1990, 1991, 1995, 1998, 2000 and 2010 and 2011-14 cigarette and tobacco prices were increased in real terms by legislative action.

Sensitivity of tobacco products sales to price

Trend in gross sales From 1990 to 2014, standard cigarette sales volumes per adult decreased 64% (Table E6, col. g), the adult population increased 41%, (Table B2, E6) and smoking prevalence was lower.

Fig. 2. Cigarette price and sales reported by manufacturers, 1990-2014



Source Table E6 and H5. The price increased irregularly in recent years, due to inflation adjustment.

The effect of price in driving down consumption is shown by the divergent plot lines in Fig 2.

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

Method. The tobacco excise rate (www.customs.govt.nz, and Table H.5) and firms' sales (Tables G and I) were based on recommended retail prices, in constant dollars.

Excise (1) Excise rates were annually adjusted for inflation since 1990, and raised above the level of inflation in 1991, 1995, 1998, 2000, and from 2010 through to 2015, and will be raised again in 2016.

2) With effect from 28 April 2010 excise on factory-made cigarettes was increased 10% and the RYO excise rate was also increased by this amount plus a further 14% more to increase and equalise the RYO excise rate with that of factory-made cigarettes.

Prices CPI inflation-adjusted consumer prices are given in Table 7.

Revenue Due to the gradual decline in smoking prevalence tobacco revenue tends to decrease if excise rates are not increased frequently. Revenue suffers annual fluctuations due to commercial reasons.

In 2000-2010, the real price increased annually by 2.3 percent, reflecting no excise increases between these years. In response, standard cigarette consumption decreased only 2.37 percent annually.

With strong excise rate increases in 2010-14, excise revenue increased to 1269 million dollars for 2011 declining slightly to 1251 million dollars in 2012 and increasing to 1325 million dollars in

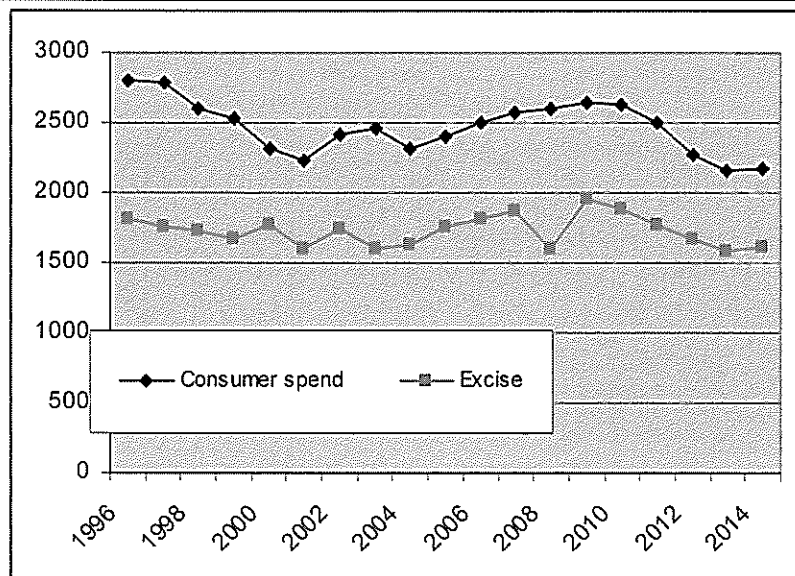
2013 (from tax outturn data www.treasury.govt.nz) and then to an estimated 1422 million dollars in 2014.

Trend in cigarettes smoked per adult, 2000-2010, versus 2010-2014 (Table 7).

Method For top plot in Fig 3, consumer spend is calculated as the product of price and volume. For price elasticity CPI indices were applied to final 2014 data in Table 5.3.

Results In 2010-14 cigarette consumption decreased at 6.3% per year, twice as rapidly as in 2000-2010 (3.4%).

Figure 3. Estimated tobacco excise revenue compared with consumer price 1996-2014 (constant 2013\$)



Method. Consumer spend is deflated by the all items consumer price index to give revenue in 2013 dollars.

Excise is derived as fraction of total spend on tobacco deflated by all items consumer price index.

Source: Table H5.

Note: The lower plot has suffered damage due to failure to plot the 2008 value correctly, due to missing data in that year.

Government share of the price. Government's share of the price from excise and GST decreased from 71 to 69 percent in 2000-2010, then increased to 74 percent in 2012 and 77 percent in 2014 in 2013 dollars. GST is levied on most goods and services, and makes up 13 percent of the final price.

Current excise and GST places New Zealand in the top group of countries in taxing tobacco.

Tobacco trade's receipts and share of the price The tobacco trade (including retailers) share of the final retail price changed (in 2013 dollars) from 19 cents a cigarette in 2000, to 27 percent in 2010, to 18 cents in 2013, to 21 cents in 2014. (Table H4, adjusted by CPI). The tobacco trade revenue also in 2014 increased from \$774 million in 2000 to \$814 million in 2010, then to \$574 million in 2014 in 2013\$. The tobacco industry and trade since 1990 through 2014 increased its dollar margin nearly every time government increased the excise per packet, successfully preserving its share of the final price at 20 cents per cigarette or more.

As Table 7 shows, consumption is down since 2010, tobacco excise is climbing, and industry revenue is falling.

Table 7. Summary of tobacco trends, 1990-2014.

From H4=2013\$		1990	2000	2005	2010	2013	2014	2013-14 %
Standard cigarettes, sales /adult p.a*	E6	2056	1253	1095	956	762	733	- 3.9
Cigarettes** (1 RYO = 1 cigarette).	B2	1960	1151	984	861	692	663	-4.2
Tobacco excise \$ per cigarette	H3	0.115	0.236	0.289	0.367	0.539	0.600	11.3
GST \$ per cigarette or per g	H3	0.02	0.04	0.06	0.07	0.114	0.121	6.1
Excise +GST as % of packet price	H3	64	71	69	70	75	77	2.7
Tobacco excise revenue \$ millions	H3	583	944	961	1099	1332	1457	9.4
RRP Price \$ /cigarette	H3	0.208	0.394	0.496	0.639	0.875	0.957	9.4
Consumer real price index, \$ /cigarette in 2013\$	H5	0.58	0.67	0.75	0.88	0.875	0.922	5.4
Consumer spend in mlns 2013\$	H5	3073	2314	2393	2630	2161	2238	3.6
Industry revenue 2013\$ per cigarette or gram of tobacco product	H5	0.22	0.19	0.23	0.27	0.18	0.21	17
Industry sales 2013\$ millions	H5	1098	774	771	814	644	574	-11
Population age 15 years plus, millions	B2	2.58	2.98	3.48	3.51	3.57	3.64	1.96

* *Standard cigarettes include RYOs as weighing 0.7 g tobacco only.*

** Cigarettes including factory made, and counting each RYO as 1 cigarette.

Discussion

Brand variants Brand variants in 2014 made up 189 brand variants of manufactured cigarettes, 75 RYO brands, 13 pipe tobacco brands and innumerable cigar brands.

Additives Lists supplied as part of the Returns show once again that sugars and fruit flavours are used in many brands. Most NZ (mainly Virginia tobacco) brands of cigarettes require little sugar as casing, as this type of tobacco contains much natural sugar which is by definition not an ingredient. Whatever the method currently used in manufacture, surviving older smokers attest that cigarettes would be more palatable to new smokers today than was the case 50 years ago.

Duty-free sales. Duty-free sales reported in past years suggest that the end to this practice in 2014 was long overdue.

Hazard monitoring

RYO testing is not required by the Smoke-free Environments Act, although RYOs account for around 30% of all cigarettes smoked.

Smoke machine nicotine and tar yields are still tested and reported, though no longer required to be printed on the packet – changed because these values were misleading to smokers – which casts doubt on the continued need for these tests.

Nicotine content is probably the best chemical measure of addictiveness of a tobacco product for smoking, Manufacturers have never disclosed nicotine content on the pack to their customers, or even to regulators, and without such information smokers can never know which cigarettes to smoke should they wish to reduced their addiction to smoking. Nor has any government required manufacturers to print nicotine content on all tobacco packages. The Smoke-free Environments Act contains the necessary powers for regulations, which would logically apply to all tobacco products.

Conclusion

Tobacco consumption continues to decrease. In 2013-4 The number of standard cigarettes sold as reported by the manufacturers with respect to their sales to the tobacco trade, decreased 3.8% per adult; and as a percentage in weight per adult counting numbers of RYOs, by 3.7% (Table E6); For the long term trend since 2010, the average decrease in tobacco consumption per adult is 23%. (Table 7).

Harm proportional to number of cigarettes and type of cigarettes smoked: tax implications. The available information shows that 0.5 g tobacco is the average normal weight for RYO smokers, and that RYO 0.5g cigarettes result in 28% extra smoke being inhaled more than from a FM cigarettes of 0.7g.

RYO sales have decreased by 30% in 2010-14, while FMs have decreased sales by 20% in this time. RYOs are popular, but produce more toxic smoke, and more toxic smoke per gram of tobacco.

RYO smokers rolling less tobacco per cigarette may increase the harm because more toxic smoke is inhaled per gram. Surveys show RYO smokers roll between 0.4 and 0.5 g tobacco per cigarette² Smoking RYOs of 0.5g per cigarette smoked has been found to increase smoke inhalation by 28 percent per cigarette compared with 0.7 g factory-made cigarettes, and carbon monoxide inhaled is no less than from factory made cigarettes containing 0.7 g tobacco.²

Hand-rolled cigarettes in 2014 accounted for 30% of all standard cigarettes smoked (as measured in dry tobacco in Table 1) and 30% of all tobacco moist weight smoked is cigarette tobacco for RYO smoking (Table E1). If we assumed that smokers use 0.5 g to roll a RYO cigarette, then 43% of cigarettes smoked in 2014 would be RYO. Smokers certainly smoke more cigarettes (albeit rolled thinner on average) than estimated by traditional assumptions of 1 g tobacco per RYO cigarette.

Reduction in smoking due to non-price factors From 2001 to 2008 sales per adult decreased 9%. This reduction was achieved without help of any tobacco tax increase, and was achieved despite the availability of relatively cheap RYO cigarettes. The new factors in this period were the Quitline, publicity and warnings about health effects, and the legislation extending smokefree protection to non-smokers.

Cigar use is static and dominated by cigarillos. Cigar use peaked in 2000 at 24 tonnes used and has since hovered at a lower level. The average tobacco per cigar is very low, under 2 g, and cigarillos predominate. (Electronic reporting on a template could assist all parties and help standardise and speed up the annual collation of results, especially for the myriad small volume brands of cigars sold.)

Electronic cigarettes. This report did not ask for information on consumption of electronic cigarettes which do not contain tobacco.

GLOSSARY

Additive	Non-tobacco content of a tobacco product. Includes menthol.
BAT	British American Tobacco, a multinational tobacco company.
Brand variant	Brand subtype differing by filter, pack size, flavour, packaging etc..
CO	Carbon monoxide, a constituent gas in all cigarette, cigar, and pipe smoke.
Content	With respect to nicotine, the amount contained in the unburnt cigarette at retail.
FM	Factory-made cigarette, manufactured, or tailor-made cigarette.
GST	Goods and services tax, increased on 1 October 2010 from 12.5% to 15%.
ISO	International Standards Organisation (defines method of testing cigarette emissions from machine smoking).
Loose tobacco	Pipe and RYO manufactured tobacco.
Nicotine	The main addictive agent in tobacco products and in their smoke.
PM	Philip Morris, a multinational cigarette company.
RRP	Recommended retail price.
RYO	Roll your own or hand-rolled fine-cut tobacco smoked as a cigarette.
Sticks	One cigarette or one cigar counts as one stick.
STG	Scandinavian Tobacco Group, replacing Swedish Match.
Tar	The solids collected on filter paper when smoke passes through a smoking machine.
Yield	Smoke constituent as measured by smoke machine (not the same as amount inhaled).

Conflict of interest. No commercial conflict of interest.

Acknowledgements This report was commissioned by the Ministry of Health, and based on data posted by the Ministry for 2014 returns by manufacturers and importers, at <http://www.health.govt.nz/our-work/preventative-health-wellness/tobacco-control/tobacco-returns/tobacco-returns-2014>

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