

**THE IMPACT OF TELEVISION ADVERTISING  
CAMPAIGNS ON CALLS TO THE  
NEW ZEALAND QUITLINE**

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## CONTENTS

Executive summary .....	3
Acknowledgements .....	5
Introduction .....	6
Methods .....	8
Results .....	12
1) Monthly call data and trends .....	12
2) The impact of specific campaigns.....	23
3) The effectiveness of specific TVCs and themes .....	26
4) The effectiveness of different approaches to TVC placement .....	36
5) The cost-effectiveness of campaigns and TVCs.....	42
Discussion.....	48
Appendix 1: Classification of IAW Campaign TVCs for thematic content.....	56
References.....	57

## EXECUTIVE SUMMARY

### Aims

1. To examine the effectiveness of different television advertising campaigns and specific advertisements in motivating smokers of different ethnic groups to call the New Zealand Quitline.
2. To estimate the cost-effectiveness of these campaigns and advertisements in terms of generating calls to the Quitline.

### Methods

Data relating to monthly calls and registrations to the Quitline were analysed for the 2002 to 2003 period. Calls to the Quitline within one hour of a television commercial (TVC) being shown were also analysed for this time period. Data on target audience rating points (TARPs) and expenditure on TVCs allowed for estimates of effectiveness and cost-effectiveness for campaigns, particular TVCs and TVC placement strategies.

### Results

Data on a total of 2319 TVC placements in four different campaigns were analysed. Monthly levels of calls to the call centre and Quitline registrations were found to be significantly associated with the level of campaign advertising on television. TVCs in the six relatively intense campaign months generated more calls to the call centre and more Quitline registrations (13 percent and 15 percent respectively). Furthermore, Māori and Pacific peoples register with the Quitline at higher rates during these relatively intense campaign months (16 percent and 11 percent respectively for new registrations).

The most effective campaign over the 2002 to 2003 period for generating calls to the Quitline (within one hour) was the *Every cigarette is doing you damage* (EC) campaign. It was 1.7 times more effective than the *It's about whānau* (IAW) campaign (95 percent confidence interval (CI) = 1.61, 1.88). The EC campaign was also over three times more effective than the two second-hand smoke campaigns (though these TVCs did not include the Quitline number). Even for Māori callers the EC campaign was 1.3 times more effective in generating calls than the IAW campaign (95 percent CI = 1.1, 1.5). However, these campaigns are not strictly comparable as the IAW campaign covered a broader range of smoking and health issues and is likely to have wider health benefits through strengthening whānau, whakapapa and other aspects of cultural identity.

The most effective single TVC was the one showing a person calling the Quitline ('call for help') at 127 calls per 100 TARPs. The other particularly effective TVCs were those that dealt with relatively novel threats to health from smoking (ie, smoking and blindness and smoking and stroke).

Specific TVCs shown in the IAW campaign were effective for both Māori callers and non-Māori callers. This may suggest particular design elements that resonate with

both populations. For Māori, the most effective of the IAW campaign TVCs were of similar effectiveness to the most effective EC campaign TVCs. This would suggest that the most effective of the IAW campaign TVCs should continue to be utilised in campaigns which aim to reach a Māori audience (eg, scheduled more with the new Māori Television channel or placed around programmes popular with Māori).

The analysis identified a number of issues that appeared to be associated with increased effectiveness of call generation (per 100 TARPs) over this two-year period:

- use of the most effective TVCs (eg, 'call for help')
- use of particular channels (eg, 'TV1' and 'Prime')
- placement of TVCs within particular types of programmes (eg, those with a special interest for a Māori audience)
- TVC placement at the start of the week and on particular days (eg, Tuesday)
- TVC placement during the day-time (particularly around late morning and lunch time).

The cost of attracting a call to the Quitline's call centre through TVC expenditure was estimated to be in the range of \$15 to \$23. For attracting a caller to register with the Quitline, the cost was estimated to be in the range of \$35 to \$56. From a public health perspective these amounts would appear to be very good value given the evidence for Quitline effectiveness in increasing smoking cessation rates and the overall cost-effectiveness of smoking cessation as a means of achieving health gain.

In terms of cost-effectiveness, the EC campaign was the best value-for-money in generating calls to the Quitline. However, the need to maximise campaign cost-effectiveness needs to be balanced with other factors such as maximising reach to priority audiences (eg, Māori and low-income New Zealanders), reaching special groups (eg, pregnant women), achieving high campaign intensity, and managing the work load of the Quitline staff (to prevent over-loading).

The findings of this study have allowed specific recommendations to be made on possible future research activities and for how the Quit Group can further maximise the effectiveness and cost-effectiveness of its campaigns.

## Conclusions

Calls to the Quitline's call centre and registrations are significantly greater when television campaign advertising levels are higher. Relatively intense campaign months also increase calls by Māori and Pacific peoples. The two campaigns that included the Quitline number (*Every cigarette is doing you damage* and *It's about whānau*) were far more effective in generating calls to the Quitline than the two that did not (the second-hand smoke campaigns). Call data within one-hour of a TVC placement provides useful information on the effectiveness of campaigns, individual TVCs and TVC placement. The relatively low cost of attracting a caller to register with the Quitline suggests that the use of TVCs as part of tobacco control mass media campaigns is a very sound public health investment.

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**Competing interests**

The author has no competing interests to declare.

## INTRODUCTION

Quitlines are becoming increasingly popular for delivering smoking cessation services. Countries with them now include Australia, Canada, Denmark, France, Germany, Iceland, Ireland, Italy, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, the United States (over 30 states), and the United Kingdom. A recent review has reported that the beneficial impact of quitlines has been supported by three meta-analyses and by multiple individual studies (Ossip-Klein and McKintosh 2003). One of these meta-analyses (a Cochrane systematic review) included 23 randomised controlled trials of telephone counselling for smoking cessation (Stead and Lancaster 2001).

There is also good scientific evidence that mass media campaigns can assist with tobacco control (Hopkins et al 2001) though only a small proportion of campaigns to date have involved a link with a quitline number. Most campaigns have also not been evaluated in terms of effectiveness for specific ethnic groups. Nevertheless, there is evidence from California that a tobacco control campaign was effective in reaching different ethnic groups (Elder et al 1996) and generating Quitline callers from these groups (Zhu et al 2000). Mass media campaigns in Florida have also been effective amongst adolescents of different ethnic groups (including whites, blacks and Hispanics) (CDC 1999; Florida DOH). In the United Kingdom, a mass media campaign was found to generate calls to the Quitline from callers with diverse socioeconomic backgrounds (Owen 2000). In Massachusetts, 15 percent of Quitline callers have been found to be from non-white ethnic groups (mainly Black and Hispanic) (Prout et al 2002).

In New Zealand there have historically been few mass media campaigns that have had any ethnic-specific focus. One campaign that had a smoking and pregnancy theme was found to have produced some favourable attitudinal shift towards quitting among pregnant Māori women (Watene et al 1999). However, this campaign was of such low intensity that most of the women were not even aware of it.

In other areas of health, a multi-media campaign was found to have had a beneficial impact on reducing burn injuries among Māori children (Skinner et al 2004). Some road safety mass media campaigns have clearly had Māori as a priority audience in select TVCs but there is no published data on the effectiveness of this campaign on Māori road crash mortality. Data from an experimental setting in New Zealand indicates that audio-visual material is perceived differently by different ethnic groups (Fleming et al 1995).

New Zealand's national Quitline has proved popular with the public as suggested by the large number of calls (eg, with around 9000 per month being reported at one point (Grigg and Glasgow 2003)). The service has attracted calls through mass media advertising (particularly television) but also through the provision of subsidised nicotine replacement therapy (NRT). Call rates to this Quitline are also sensitive to media publicity on smoking and health risks (Wilson et al 2002a) and to international events (Wilson et al 2002b).

The Quitline attempts to reach all smoking adults but with a focus on the 25 to 44 year age group. A particular focus is also to support smoking cessation by Māori.

Reducing smoking prevalence among Māori provides major potential for health gain, enhancing Māori economic and social development, and reducing health inequalities within New Zealand society (Wilson 2003a).

One particular campaign to promote the smokefree message and to encourage use of the Quitline by Māori has been the IAW campaign. Survey data indicates that this campaign is viewed favourably by a Māori audience (Waa and Grigg 2003; Barnes and McPherson 2003).

This study was undertaken to further explore the impact of the various campaigns used by the Quit Group, including the IAW campaign. Such work is particularly timely given that new communication options are emerging – such as the recent launch of a dedicated Māori television channel and an expanding number of cable and satellite TV channels in New Zealand. It is also needed to help design new types of TVCs and campaigns for when the existing ones become less effective over time.

## METHODS

### Study period selection

The years 2002 and 2003 were the focus of this analysis since this allowed for comparison of both the EC and IAW campaigns after the latter had got past the initial launch period (it was launched in August 2001). Also the data for the preceding years was considered to be of less value for studying specific campaigns since calls to the Quitline in 2000 and 2001 were thought to be heavily influenced by callers wishing to gain access heavily subsidised nicotine replacement therapy (which became available in November 2000).

### The campaigns

The campaigns run during the study period are briefly described in the table below.

**Table 1: General descriptions of the tobacco control media campaigns occurring in 2002 & 2003**

Name of campaign	Themes and background	Time period
<i>Every cigarette is doing you damage</i>	Themes are of a 'threat appeal' nature concerning relatively unknown (eg, blindness, stroke) and better known (eg, cancer) adverse health consequences of smoking. These themes are combined with the promotion of quitting (Quitline number). The text of some of the TVCs is detailed on the Quit Group's website (TQG 2004). All these TVCs are based on those used in the Australian National Tobacco Campaign (Wakefield et al 2003) with different levels of adaptation to the New Zealand setting. Some of these TVCs include Māori-specific content (eg, a Māori women in the 'tumour' TVC, the use of Te reo Māori in the 'tumour' and 'call for help' TVCs, and the image of a Māori and a Pacific Quit Advisor answering the phone). None of these (or any other) TVCs mention that the Quitline can provide access to heavily subsidised NRT. This campaign also used radio and print media prior to 2002. Not all TVCs were shown in the 2002 to 2003 study period (ie, not the 'aorta' and 'lung' TVCs). These TVCs were run in six months in 2002 and in seven months in 2003 (see Table 1.1).	These TVCs were shown during a pilot phase from September 1998 to March 1999, then they were rolled out region by region until all the country had some exposure by January 2000.
<i>It's about whānau</i>	These TVCs involve personal testimonials with themes that include the promotion of quitting and being smokefree for health, protecting whānau, and being smokefree to reaffirm whakapapa and strengthen cultural identity. All the TVCs show the Quitline number. Two TVCs actually included themes on being smokefree when hapū (although this is not a stated theme of this campaign). As well as TVCs, this campaign includes magazine and radio advertising, supported by public relations activities.	The campaign was launched in August 2001 (Gregory 2001). These TVCs were run in five months in 2002 and in eight months in 2003 (see Table 1.1).

Name of campaign	Themes and background	Time period
<i>World Smokefree Day (2003)</i>	The major theme concerned second-hand smoke (SHS) and included smoking and infants, smoking in bars and smokefree sport.	May 2003 only.
<i>Let's clear the air</i>	The major theme concerned SHS and included smoking and infants (including asthma and glue ear), and smoking in bars (including links between SHS and stroke and heart attacks).	These TVCs were run in six months of 2003 (Table 1.1).

### ***Exposure data***

The Quit Group routinely obtains data from the company (Graham Strategic) that is used for placing the TVCs. This data covers the timing of each TVC shown and the name of the television programme it is shown in association with. The target audience rating points (TARPs) for each TVC is also collected. TARPs are the conventional units for buying media time on television and they represent the potential weight of advertising exposure to a designated target audience. For example, three TVCs that individually reached 10 percent of the target audience would be equal to 30 TARPs, as would 10 TVCs that individually reached 3 percent of the target audience.

The original TARPs value assigned to a TVC placement was also subsequently adjusted to take account of the actual ratings when the TVCs went to air. This data was assembled into a database (along with the other variables detailed below), which covered the two-year period.

The analyses generally excluded the TVCs that were just shown on regional television (EC campaign in February and March 2002). When these TVCs were included in the analysis (eg, in the graphs and Tables 1.1, 1.2, 5.1, 5.2, 5.3) the TARPs values were adjusted downwards to equate to those at the national level. This was done by assuming the same calls per TARPs for the EC TVCs shown in September/October 2002 (a period when no IAW campaign TVCs were aired).

### ***Expenditure data***

The Quit Group also obtains the data on the cost of placing each particular TVC (including for those TVC placements which were provided by the channel for no charge). Given the relatively small role thought to be played by radio advertising (generating around 2 percent of calls) and other Quitline promotional activities (relative to TVCs) (TQG 2003), the cost of these other forms of promotion were not included in the analysis.

### ***Response data***

The Quit Group routinely collects data on the number of calls to the Quitline within 30 minutes and one hour of each TVC being shown. The Quitline 'opening' hours were modified slightly in November 2003 but the call centre was able to receive calls at

any hour throughout the study period (ie, it is available on a 24-hour basis). The call centre collects data on the ethnicity of callers (Māori or non-Māori).

On a monthly basis, data is collected on calls to the call centre and new registrations to the Quitline (by ethnicity and by relapse status, among other variables). This data was assembled into a monthly database covering the two-year period and analysed separately from the one-hour call data.

This study focused only on the end points of generating calls to the Quitline (one-hour call data – as used elsewhere [Carroll and Rock 2003]) and generating monthly calls and registrations with the Quitline. It did not attempt to determine the actual quit rate associated with particular TVCs or campaigns – given the complexities involved (eg, the variable time delays associated with setting a quit date, the making of repeat quitting attempts and differing ‘doses’ over time of the provision of Quit Adviser call-backs). Furthermore, there is now good evidence from the international literature (see the introduction) and some New Zealand work (by BRC [BRC 2001] and a yet-to-be published evaluation report by BRC) that those who use a quitline have enhanced quit rates.

### ***Classification of TV programmes and times***

A simple classification system was used that covered: ‘news and current affairs’, documentaries, sports, ‘special interest to Māori’ and ‘other’ (ie, movies, dramas, comedy and other light entertainment). The special interest to Māori category covered all programmes that contained te reo Māori words in the programme title or the name of a prominent Māori personality (eg, the comedian Mike King), or a documentary specifically about Māori (eg, ‘Māori in New York’). In fact most of these programmes were either ‘Te Karere’ or ‘Mai Time’. The ‘sports’ category included both regular sports programmes and major one-off sporting events.

### ***Classification of TVC themes***

Prior to the analysis of the call data, the IAW campaign TVCs were classified by the author according to various themes using a four-point scale (0 – nil, 1 – some, 2 – moderate, 3 – high). This assessment considered the severity of the health conditions mentioned and gave attention to differing components of Māori-specific content (Māori subjects, use of te reo Māori, use of cultural symbols and discussion of cultural identification). The Appendix has further details on the results of the scoring.

### ***Denominator populations***

The priority age group that the TVCs were primarily designed to reach was aged from 25 to 44 years (inclusive). The estimated populations were obtained from the Statistics New Zealand website for 2003 and were: Māori – 170,280; Pacific peoples – 76,380; and other (mainly Pakeha/ European) – 913,390.

***Attribution of impact to the TVCs***

The source of information about the Quitline stated by those registered with the Quitline was used in the cost-effectiveness calculations (to attribute proportions of the calls to expenditure on the TVCs). The minimum level was 41 percent since this is the proportion of those registered with the Quitline who explicitly state 'television advertising' as the source of information about the Quitline (TQG 2003). The maximum level was estimated to be 65 percent. This is based on 50 percent of the attribution to 'health worker' (14 percent x 50 percent) or 'friends and family' (23 percent x 50 percent) since TVCs are likely to have been a common source of information for these people, and all other sources minus the following specified sources: information from 'cigarette packet' (7 percent), 'radio' (2 percent), 'newspaper' (1 percent) and other specified source (7 percent). No attribution was made for other potential call generating publicity (eg, media stories on smoking and health and public health unit activities). Given these assumptions and uncertainties over the value of self-reported 'source of information' for the Quitline, this part of the analysis must be regarded as providing indicative rather than precise results.

***Statistical analyses***

The monthly data and one-hour call data for 2002 and 2003 were collated into separate databases in Microsoft Excel. Analyses were conducted using EpilInfo 2000 software (CDC 2001).

## RESULTS

### 1) Monthly call data and trends

Data on a total of 2319 TVC placements in four different campaigns were analysed (Table 1.1). Monthly calls to the call centre were associated with the monthly number of TARPs of TVCs for the EC and IAW campaigns combined (ie, linear regression results gave a coefficient of determination  $r^2 = 0.17$ ,  $p = 0.047$ ). This was also the case for new calls to the Quitline and total registrations with the Quitline ( $r^2 = 0.15$ ,  $p = 0.06$  and  $r^2 = 0.18$ ,  $p = 0.04$  respectively). Also, when viewed graphically, it appears that when the level of advertising declines or rises, so does the number of monthly registrations with the Quitline – for all registrations, for Māori and for Pacific peoples (Figures 1-3).

The relatively intense six campaign months (ie, those with over 480 TARPs/month) were compared with the other 18 months. From this it was apparent that significantly more calls were generated to the call centre and in terms of Quitline registrations in the relatively intense campaign months (Table 1.2). This was also the case for Māori and Pacific peoples registering with the Quitline (both for the first time registrations and for all registrations).

The monthly distribution of TVCs in Table 1.1 also shows that TVCs are generally not run during the time that television advertising is most expensive (the months just prior to Christmas). This is also so for the period immediately after Christmas and into January, since prior experience has suggested that smokers are much less likely to call the Quitline during this time.

There were a total of 7379 calls within one hour of a TVC being aired. But there was some evidence for a reduction over time in the number of these calls relative to the number of Quitline registrations (Table 1.3). This may suggest that an increasing proportion of callers are not calling immediately but rather at a later time (eg, when it is more convenient to call or possibly when the callers expect the Quitline to be operating).

#### ***Relapsed callers***

The proportion of callers who were re-registering with the Quitline after a relapse in their smoking status was 20 percent (Table 1.4). But the proportion of such callers among Māori and Pacific peoples was significantly less (at 16 percent and 9 percent respectively). The proportion in the 'relapse' category increased significantly with every additional six-month period (Table 1.5 and Figure 4). The actual numbers in the 'relapse' category was far more stable over time relative to the 'new callers' category (Figure 4).

Figure 1: Registrations with the Quitline and advertising campaign intensity

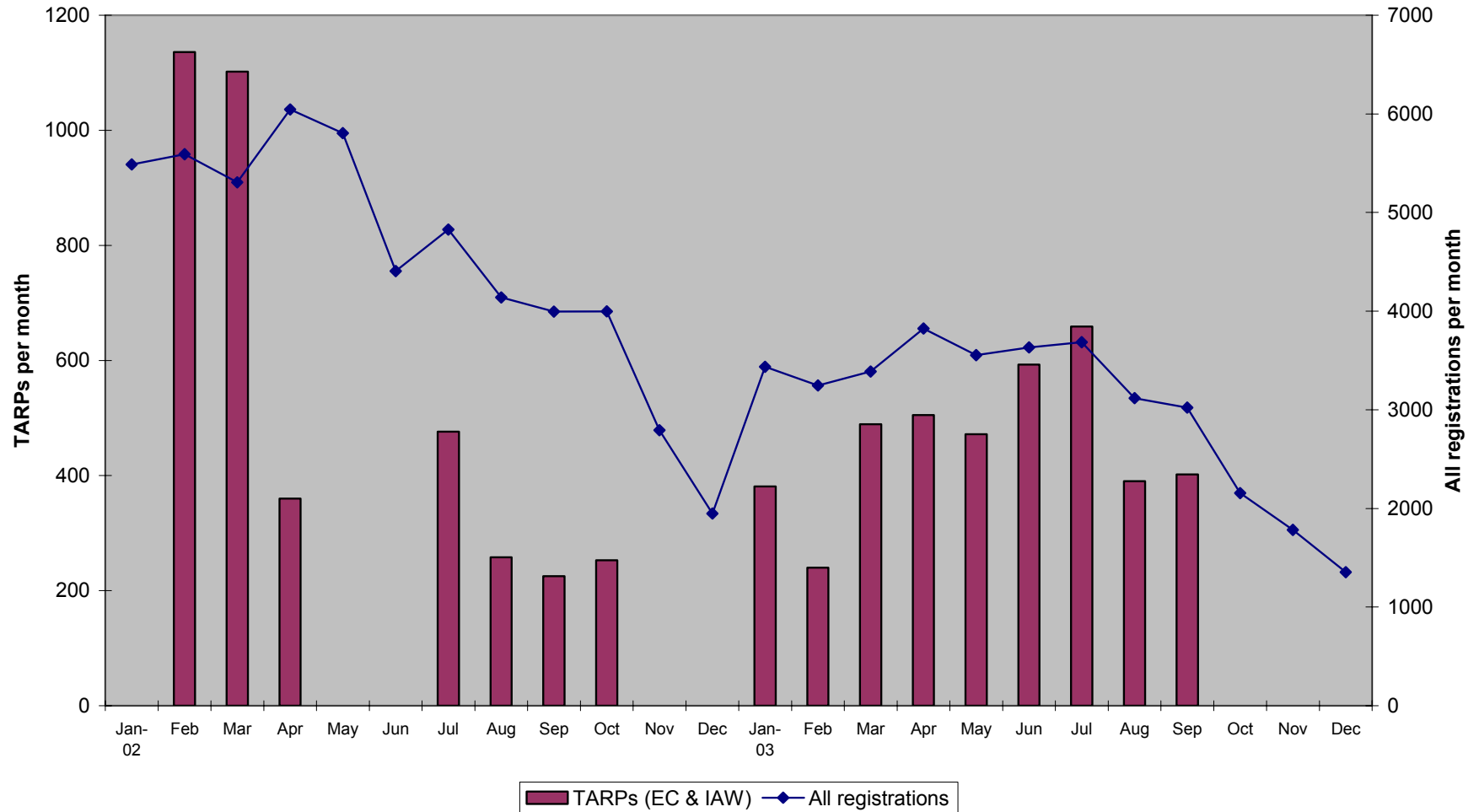


Figure 2: Maori registrations with the Quitline and advertising campaign intensity

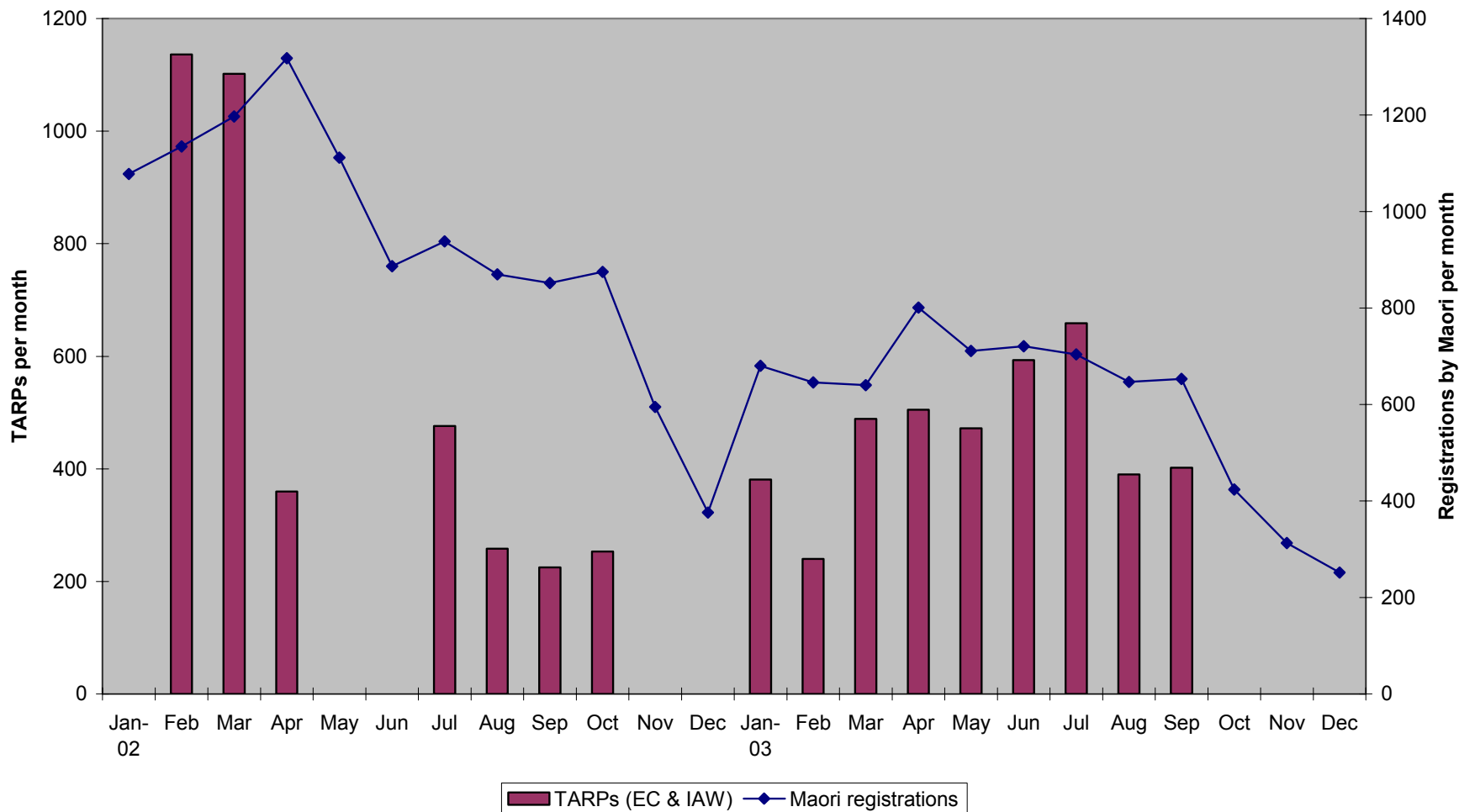
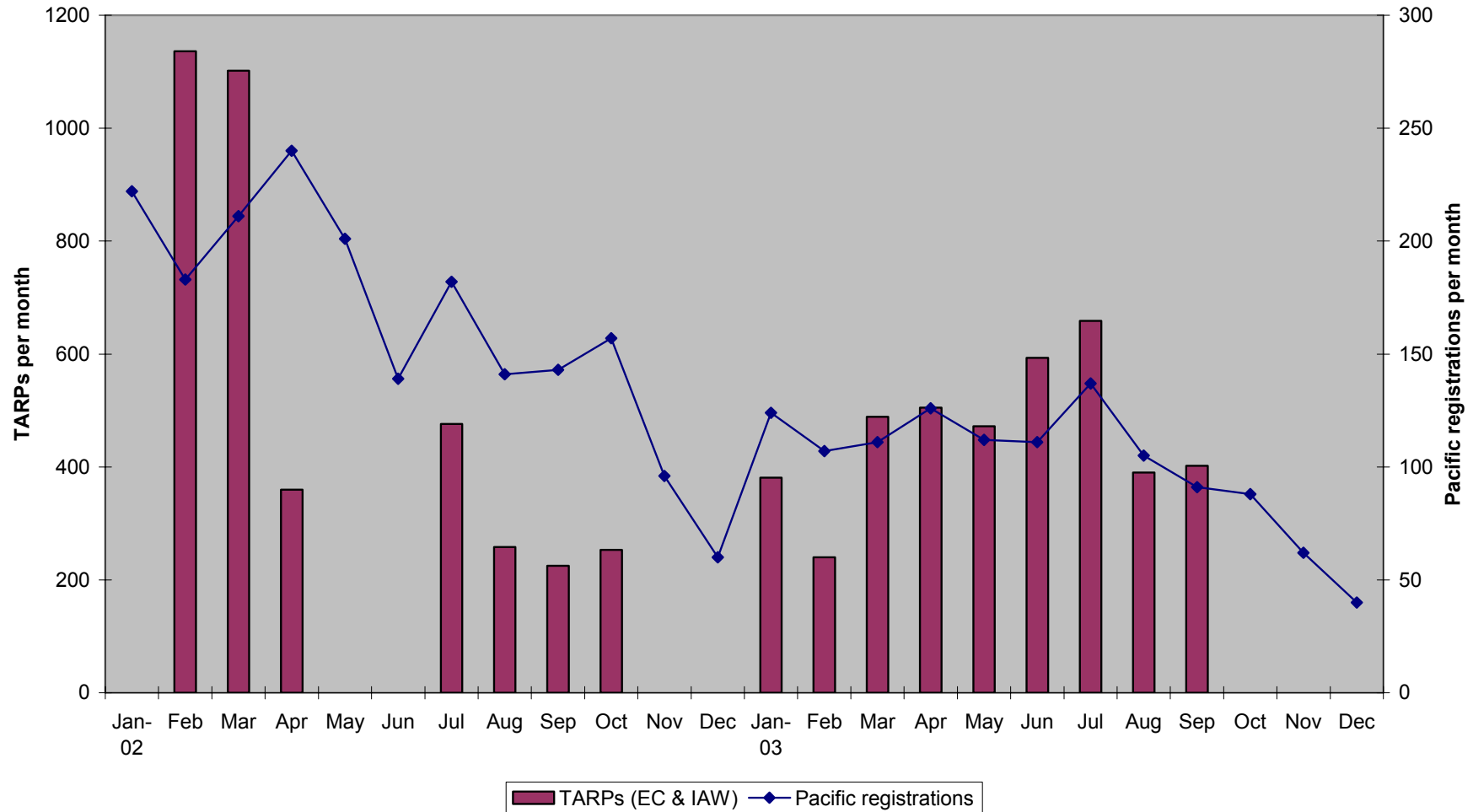
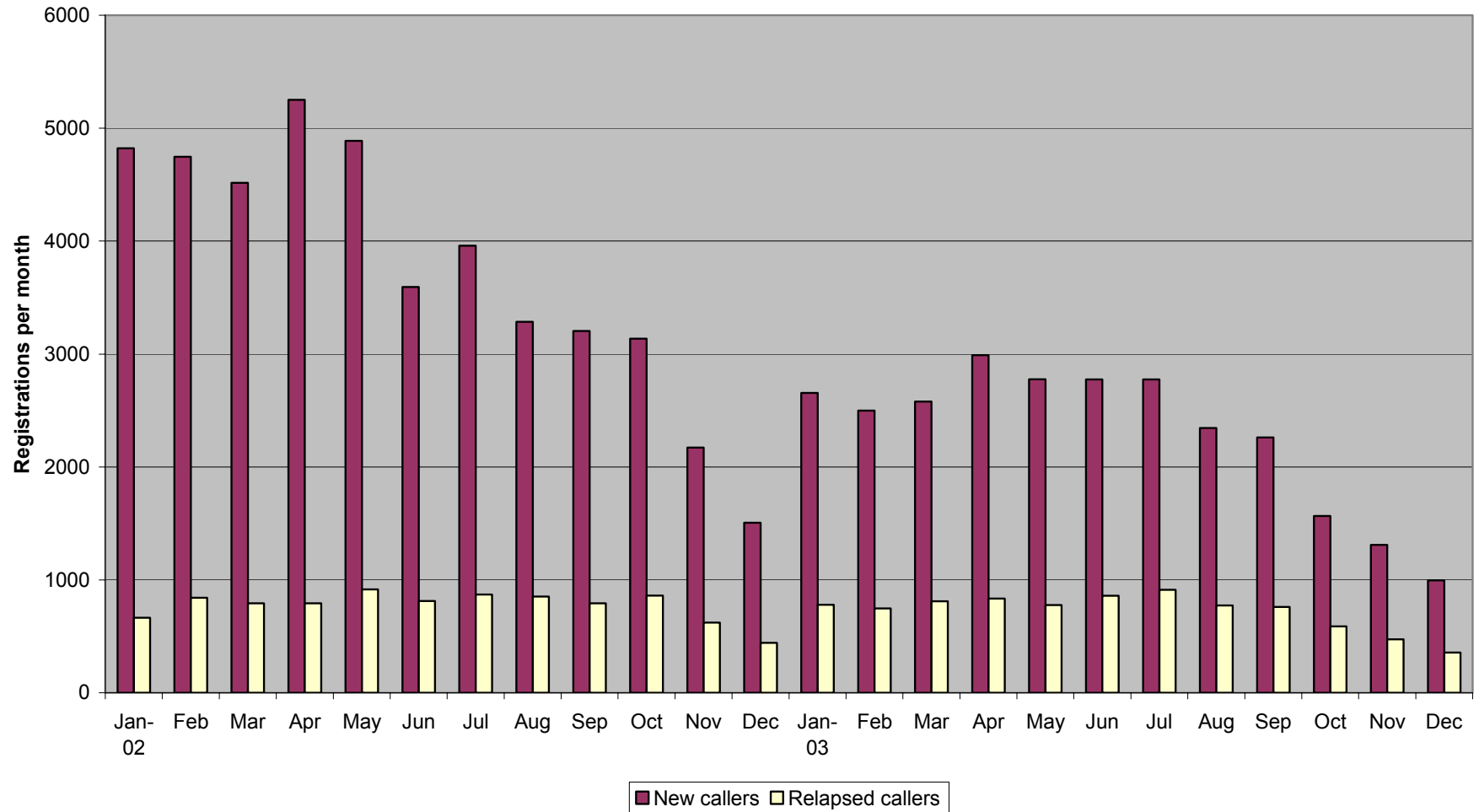


Figure 3: Pacific peoples registrations with the Quitline and advertising campaign intensity



**Figure 4: New callers and relapsed callers registering with the Quitline**

**Table 1.1: Distribution of the number of TVC placements by campaign over time (for 2002 & 2003)**

Year/Month	Campaign				Total
	EC*	LCTA*	WSD*	IAW*	
2002-01	0	0	0	0	0
2002-02	267**	0	0	40	307
2002-03	364**	0	0	6	370
2002-04	0	0	0	52	52
2002-05	0	0	0	0	0
2002-06	0	0	0	0	0
2002-07	47	0	0	11	58
2002-08	14	0	0	23	37
2002-09	33	0	0	0	33
2002-10	44	0	0	0	44
2002-11	0	0	0	0	0
2002-12	0	0	0	0	0
2003-01	13	0	0	31	44
2003-02	53	69	0	1	123
2003-03	52	77	0	36	165
2003-04	58	0	0	30	88
2003-05	20	0	153	69	242
2003-06	16	0	0	79	95
2003-07	49	0	0	55	104
2003-08	0	112	0	64	176
2003-09	0	120	0	72	192
2003-10	0	181	0	0	181
2003-11	0	8	0	0	8
2003-12	0	0	0	0	0
<b>Total</b>	<b>1030</b>	<b>567</b>	<b>153</b>	<b>569</b>	<b>2319</b>

\* EC = *Every cigarette is doing you damage*; LCTA = *Let's clear the air*; WSD = *World Smokefree Day*; IAW = *It's about whānau*.

\*\* These EC campaign TVCs were shown regionally and not nationally (and have only been included in select parts of the subsequent analyses).



**Table 1.2: Comparison of the six relatively intense campaign months (ie, those with the highest TARPs per month for the EC & IAW campaigns combined) with other months for calls and registrations with the Quitline**

<b>Calls and registrations with the Quitline</b>	<b>Mean calls per month for the top TARPs months (n = 6 months)</b>	<b>Mean calls per month for the other months (n = 18)</b>	<b>% difference in mean calls per month**</b>
<b><i>All callers</i></b>			
Calls to the call centre	10,042	8,693	13.4%
New registrations*	3,397	2,901	14.6%
Total registrations	4,238	3,617	14.7%
<b><i>Specific populations</i></b>			
New registrations* for Māori	731	617	15.7%
Total registrations for Māori	866	735	15.2%
New registrations* for Pacific peoples	132	117	11.1%
Total registrations for Pacific peoples	147	128	12.4%

\* New registrations exclude those callers who are re-registering with the Quitline after a relapse in their smoking status.

\*\* None of these differences were statistically significant.

**Table 1.3: Time trends in the number of calls within one hour of a TVC being shown relative to the total number of callers registered with the Quitline\***

Quartile	Calls within one hour	Total registrations with the Quitline	Percentage of calls within 1 hour	Rate ratio (RR)* (95% CI)
2002 – first 6 months	2,600	16,941	15.4%	1.00 (Reference)
2002 – second 6 months	1,175	16,958	6.9%	<b>0.45 (0.42, 0.49)</b>
2003 – first 6 months	2,480	21,083	11.8%	<b>0.77 (0.72, 0.81)</b>
2003 – second 6 months	1124	9,826	11.4%	<b>0.75 (0.69, 0.80)</b>

\* RR = rate ratio (for the rate of calls to total registrations). Statistically significant results are shown in bold.

**Table 1.4: The proportion of registered callers who are re-registering with the Quitline after a relapse in their smoking status**

<b>Population</b>	<b>Number of relapsed callers</b>	<b>Number of registrations</b>	<b>Percentage of callers who have relapsed</b>	<b>RR (95% CI)</b>
All	17,934	90,539	19.8	-
Māori	2,939	18,425	16.0	<b>0.70 (0.67, 0.73)</b>
Pacific	282	3,189	8.8	<b>0.36 (0.32, 0.41)</b>
Other	14,713	68,925	21.3	1.00 (Reference)

**Table 1.5: Time trends in the proportion of callers who are re-registering with the Quitline after a relapse in their smoking status**

<b>Quartile</b>	<b>Number of relapsed callers</b>	<b>Number of registrations</b>	<b>Percent</b>	<b>RR (95% CI)</b>
2002- first 6 months	4,823	32,640	14.8	1.00 (Reference)
2002- second 6 months	4,440	21,700	20.5	<b>1.48 (1.42, 1.55)</b>
2003- first 6 months	4,808	21,083	22.8	<b>1.70 (1.63, 1.78)</b>
2003- second 6 months	3,863	15,116	25.6	<b>1.98 (1.89, 2.08)</b>
p-value for linear trend <0.00001				

## **2) The impact of specific campaigns on Quitline calls within one hour of airing**

### ***Overall call response***

There were 7379 calls made to the Quitline within one hour of a TVC being aired over this two-year period. Of this total 60.3 percent were made in the first 30 minutes. The proportion of callers on whom ethnicity data was collected was 82.7 percent, of whom 20.6 percent were Māori and 79.4 percent were non-Māori. But when considering just the EC and IAW campaigns broadcast at the national level, ethnicity data was available on 91.5 percent of callers.

### ***Campaign effectiveness***

The most effective campaign over the 2002 to 2003 period in term of generating calls to the Quitline was the EC campaign (Table 2.1). In terms of calls per 100 TARPs at the national level it was 1.7 times more effective than the IAW campaign and over three times more effective than the most effective SHS related campaign (with all these results being statistically significant). The EC campaign was also 1.3 times more effective in generating calls from Māori callers than the IAW campaign (Table 2.1). This was particularly so for non-Māori callers (at 2.1 times).

When considering the two campaigns relating to SHS, the *World Smokefree Day* (WSD) campaign was significantly more effective in generating calls than the *Let's clear the air* (LCTA) (Table 2.1). This was the case for both Māori and non-Māori callers. It is important to note however, that the purpose of these campaigns was not to promote calls to the Quitline but rather to inform smokers and non-smokers of the hazard of SHS (ie, the TVCs did not include the 0800 telephone number).

### ***Time trends in effectiveness***

When considering six-month periods during 2002 and 2003, it is apparent that the effectiveness of call generation significantly declined for the three campaigns (EC, IAW, LCTA) that spanned more than one six-month period (Table 2.2). The decline for the LCTA campaign was particularly marked at 65 percent reduction. Nevertheless, it is important to note that these declines may not necessarily reflect any reduction in 'effectiveness' per se but possibly changes in the extent to which smokers telephone within the first hour after seeing the TVC as opposed to a latter time (see Table 1.5).

**Table 2.1: Impact of various campaigns for generating calls from all callers, Māori and non-Māori callers (for calls to the Quitline within one hour of showing a TVC)**

<b>Campaign / Population of callers</b>	<b>Total TVC placements</b>	<b>Total calls within 1 hour</b>	<b>Average calls per TVC</b>	<b>Total TARPs</b>	<b>Calls per 100 TARPs*</b>	<b>RR (95% CI)</b>
<b>All callers</b>						
<i>Every cigarette is doing you damage</i>	399	2487	6.2	2393	104	<b>1.74 (1.61, 1.88)</b>
<i>It's about whānau</i>	569	2225	3.9	3732	60	Reference
<b>Māori callers</b>						
<i>Every cigarette is doing you damage</i>	372	383	1.0	2264	17	<b>1.26 (1.08, 1.46)</b>
<i>It's about whānau</i>	483	439	0.9	3266	13	Reference
<b>Non-Māori callers</b>						
<i>Every cigarette is doing you damage</i>	372	2024	5.4	2270	89	<b>2.07 (1.90, 2.26)</b>
<i>It's about whānau</i>	505	1464	2.9	3396	43	Reference
<b>Campaigns on SHS that did not use the Quitline number</b>						
<b>All callers</b>						
<i>World Smokefree Day</i>	153	206	1.3	640	32	<b>1.74 (1.44, 2.11)</b>
<i>Let's clear the air</i>	567	470	0.8	2546	18	Reference
<b>Māori callers</b>						
<i>World Smokefree Day</i>	134	35	0.3	532	7	<b>1.79 (1.17, 2.73)</b>
<i>Let's clear the air</i>	493	82	0.2	2228	4	Reference
<b>Non-Māori callers</b>						
<i>World Smokefree Day</i>	134	142	1.1	532	27	<b>2.02 (1.61, 2.54)</b>
<i>Let's clear the air</i>	493	294	0.6	2228	13	Reference

\* For all TARPs – ie, not adjusted by any estimated attribution to particular ethnic groups.

**Table 2.2: Trends in campaign effectiveness over time (by six month intervals)**

Six month period	TVCs (no.)	Calls (no.)	TARPS (total)	Calls/100 TARPS	RR	p-value for linear trend
<b><i>Every cigarette is doing you damage</i></b>						
2002-1st*	0	0	0	-		
2002-2nd	138	1024	951	108	Reference	
2003-1st	212	1213	1149	106	0.98 (0.87, 1.11)	p = 0.05
2003-2nd	49	250	293	85	<b>0.79 (0.65, 0.96)</b>	
<b><i>It's about whānau</i></b>						
2002-1st	98	609	782	78	Reference	
2002-2nd	34	151	261	58	<b>0.74 (0.59, 0.94)</b>	p<0.00001
2003-1st	246	833	1531	54	<b>0.70 (0.61, 0.80)</b>	
2003-2nd	191	632	1158	55	<b>0.70 (0.61, 0.82)</b>	
<b><i>Let's clear the air</i></b>						
2002	0	0	0	-	-	
2003-1st	146	228	635	36	Reference	
2003-2nd	421	242	1911	13	<b>0.35 (0.29, 0.43)</b>	

\* Only TVCs shown nationally were included in this analysis (although EC campaign TVCs were shown in early 2002, they were only shown on regional television).

### **3) The effectiveness of specific TVCs and themes in generating Quitline calls within one hour of airing**

The most effective single TVC in terms of generating calls per 100 TARPs was the one showing a person calling the Quitline ('call for help' in Table 3.1). This was followed by the TVC on smoking and blindness ('eye') and then the one on smoking and stroke ('brain').

#### **EC campaign TVCs**

The 'call for help' TVC was 1.6 times more effective than the least effective TVC in this campaign ('tumour') (Table 3.1). Comparisons with TVCs showing a 'clogged aorta' or 'rotting lungs' were not possible as these TVCs have not been shown during the study period. For Māori callers the 'call for help' TVC was also the most effective and the 'brain' was the least so (Table 3.2). Even though the 'tumour' TVC contained a Māori woman as the main person, it was less effective than the 'eye' TVC.

#### **IAW campaign TVCs**

The most effective of these TVCs for all callers were the two montages and the TVCs 'Tu & Wai' and 'Meri' (Table 3.1). For Māori callers, the four most effective TVCs were the same (except for 'Michael' replacing 'Meri') (Table 3.2). The span in effectiveness was such that the most effective TVC generated 2.4 times more calls from Māori callers than the least effective one. Also for Māori callers the effectiveness of the top five IAW TVCs was similar to the effectiveness of the top two EC campaign TVCs (ie, around 20 calls per 100 TARPs).

The most effective TVCs for non-Māori callers overlapped with the most effective for Māori (ie, with four TVCs in common out of the top six) (Table 3.3). The span in effectiveness was significant with the most effective TVC generating 2.1 times more calls than the least effective one.

#### **LCTA campaign TVCs**

The most effective of these TVCs for all callers was the 'baby' TVC (relative to the modified versions mentioning 'asthma' and 'glue ear') (Table 3.1). In terms of the TVCs relating to smoking in bars, the TVC on smoking and stroke was by far the most effective.

For Māori callers, the 'baby' TVC was also far more effective than the 'asthma' and 'glue ear' TVCs (Table 3.2). Also the TVC on smoking and the risk of stroke was the most effective of the TVCs relating to smoking in bars.

### **WSD campaign TVCs**

The most effective of these TVCs was the one on smokefree sport. This was so for both Māori and non-Māori callers – but only at a statistically significant level for the latter (Tables 3.2 and 3.3).

### **TVC content**

The thematic analysis performed on the various TVCs in the IAW campaign did not reveal any statistically significant differences between the most effective TVCs and the others (for either Māori callers or all callers – Table 3.4). The gender of the main person in the IAW campaign TVCs seemed to make no difference to TVC effectiveness (for all callers and for Māori callers) (Table 3.5).

**Table 3.1: Impact of specific TVCs on Quitline calls for all callers (for calls to the Quitline within one hour of showing a TVC)**

Campaign and specific TVCs	Total TVC placements	Total TARPs	Total calls within 1 hour	Average calls per TVC	Calls per 100 TARPs	RR (95% CI)
<b><i>Every cigarette is doing you damage</i></b>						
Call for help	189	1038	1320	7.0	127	<b>1.64 (1.39, 1.94)</b>
Eye	47	309	299	6.4	97	1.25 (1.00, 1.55)
Brain (stroke)	102	606	527	5.2	87	1.12 (0.93, 1.35)
Tumour	61	440	341	5.6	78	Reference
<b><i>Its about whānau</i></b>						
Montage 2*	22	93	75	3.4	81	<b>1.66 (1.14, 2.41)</b>
Tu & Wai	40	245	168	4.2	69	<b>1.41 (1.07, 1.87)</b>
Meri	45	323	220	4.9	68	<b>1.40 (1.08, 1.82)</b>
Montage 3**	42	254	165	3.9	65	<b>1.34 (1.01, 1.77)</b>
Ronald	62	406	262	4.2	65	<b>1.33 (1.04, 1.71)</b>
Michael	42	252	158	3.8	62	1.29 (0.97, 1.71)
Rhonda	68	394	232	3.4	59	1.21 (0.94, 1.57)
Vaughan	24	172	101	4.2	59	1.21 (0.88, 1.67)
Melanie	36	270	155	4.3	57	1.18 (0.89, 1.57)
Gordon	42	306	172	4.1	56	1.16 (0.88, 1.52)
Tina	46	334	185	4.0	55	1.14 (0.87, 1.49)
Pauline	20	143	70	3.5	49	1.01 (0.71, 1.44)
Hereana	37	204	99	2.7	49	1.00 (0.73, 1.37)
Pita	43	336	163	3.8	49	1.00 (Reference)

Campaign and specific TVCs	Total TVC placements	Total TARPs	Total calls within 1 hour	Average calls per TVC	Calls per 100 TARPs	RR (95% CI)
<b><i>Let's clear the air</i></b>						
Baby	28	76	66	2.4	87	<b>7.16 (4.06, 12.72)</b>
Baby-asthma	18	107	26	1.4	24	<b>2.00 (1.05, 3.82)</b>
Baby-glue ear	36	198	24	0.7	12	Reference
Bar-stroke	18	82	42	2.3	51	<b>4.93 (3.20, 7.60)</b>
Bar-smoke	45	193	58	1.3	30	<b>2.89 (2.02, 4.14)</b>
Bar-revised	112	521	104	0.9	20	<b>1.92 (1.45, 2.56)</b>
Bar-heart attack	19	88	17	0.9	19	<b>1.86 (1.03, 3.31)</b>
Bar-habit	291	1281	133	0.5	10	Reference
<b><i>World Smokefree Day</i></b>						
Smokefree sport	16	52	33	2.1	63	<b>2.52 (1.48, 4.26)</b>
Bar	63	255	89	1.4	35	1.38 (0.97, 1.97)
Baby	74	666	168	1.1	25	Reference

\* Montage 2 contained elements of 'Michael' and 'Tina'.

\*\* Montage 3 contained elements of 'Gordon', 'Rhonda', 'Vaughan', 'Meri' and 'Pita'.

**Table 3.2: Impact of specific TVCs on Quitline calls for Māori callers (for calls to the Quitline within one hour of showing a TVC)**

Campaign and specific TVCs	Total TVC placements	Total calls within 1 hour	Average calls per TVC	Total TARPs	Calls per 100 TARPs*	RR (95% CI)
<b><i>Every cigarette is doing you damage</i></b>						
Call for help	177	206	1.2	979	21	<b>1.69 (1.26, 2.28)</b>
Eye	44	44	1.0	265	17	1.34 (0.88, 2.03)
Tumour	58	60	1.0	433	14	1.11 (0.76, 1.60)
Brain (stroke)	93	73	0.8	587	12	Reference
<b><i>It's about whānau</i></b>						
Tu & Wai	34	38	1.1	192	20	<b>2.39 (1.10, 5.34)</b>
Montage 2**	20	15	0.8	81	19	2.24 (0.89, 5.68)
Michael	29	30	1.0	179	17	2.03 (0.91, 4.62)
Montage 3***	37	41	1.1	247	17	2.01 (0.93, 4.44)
Melanie	34	42	1.2	267	16	1.90 (0.88, 4.19)
Vaughan	23	23	1.0	171	14	1.63 (0.71, 3.82)
Meri	37	38	1.0	285	13	1.61 (0.74, 3.58)
Gordon	37	39	1.1	295	13	1.60 (0.74, 3.54)
Rhonda	56	38	0.7	299	13	1.54 (0.71, 3.41)
Ronald	51	40	0.8	351	11	1.38 (0.64, 3.04)
Hereana	31	19	0.6	168	11	1.37 (0.58, 3.29)
Tina	38	32	0.8	292	11	1.33 (0.60, 2.98)
Pita	40	34	0.9	318	11	1.29 (0.59, 2.89)
Pauline	16	10	0.6	121	8	Reference

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<b><i>Let's clear the air</i></b>						
Baby	27	17	0.6	62	27	<b>20.56 (4.37, 133.00)</b>
Baby-asthma	15	3	0.2	98	3	2.30 (0.31, 20.02)
Baby-glue ear	28	2	0.1	150	1	Reference
Bar-stroke	16	15	0.9	79	19	<b>12.49 (5.72, 27.18)</b>
Bar-heart attack	13	3	0.2	66	5	2.99 (0.68, 11.11)
Bar-smoke	39	7	0.2	171	4	2.69 (0.94, 6.87)
Bar-revised	94	17	0.2	418	4	2.68 (1.30, 5.49)
Bar-habit	261	18	0.1	1184	2	Reference

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<b><i>World Smokefree Day</i></b>						
Smokefree sport	13	4	0.3	47	9	1.71 (0.45, 5.89)
Bar	56	17	0.3	204	8	1.67 (0.76, 3.68)
Baby	65	14	0.2	281	5	Reference

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\* For all TARPs – ie, not adjusted by any estimated attribution to particular ethnic groups.

\*\* Montage 2 contained elements of 'Michael' and 'Tina'.

\*\*\* Montage 3 contained elements of 'Gordon', 'Rhonda', 'Vaughan', 'Meri' and 'Pita'.

**Table 3.3: Impact of specific TVCs on Quitline calls for non-Māori callers (for calls to the Quitline within one hour of showing a TVC)**

Campaign and specific TVCs	Total TVC placements	Total calls within 1 hour	Average calls per TVC	Total TARPs	Calls per 100 TARPs*	RR (95% CI)
<b><i>Every cigarette is doing you damage</i></b>						
Call for help	177	1060	6.0	985	108	<b>1.68 (1.41, 2.01)</b>
Eye	44	246	5.6	265	93	<b>1.45 (1.15, 1.84)</b>
Brain (stroke)	93	441	4.7	587	75	1.17 (0.96, 1.43)
Tumour	58	277	4.8	433	64	Reference
<b><i>It's about whānau</i></b>						
Montage 2	20	58	2.9	81	72	<b>2.07 (1.35, 3.17)</b>
Rhonda	60	173	2.9	343	50	<b>1.46 (1.08, 1.97)</b>
Tu & Wai	37	102	2.8	212	48	1.39 (0.99, 1.95)
Montage 3	37	117	3.2	247	47	1.37 (0.99, 1.90)
Ronald	54	167	3.1	371	45	1.30 (0.97, 1.76)
Vaughan	23	77	3.3	171	45	1.30 (0.90, 1.88)
Pauline	16	53	3.3	121	44	1.27 (0.84, 1.91)
Hereana	31	71	2.3	168	42	1.22 (0.84, 1.77)
Michael	33	81	2.5	199	41	1.18 (0.82, 1.68)
Meri	40	117	2.9	291	40	1.16 (0.84, 1.61)
Pita	40	125	3.1	318	39	1.14 (0.89, 1.76)
Melanie	34	104	3.1	267	39	1.28 (0.83, 1.56)
Tina	41	116	2.8	309	38	1.09 (0.79, 1.50)
Gordon	39	103	2.6	298	35	Reference

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<b><i>Let's clear the air</i></b>						
Baby	27	48	1.8	62	77	<b>8.29 (4.08, 17.08)</b>
Baby-asthma	15	19	1.3	98	19	2.08 (0.94, 4.61)
Baby-glue ear	28	14	0.5	150	9	Reference
Bar-stroke	16	25	1.6	79	32	<b>4.80 (2.81, 8.18)</b>
Bar-smoke	39	43	1.1	171	25	<b>3.82 (2.48, 5.81)</b>
Bar-revised	94	60	0.6	418	14	<b>2.18 (1.51, 3.15)</b>
Bar-heart attack	13	7	0.5	66	11	1.61 (0.65, 3.79)
Bar-habit	261	78	0.3	1184	7	Reference

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<b><i>World Smokefree Day</i></b>						
Smokefree sport	13	26	2.0	47	55	<b>2.78 (1.53, 5.03)</b>
Bar	56	60	1.1	204	29	<b>1.48 (0.96, 2.26)</b>
Baby	65	56	0.9	281	20	Reference

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\* For all TARPs – ie, not adjusted by any estimated attribution to particular ethnic groups.

**Table 3.4: Thematic analysis of *It's about whānau* TVCs (as per the scoring system in Appendix One)\***

Theme	All callers		Māori callers	
	Top 4 TVCs** (mean score)	Other 10 TVCs (mean score)	Top 4 TVCs*** (mean score)	Other 10 TVCs (mean score)
'Health threat'	0.0	0.9	0.0	0.9
'Emotion'	0.5	1.1	0.75	1.0
'Support for quitting'	1.5	1.5	1.25	1.6
'Māori content'	1.75	1.6	2.0	1.5
Total (all the above categories)	3.75	5.1	4.0	5.0

\* None of these differences were statistically significant.

\*\* The TVC included: Montages 2 & 3, 'Tu & Wai', and 'Meri'.

\*\*\* The TVC included: Montages 2 & 3, 'Tu & Wai', and 'Michael'.

**Table 3.5: Relationship of the gender of the main person in the TVC for the IAW campaign TVCs on calls to the Quitline**

Gender of the main person in the TVC	Total TVC placements	Total calls within 1 hour	Average calls per TVC	Total TARPs	Calls per 100 TARPs	RR (95% CI)*
<b><i>All callers</i></b>						
Men	253	1024	4.0	1717	60	1.04 (0.93, 1.16)
Women	252	961	3.8	1668	58	Reference
<b><i>Māori callers</i></b>						
Men	214	204	1.0	1506	14	1.08 (0.87, 1.35)
Women	212	179	0.8	1432	13	Reference

#### **4) The effectiveness of different approaches to TVC placement**

##### ***TV channels***

In terms of generating calls to the Quitline, the most effective channel for TVC placement was 'TV1' (Table 4.1). It was around two to three times more effective than the least effective channel ('TV2'). This was also the pattern for both the EC and IAW campaigns and for both all callers and Māori callers. Following 'TV1' the next most effective channel was 'Prime' and then 'TV3'. When considering the two most cost-effective channels ('TV1' and 'Prime') – the EC campaign was more effective than the IAW campaign for generating calls from Māori.

##### ***TVC placement within programmes***

The most effective programme type for TVC placement was 'Special interest to Māori' programmes for the EC and IAW campaigns overall (Table 4.2). The least effective programme types were 'news and current affairs' and 'documentary'. The pattern for all callers and for Māori callers was similar.

##### ***TVC placement during the week and day***

The most effective time of the week for TVC placement was in the Monday to Wednesday period (Table 4.3). This was four times more effective than weekend placement. The start of the week was also the most effective for generating calls from Māori callers.

The most effective day of the week for TVC placement was Tuesday followed by Thursday (Table 4.3). Placement on Tuesday was five times more effective than on Saturday (the least effective day). The pattern for Māori callers was fairly similar to that for all callers.

##### ***TVC placement by time during the day***

The most effective time slot for TVC placement was during the day (6am to 3.59 pm) (Table 4.3). This was over five times more effective than peak viewing time. The pattern for Māori callers was similar to that for all callers (day time being 5.4 times more effective than peak viewing time). Further analysis of calls during the day indicated that the most effective time was late morning, followed by lunch time (for both all callers and Māori callers).

**Table 4.1: Effectiveness for Quitline call generation (within one-hour of TVC placement) of using different television channels (for the EC and IAW campaigns and excluding regional TVC placement in the EC campaign)**

Campaign & channel	Total TVC placements	Total calls within 1 hour	Average calls per TVC	Total TARPs	Calls per 100 TARPs*	RR (95% CI)
<b><i>Every cigarette is doing you damage – All callers</i></b>						
TV1	118	550	4.7	330	167	<b>1.88 (1.60, 2.22)</b>
Prime	38	78	2.1	58	135	<b>1.52 (1.05, 2.19)</b>
TV3	123	880	7.2	900	98	1.10 (0.97, 1.26)
TV2	120	979	8.2	1105	89	Reference
<b><i>Every cigarette is doing you damage - Māori callers</i></b>						
TV1	107	529	4.9	296	179	<b>1.98 (1.67, 2.34)</b>
Prime	32	68	2.1	49	139	<b>1.53 (1.04, 2.28)</b>
TV3	120	865	7.2	855	101	1.12 (0.98, 1.28)
TV2	113	962	8.5	1064	90	Reference
<b><i>It's about whānau – all callers</i></b>						
TV1	140	475	3.4	383	124	<b>2.71 (2.31, 3.17)</b>
Prime	54	95	1.8	86	111	<b>2.41 (1.76, 3.30)</b>
TV3	186	735	4.0	1254	59	<b>1.28 (1.13, 1.45)</b>
TV2	189	920	4.9	2009	46	Reference
<b><i>It's about whānau – Māori callers</i></b>						
TV1	113	402	3.6	297	135	<b>2.86 (2.40, 3.40)</b>
Prime	46	85	1.8	76	112	<b>2.36 (1.69, 3.29)</b>
TV3	160	643	4.0	1082	59	<b>1.25 (1.10, 1.43)</b>
TV2	164	858	5.2	1811	47	Reference

**Table 4.2: Effectiveness for Quitline call generation (within one-hour of TVC placement) by TVC placement within different programme types (for the EC and IAW campaigns)**

Campaign / programme type	Total TVC placements	Total calls within 1 hour	Calls per TVC	Total TARPs	Calls per 100 TARPs	RR (95% CI)
<b><i>All callers</i></b>						
Special interest to Māori	54	119	2.2	99	120	<b>3.42 (1.65, 7.21)</b>
Other*	773	4001	5.2	5078	79	<b>2.24 (1.15, 4.44)</b>
Sports	37	129	3.5	178	72	<b>2.06 (1.01, 4.27)</b>
News & current affairs	97	450	4.6	733	61	<b>1.75 (0.89, 3.50)</b>
Documentary	7	13	1.9	37	35	<b>Reference</b>
<b><i>Māori callers</i></b>						
Special interest to Māori	51	115	2.3	95	121	<b>5.02 (1.98, 13.20)</b>
Sports	31	116	3.7	119	97	<b>4.04 (1.61, 10.57)</b>
Other*	686	3765	5.5	4645	81	<b>3.36 (1.40, 8.41)</b>
News & current affairs	82	409	5.0	642	64	<b>2.64 (1.09, 6.67)</b>
Documentary	5	7	1.4	29	24	<b>Reference</b>

\* 'Other' – includes drama, comedy, light entertainment, movies.

**Table 4.3: Effectiveness for Quitline call generation (within one-hour of TVC placement) by timing of TVC placement (for the EC and IAW campaigns)**

Time dimension	TVC placements (No.)	Total calls within 1 hour	Calls per TVC	Total TARPs	Calls per 100 TARPs	RR (95% CI)
<b><i>Position in week – all callers</i></b>						
Start (Mon-Wed)	512	3149	6.2	3443	91	<b>4.21 (3.55, 5.00)</b>
End (Thu-Fri)	321	1381	4.3	1844	75	<b>3.45 (2.88, 4.12)</b>
Weekend	135	182	1.3	838	22	Reference
<b><i>Position in week – Māori callers</i></b>						
Start (Mon-Wed)	464	3007	6.5	3192	94	<b>4.48 (3.71, 5.41)</b>
End (Thu-Fri)	276	1258	4.6	1639	77	<b>3.65 (3.00, 4.45)</b>
Weekend	115	147	1.3	699	21	Reference
<b><i>Day of week – all callers</i></b>						
Tuesday	187	1237	6.6	1193	104	<b>5.31 (3.98, 7.10)</b>
Thursday	195	998	5.1	1148	87	<b>4.46 (3.34, 5.96)</b>
Monday	175	1064	6.1	1231	86	<b>4.43 (3.32, 5.92)</b>
Wednesday	150	848	5.7	1019	83	<b>4.26 (3.19, 5.72)</b>
Friday	126	383	3.0	696	55	<b>2.82 (2.08, 3.83)</b>
Sunday	64	118	1.8	510	23	1.19 (0.84, 1.68)
Saturday	71	64	0.9	328	20	Reference
<b><i>Day of week – Māori callers</i></b>						
Tuesday	174	1198	6.9	1129	106	<b>6.54 (4.62, 9.29)</b>
Wednesday	128	788	6.2	889	89	<b>5.47 (3.84, 7.80)</b>
Monday	162	1021	6.3	1174	87	<b>5.36 (3.79, 7.62)</b>
Thursday	171	917	5.4	1057	87	<b>5.35 (3.77, 7.61)</b>

<b>Time dimension</b>	<b>TVC placements (No.)</b>	<b>Total calls within 1 hour</b>	<b>Calls per TVC</b>	<b>Total TARPs</b>	<b>Calls per 100 TARPs</b>	<b>RR (95% CI)</b>
Friday	105	341	3.2	582	59	<b>3.61 (2.51, 5.22)</b>
Sunday	56	105	1.9	440	24	1.47 (0.98, 2.21)
Saturday	59	42	0.7	259	16	Reference
<b><i>Time periods – all callers</i></b>						
Daytime (6am – 3.59pm)	364	2068	5.7	845	245	<b>7.18 (5.73, 9.01)</b>
Fringe (4pm – 5.59pm)	237	921	3.9	1561	59	<b>1.73 (1.38, 2.17)</b>
Peak (6pm – 10.29pm)	293	1601	5.5	3361	48	<b>1.40 (1.12, 1.74)</b>
Night (10.30pm – 5.59am)	74	122	1.6	358	34	Reference
<b><i>Time periods – Māori callers</i></b>						
Daytime (6am – 3.59pm)	323	1946	6.0	748	260	<b>7.76 (6.09, 9.89)</b>
Fringe (4pm – 5.59pm)	206	847	4.1	1346	63	<b>1.88 (1.47, 2.39)</b>
Peak (6pm – 10.29pm)	263	1513	5.8	3120	48	<b>1.45 (1.14, 1.83)</b>
Night (10.30pm – 5.59am)	63	106	1.7	316	34	Reference
<b><i>Time during the day – all callers</i></b>						
10am to 11.59am	39	274	7.0	79	347	<b>7.70 (4.60, 12.91)</b>
12pm to 1.59pm	179	1211	6.8	442	274	<b>6.08 (3.87, 9.58)</b>
2pm to 3.59pm	62	376	6.1	148	254	<b>5.64 (3.48, 9.16)</b>
8am to 9.59am	34	175	5.1	105	167	<b>3.70 (2.22, 6.17)</b>
6am to 7.59am	50	32	0.6	71	45	Reference

<b>Time dimension</b>	<b>TVC placements (No.)</b>	<b>Total calls within 1 hour</b>	<b>Calls per TVC</b>	<b>Total TARPs</b>	<b>Calls per 100 TARPs</b>	<b>RR (95% CI)</b>
<b><i>Time during the day – Māori callers</i></b>						
10am to 11.59am	36	257	7.1	72	357	12.05 (6.26, 23.43)
12pm to 1.59pm	162	1152	7.1	401	287	9.70 (5.33, 17.86)
2pm to 3.59pm	59	364	6.2	142	256	8.65 (4.64, 16.33)
8am to 9.59am	28	157	5.6	79	199	6.71 (3.47, 13.10)
6am to 7.59am	38	16	0.4	54	30	Reference

## **5) The cost-effectiveness of campaigns and TVCs**

### ***Overall cost-effectiveness (EC & IAW campaigns combined)***

The cost of attracting a call to the Quitline's call centre through TVC expenditure was estimated to be in the range of \$15 to \$23 (depending on the assumptions for apportioning the role of the TVCs) (Table 5.1). The cost of a registration of a caller with the Quitline was in the range of \$35 to \$56. When comparing the cost of generating new registrations with the Quitline, the cost was lowest for Māori (Table 5.1). The cost of generating a new registration with a Pacific caller was estimated to be over twice that of a Māori caller.

**Table 5.1: TVC expenditure to generate each call to the Quitline for all 2002 to 2003 (EC & IAW campaigns)**

	Total calls	Total cost* (\$)	Cost per call (\$)	Cost per call (\$) – maximum attribution to TVCs**	Cost per call (\$) – minimum attribution to TVCs**
<b>All callers</b>					
Calls to the call centre	216,720	2,074,871	10	15	23
New registrations	72,605	2,074,871	29	44	70
Total registrations	90,539	2,074,871	23	35	56
<b>Specific populations</b>					
New registrations for Māori	15,486	304,564	20	30	48
New registrations for Pacific peoples#	2,907	136,614	47	72	115
New registrations for other ethnic groups	54,212	1,633,694	30	46	74

\* Adjusted by denominator populations using Statistics New Zealand estimated populations in 2003 for the 25 to 44 year age group inclusive: 14.7 percent Māori, 6.6 percent Pacific, and 78.7 percent other.

\*\* It was assumed that TVCs accounted for a minimum of 41 percent of the calls and a maximum of 65 percent of the calls (see the methods section for details).

# No specific part of these campaigns focused on Pacific peoples (but some Pacific-relevant content is still present – see Table 1).

***Campaign cost-effectiveness trends***

The TVC expenditure per person registered with the Quitline increased significantly over the two-year period (Table 5.2). The cost effectiveness of TVC expenditure in generating registrations in the last six months of 2003 was under half that for the other six-month periods in 2002. Of note however, is that in the last half of 2003 the TVC placement was particularly orientated towards 'awareness raising' rather than specifically to generate calls to the Quitline.

**Table 5.2: Time trends in the TVC expenditure per person registered (for the EC and IAW campaigns)**

Quartile	Total Registrations	Total TVC expenditure (\$)	TVC expenditure per registration (\$)	RR (95% CI)
2002 – first 6 months	16,941	447,474	26	<b>2.10 (2.04, 2.15)</b>
2002 – second 6 months	16,958	343,194	20	<b>2.74 (2.67, 2.81)</b>
2003 – first 6 months	21,083	740,168	35	<b>1.58 (1.54, 1.67)</b>
2003 – second 6 months	9,826	544,035	55	Reference

p-value for linear trend: **p<0.00001**

***Campaign cost-effectiveness (calls within one hour)***

As well as being the most effective (Table 2.1 above), the EC campaign was also the most *cost-effective* one in terms of generating calls per dollar spent on TVC advertising (Table 5.3). It was 2.0 times more cost-effective than the IAW campaign. The WSD and LCTA campaigns were not particularly cost-effective but this was because the purpose of these campaigns was not to generate calls but to inform the public on the hazards of SHS.

**Table 5.3: Cost-effectiveness of the various campaigns in terms of generating calls to the Quitline (within one hour of the TVC being shown)**

Campaign	Total TVC placements	Total calls within 1 hour	Average calls per TVC	Total Cost	Cost per call generated to the Quitline (within 1 hour) – unadjusted*
<i>Every cigarette is doing you damage</i>	399	2487	6.2	\$670,205	\$269
<i>It's about whānau</i>	569	2225	3.9	\$1,190,163	\$535
<b>Campaigns on SHS that did not use the Quitline number</b>					
<i>Let's clear the air</i>	567	470	0.8	\$1,075,678	\$2289
<i>World Smokefree Day</i>	153	206	1.3	\$252,140	\$1224

\* Not adjusted by the proportion of calls that might be attributable to TVCs as opposed to other means of promotion (eg, information from health workers and friends).

## DISCUSSION

### Limitations of this analysis

This analysis has a number of limitations with the more significant ones being as follows:

1. Much of the analysis in this report was based on calls occurring within an hour of a TVC going to air. However, the majority of calls to the Quitline are actually outside this time zone. So it is possible that data based on the 'one-hour' calls is not fully representative for all callers to the Quitline. Nevertheless, such data are still very valuable since it reflects actual behaviour ('picking up the phone'). As such it can complement the other data from surveys involving self-reported attitudes and behaviour. Also, to some extent the analysis of monthly call data has given a richer picture – but these data are also harder to interpret given that some campaigns overlapped for particular months.
2. The reductionist approach taken towards examining the effectiveness of particular TVCs is somewhat limited in that particular TVCs may be more effective when shown in close proximity to other particular TVCs (within the same hour, day or week) and after cumulative exposure to other TVCs. Such synergy might explain why the two 'montage' TVCs were relatively effective ones in the IAW campaign (since they contained overlapping components of many of the other TVCs). Similarly, the effectiveness of the 'call for help' TVC may be partly due to it always being shown in close proximity with other EC campaign TVCs. Also for part of 2003 (for around seven months) some of the TVCs in these campaigns were shown primarily to raise general awareness of smoking and health issues and not specifically to generate more calls to the Quitline (since the Quitline was operating at or above its planned capacity at this time).
3. The dynamic nature of the smoking cessation environment in New Zealand may have complicated the interpretation of this analysis. For example, the impact of heavily subsidised access to NRT may have continued to have influenced many callers during the 2002 to 2003 period. The year 2003 also saw substantial discussion in the media around smoking issues (ie, legislation to further restrict exposure to SHS was in a Select Committee). Such factors could have meant that the specific content of a particular TVC was less important than the fact that it simply reminded viewers of the existence of the Quitline.
4. Some of the data in this report might have been more appropriately analysed using additional stratified analyses and even multivariate analysis. This could have helped to address possible confounding for some of the associations. For example, was the effectiveness of placing TVCs within programmes for a Māori audience due to the type of audience drawn to these programmes or because such programmes were shown at a particular time of the day? However, the time constraints with this project prevented these more sophisticated analyses and they would probably be of more value once the dataset was expanded to cover a longer time period.

5. The scoring of the content of the IAW campaign TVCs was very crude as it only involved the author (a non-smoking, male, Pakeha, health professional) rather than a panel of Māori smokers. Even the use of a convenience panel of Quitline staff could improve the validity of this scoring system.
6. The time period used in this analysis (2002 to 2003) was not long enough to permit inclusion of particular EC campaign TVCs (ie, 'aorta' and 'lung') that were used prior to 2002. The time period selection also meant that some of the EC campaign TVCs were much 'older' in terms of audience exposure than the IAW campaign TVCs. The expansion of the data set (eg, to include 2004 data) will also allow for more effective comparisons between TVCs (since some have been shown on under 25 occasions in the 2002 to 2003 period).

But despite these limitations, the overall data quality appeared to be fairly robust and internally consistent. The findings obtained are also generally consistent with what might be expected given the published data from other quitline services around the world. As such, this initial analysis is likely to provide additional information upon which further campaign and programmatic decision-making can be better informed.

### **Discussion of campaign effectiveness**

This analysis found that data collection on calls and registrations at the monthly level can provide statistically significant evidence for TVC campaign effectiveness. This was further indicated by the finding that relatively intense campaign months resulted in more calls to the call centre and in terms of Quitline registrations (Table 1.2). It is also apparent from the monthly data that Māori and Pacific peoples register with the Quitline at higher rates during relatively intense campaign months. Such findings are consistent with the international literature on campaign advertising and quitline calls (Wakefield and Borland 2001). Similarly, there is evidence from California that Pacific peoples will utilise a Quitline in response to targeted media campaigns (Zhu et al 2000).

The most effective campaign over the 2002 to 2003 period in term of generating calls to the Quitline (within one hour) was the EC campaign (Table 2.1). This was so even with the EC campaign being the oldest of the four campaigns (having started in September 1998). Even for Māori callers the EC campaign was 1.3 times more effective in generating calls than the IAW campaign (Table 2.2). The reasons for this are not known but it could possibly reflect the stronger emphasis in the EC campaign on the 'call for help' component and possibly on the 'threat appeal' component (for which there is some evidence for effectiveness (Hill et al 1998; Biener and Taylor 2002)). However, these campaigns are not strictly comparable as the IAW campaign covered a broader range of smoking and health issues (eg, issues around SHS and pregnant women and smoking). Also IAW is likely to have wider health benefits for Māori through strengthening whānau, whakapapa and other aspects of cultural identity.

The higher effectiveness of the WSD campaign compared to the LCTA campaign in generating calls to the Quitline is striking given the similar TVC content used in these two campaigns. Although there were different voice overs and graphics, the different

impacts may possibly reflect the much greater intensity of the WSD campaign in time (ie, it ran relatively intensely over just one month compared to a total of six months (at low intensity) for the LCTA campaign). Also, the WSD campaign TVCs were shown before the majority of the LCTA campaign TVCs. Other publicity around World Smokefree Day undertaken by other agencies (eg, public health units in District Health Boards) could also have contributed to the apparent effectiveness of the WSD campaign.

### **Discussion of TVC effectiveness**

The most effective single TVC out of all those shown was the one showing a person calling the Quitline ('call for help'). The reason might be because this TVC models the desired behaviour ('telephoning the Quitline') and suggests friendly and culturally appropriate staff (eg, it shows a Māori Quit Adviser and a Pacific Quit Advisor, and uses some te reo). The other particularly effective TVCs were those that dealt with relatively novel threats to health from smoking (ie, smoking and blindness and smoking and stroke). Data from Australia also indicates the relative effectiveness of this particular smoking and blindness TVC (Carroll and Rock 2003) as well as of the EC campaign overall in generating calls to a Quitline (Miller et al 2003).

Specific TVCs shown in the IAW campaign were effective for both Māori callers and non-Māori callers. This may suggest particular design elements that resonate with both populations. Nevertheless, further work is needed to identify what these components are so that future TVC design can be improved – particularly to enhance effectiveness for a Māori audience. Even without such work it is possible that some approaches could perhaps be avoided on basic theoretical grounds. Possible examples include:

- the TVC featuring the impact of smoking on singing ('Hereana') does not suggest a serious threat to health or well-being. Also, this TVC did not link with the protecting whānau theme.
- the TVC 'Vaughan' could be criticised on grounds of potentially causing offence to Māori women (though this particular TVC has the benefit of providing a gritty challenge to viewers to quit)
- some TVCs contained words and concepts that might only appeal to a narrow range of viewers (eg, 'empowerment' and 'life metaphor' in the TVC 'Michael')
- in one TVC the front person appeared to be Pakeha – though this was still in the context of a Māori whānau (the TVC 'Ronald').

The TVCs that covered smoking and pregnancy ('Melanie' and 'Tina'), may have too restricted an audience to ever appear to be very effective in this type of national-level analysis. However, given the importance of preventing harm from smoking and pregnancy such TVCs are still highly desirable from a public health perspective. Even so, they could possibly have more impact if the theme was expanded to the threat from any person smoking in the presence of a woman who is hapū.

For Māori, the most effective of the IAW campaign TVCs were of similar effectiveness to the most effective EC campaign TVCs. This would suggest that the best of the IAW campaign TVCs should continue to be utilised in campaigns which aim to reach a Māori audience (eg, with scheduling on the new Māori Television

channel or which are placed within programmes popular with Māori). The IAW campaign may also continue to have a place on more mainstream television so as to maximise reach to all Māori and possibly to provide for a greater diversity of smoking and health messages (given the more narrow focus of the EC campaign).

### **Discussion of cost-effectiveness (EC & IAW campaigns combined)**

The cost of attracting a call to the Quitline's call centre through TVC expenditure was estimated to be in the range of \$15 to \$23 (Table 5.1). For attracting a caller to register with the Quitline, the cost was estimated to be in the range of \$45 to \$71. These figures might slightly underestimate the true range since the analysis did not consider the impact of advertising relating to SHS (since these campaigns did not include the Quitline telephone number in the TVCs). But it is more likely that they overstate the true range since some of the TVC campaign expenditure in 2003 was for general awareness raising and not specifically to generate Quitline calls. Nevertheless, from a public health perspective this expenditure would appear to be very good value-for-money given the evidence for Quitline effectiveness in increasing smoking cessation rates and the overall cost-effectiveness of smoking cessation as a means of achieving health gain (Wilson 2003b).

When comparing the cost of attracting different callers, the cost was lowest for Māori (relative to Pacific peoples and others). This is likely to be because a large proportion of the TVCs shown were orientated towards a Māori audience (particularly the IAW campaign TVCs). It may also partly be because of the relatively high smoking prevalence rate amongst Māori.

The cost of attracting a Pacific caller was estimated to be over twice that of a Māori caller. This might be because none of the TVCs were specifically focused on attracting a Pacific audience and only one had any Pacific-specific content (ie, a Pacific Quit Adviser in the 'call for help' TVC).

### **Discussion of campaign cost-effectiveness**

The EC campaign was the most cost-effective campaign overall in generating calls to the Quitline (at twice that of the IAW campaign – Table 5.3). Therefore, if the primary focus is to maximise calls to the Quitline, such a result may suggest a need to strengthen the relative use of EC campaign TVCs or to raise the cost-effectiveness of using IAW campaign TVCs (eg, by only using the most effective ones, placing TVCs for maximal effectiveness and evaluating the value of the new Māori television channel).

Improving the overall cost-effectiveness of TVC campaigns is very complex as it involves many considerations relating to how placements are purchased from the various television channels. For example, relatively new channels such as 'Prime' gave a relatively large proportion of TVC placements free of charge during the study period. Other examples are the time of the year of running TVCs (given variations by month in audience size and the cost of TVC placement) and how far in advance the advertising time is purchased.

At a national level, the cost-effectiveness of campaign advertising might also be enhanced if it was synchronised with the routine price increase of tobacco (the annual inflation adjustment of tobacco tax). However, this currently occurs in December which is the most expensive time to buy television time and also not the best time to encourage smokers to quit (ie, possibly due to pre-Christmas activities). Therefore such annual price rises should probably be shifted to occur on World Smokefree Day (in May) so as to maximise the potential synergies. Also, the annual price rise of tobacco should ideally be larger than just an inflation adjustment if maximal quit rates are to be achieved.

### **Specific effectiveness issues**

The analysis identified the following issues that appeared to be associated with increased effectiveness of call generation over this two-year period:

- use of the most effective TVCs (eg, the 'call for help' one).
- use of particular channels ('TV1' and 'Prime')
- placement of TVCs within particular programmes (eg, those with a special interest to a Māori audience). The results indicating that documentaries were a less efficient choice for placement were similar to the findings in Australia (Carroll and Rock 2003) (which also found similar results for 'movies' and the best results for 'light entertainment').
- TVC placement at the start of the week and on particular days (eg, Tuesday). One possible reason for the lack of effectiveness of weekend TVCs is that some callers may believe that the Quitline does not operate in the weekend
- TVC placement during the day-time and particular around late morning and lunch time. Such placement may also have the advantage of enhancing reach to unemployed New Zealanders (who have relatively high smoking rates [Wilson 2000]).

These effectiveness issues could be considered in regard to the future placement of TVCs by the Quit Group. However, such considerations need to be balanced with other factors such as the costs of advertising, achieving high campaign intensity (eg, by using multiple channels simultaneously), and managing the work load of the Quitline staff (eg, in terms of distributing the calls throughout the week to prevent overloading). There are also the issues of which populations will benefit most from smoking cessation (ie, particularly Māori) given the potential to reduce health inequalities and to support Māori economic development (by reducing the hundreds of millions spent annually on tobacco and taken in tobacco taxation). Other population groups that are likely to particularly benefit from smoking cessation include:

- pregnant women (especially Māori women who are hapū)
- Pacific peoples (who have higher smoking rates than Pākehā/European New Zealanders) and also have poorer health and socio-economic status
- low-income people (who also have higher smoking rates than those on higher incomes)
- women in the reproductive age range (given that reducing smoking in this group can protect the fetus, infants and children from SHS).

### **Further proof that mass media advertising works**

This analysis did not specifically seek to provide further evidence that TVCs can generate additional calls to a Quitline (given the extensive international evidence that shows this). Nevertheless, it incidentally found further evidence that TVCs can work in this way:

- the calls to the Quitline and total registrations were statistically significantly higher in the months where the advertising level was higher. Also in relatively intense campaign months the calls were at a higher level (Table 1.2 and Figures 1-3) for Māori, Pacific and the total population
- the calls to the Quitline were substantially higher in the one-hour after TVCs that included the Quitline number relative to those TVCs on SHS that did not (Table 2.1)
- the calls per TVC placement were higher when the audience size was greater. For example, the calls per TVC were higher for a popular channel ('TV1') relative to a less popular one ('Prime') (Table 4.1)
- there were more calls to the Quitline in the first 30 minutes after a TVC airing (60.3 percent of the total) than in the subsequent 30 minutes.

Despite the success of TVCs, in the long-term it might be necessary to consider additional approaches as television viewing patterns and technology changes. For example, people may watch fewer TVCs if they start to pre-record more television programmes and then 'fast forward' through the TVCs. This might happen more as the technology for digital storage on large capacity hard drives becomes cheaper. Possible responses include: (i) designing TVCs to be 'understandable' when viewed on 'fast forward'; (ii) including promotional messages in the start of programmes (ie, outside of commercial breaks); and (iii) incorporating messages on quitting and using the Quitline into the scripts of soap operas. The latter has already been done with 'Shortland Street' where New Zealand health professionals worked with those workers involved in the production to include messages on the importance of immunisation.

## Recommendations for future data collection and research

From the information detailed in this study the following recommendations are made to the Quit Group:

1. *Regular analysis:* That the Quit Group considering undertaking or commissioning this type of analysis at regular intervals (eg, annually) to better determine the relative effectiveness and cost-effectiveness of particular campaigns, TVCs and TVC placement strategies. Future analyses might benefit from undertaking analysis of both monthly and weekly level data (in addition to one-hour call data).
2. *TVC thematic analysis:* That to inform future TVC design decisions, the Quit Group considers improving the categorisation of the thematic content of individual TVCs. To do this a panel of judges (ideally a group of Māori and non-Māori smokers) could be assembled and asked to score each TVC (eg, as per the approach used elsewhere (Biener et al 2000)).
3. *Evaluating Māori television:* That the Quit Group consider comparing the use of Quitline advertising on the new Māori television channel with other channels in terms of effectiveness and cost-effectiveness. This could also be considered for any of the satellite channels that have a relatively high Māori audience.
4. *TV vs radio advertising:* That the Quit Group consider conducting a study to compare television advertising with radio advertising. This could involve alternating months of intensive radio advertising and intensive television advertising. For maximising reach to Māori, the study could compare advertising on iwi radio with that on the new Māori Television channel.
5. *Programme categorisation:* That the Quit Group give consideration to improving the categorisation of the television programmes associated with TVC placements. That is, the 'other' category could possibly be sub-divided into: movies, dramas, and comedies etc (Carroll and Rock 2003). However this is quite a major recoding task and it may not add much value to the current use of quarter-hour rating data in purchasing TVC placements.
6. *Call centre level data:* That the Quit Group consider collecting more data on the calls to the call centre within one hour of the airing of a TVC. This could include caller gender (coded by the call centre staff on voice alone) and an ethnicity category for 'Pacific people'.
7. *Other ethnic groups:* That in the long-term, the Quit Group consider exploring TVCs that are effective with other ethnic groups in New Zealand eg, Pacific peoples and Asian New Zealanders.

## **Recommendations for maximising effectiveness and cost-effectiveness of campaigns and TVCs**

From the results of this study the following recommendations are made to the Quit Group in the context of maximising calls to the Quitline:

1. *TVC choice*: That the Quit Group considers making relatively greater use of the most effective TVCs identified in this analysis (at least until any new TVCs are obtained or developed).
2. *Reaching Māori*: That the Quit Group considers using the findings in this report to further enhance the effectiveness of TVC placement and to maximise cost-effectiveness of reaching a Māori audience (eg, channel choice, associated programme choice, and TVC selection).
3. *TVC content*: That the Quit Group considers exploring particular aspects of TVC content that might enhance effectiveness and cost-effectiveness. One option is to mention that the Quitline provides access to heavily subsidised nicotine replacement therapy (since obtaining access to NRT has proved so popular with New Zealand smokers in the past). Another option is to link phoning the Quitline with automatic enrolment in a Quit and Win contest – and to use this contest theme in the TVCs. Such contests have proven effective and cost-effective in promoting smoking cessation internationally (Bains et al 1998; Wilson 2003b) as well as in New Zealand (Milne 2002). The anti-tobacco industry theme has also not been adequately explored in the New Zealand setting (despite this being used elsewhere) (Balbach and Glantz 2002; Sly et al 2001; Heaton 2001; Doyle 2003).

## APPENDIX 1: CLASSIFICATION OF IAW CAMPAIGN TVCS FOR THEMATIC CONTENT

**Table A1: Classification of IAW campaign TVCs shown by the Quit Group (see methods section for details)**

<b>Name of TVC</b>	<b>Strength of threat (harm to health)</b>	<b>Strength of emotional impact</b>	<b>Supportive-ness regarding quitting</b>	<b>Māori - specific content</b>	<b>Total score</b>
Gordon	1	1	1	2	5
Hereana	0	0	1	2	3
Melanie	1	1	2	1	5
Meri	0	0	2	1	3
Michael	0	1	1	2	4
Montage 1*	1	1	1	2	5
Montage 2	0	1	2	2	5
Montage 3	0	1	1	2	4
Pauline	1	1	1	1	4
Pita	1	2	2	3	8
Rhonda	1	1	2	1	5
Ronald	1	1	1	1	4
Tina	1	1	2	2	6
Tu & Wai	0	0	1	2	3
Vaughan	2	2	2	1	7

\* Not shown in the 2002 to 2003 period.

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