



**Research and Evaluation Unit**

**Sun Exposure Survey 2010:  
Topline Time Series Report**

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**September 2010**





# Summary

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## Background

The Health Sponsorship Council (HSC), in conjunction with the Cancer Society of New Zealand (CSNZ), conducts the Sun Exposure Survey (SES) every three years. The overall goal of the SES is to:

*Improve evidence available on prevalence and trends in sun safety behaviour, inclusive of both risk factors and protective strategies in multivariable analyses that will aid future sector decision making.*

The SES was developed in 2009 following a review of the Triennial Sun Protection Survey (TSPS), which had been conducted in 1994, 1997, 2000, 2003 and 2006. The SES contains measures of weekend behaviour, sunburn, risk factors and attitudes that can be compared with TSPS measures, along with some new questions.

This report summarises the findings for the adult sample (aged 18-54 years) of the 2010 SES. Some results are compared with age-adjusted data from the five waves of the TSPS. When questions have been asked differently in 2010, and the difference may be expected to have affected the data collected, this is noted in the report. Questions that were asked for the first time in 2010 are presented without comparison.

## Methodology

A total of 1,250 adult (18-54 years) and 500 teen (13-17 years) interviews were conducted. The sample frame was all residential phone numbers contained in the White Pages telephone directories. Quotas were set for each regional directory pro rata to the adult population in these areas, to ensure a nationwide spread of interviews. A random sample was then taken within each area.

The data collection method for the survey was a paper-based questionnaire. Interviews were conducted by telephone to sampled households, by National Research Bureau (NRB) interviewers. The interviews were carried out between 25 January and 3 March 2010, on Monday, Tuesday and Wednesday nights.

## Key Findings

### Skin Type and Sunburn History

When asked about their untanned skin's reaction to strong sunshine, the majority of respondents said that they would "burn first, then tan later". This was consistent with previous years. The remaining responses were split between those whose skin would "just burn" and those whose skin would "just tan". When asked about natural skin colour, the majority of respondents said that they had fair or medium skin types, with smaller proportions reporting olive, very fair, or darker skin types. Compared with previous years, fewer respondents in 2010 reported that they had a very fair skin type, and more reported that their skin type was "medium".

One in five respondents had been sunburnt the previous weekend, a figure that has not changed significantly since the previous survey in 2006.

Consistent with previous years, the body parts most likely to have been sunburnt were those less likely to have been covered by clothing – the face, neck, shoulders and lower arms.

One-half of respondents in 2010 said that they had in the past had a moderate to severe sunburn (resulting in blisters or pain for two or more days). This figure had increased significantly since 2006.

## **Outdoor Activity**

In 2010, significantly more respondents had spent 15 minutes or more outside during the previous weekend, compared with 2006. There was also a significant increase since 1994 in the portion of respondents spending time outdoors on both Saturday and Sunday.

When asked about the period of time they had spent outdoors, and whether it was the amount of time they had been intending to spend, the majority of respondents said that they had either spent about the same amount of time they had intended, or that they had not intended any particular time when they went out.

Consistent with previous years, the most popular outdoor activities included gardening, walking or running and jobs around the house. In 2010 there was a significant increase in the proportion of respondents spending time outdoors around shops or other public places, and a significant decrease in those participating in sport. One-third of respondents who had been outside in 2010 had done activities based in or by water.

## **Sun Protection Behaviour – Clothing, Hats and Sunglasses**

While the majority of respondents who had been outdoors in 2010 said that they had been prepared to protect themselves from the sun (ie, had the things they needed on hand), a notable minority (four out of 10) had not.

Around one-half of those who had been outdoors the previous weekend had worn a hat. This proportion had increased significantly since 1994. More than half of those who had been outdoors in 2010 had worn sunglasses.

More than half of those who had been outdoors in 2010 had spent some of that time in the shade.

One-half of those who had been outdoors had covered some of their skin with sunscreen. This proportion had not changed since 2006. There was a significant increase in the proportion of respondents applying sunscreen to their neck and ears, compared with 2006.

## **Advertising and Information Awareness**

Around nine out of 10 respondents in 2010 could recall advertising about sun safety. This was a significant increase since 2006. The most commonly recalled advertising was HSC's most recent campaign, *Never Let Your Child Get Sunburnt*.

## **Skin Cancer Knowledge**

When asked about what they thought would increase a person's chances of getting skin cancer, the majority of respondents mentioned sun exposure. "Not using sun protection" and "getting sunburnt" were also frequently mentioned.

When asked about their own risk of getting skin cancer, around four out of 10 respondents thought that their risk was "medium", and another four out of 10 thought their risk was "low". The remaining two out of 10 respondents rated their risk as "high".

## **Attitudes to Getting a Tan**

While there was no significant change in the proportion of respondents in 2010 agreeing with statements such as "I feel more healthy with a suntan" (four out of 10 respondents agreed) and "A suntan makes me feel better about myself" (nearly one-half agreed), the proportion of respondents who agreed that they actually intended to try to get a suntan was much lower (just under one out of 10).

## **Vitamin D**

Most respondents (nearly nine out of 10, 91%) did not report having done anything deliberately to improve their Vitamin D levels during the previous weekend. Of the 9% who had done something specific, the majority had changed their sun exposure behaviour by going out in the sun, while smaller proportions had taken supplements or foods that they believed (not always correctly) contained Vitamin D.

## Summary of Respondents' Attitudes and Sun Behaviour in 2010 and Previous Years

	1994 %	1997 %	2000 %	2003 %	2006 %	2010 %
<b>Sun exposure and sunburn</b>						
Spent 15 minutes or more outside during previous weekend	76	76	80	75	73	81
Sunburnt during the previous weekend	11	34	24	21	23	20
Ever been severely sunburnt	47	48	39	42	37	51
<b>Sun protection behaviour</b>						
Wore a hat	35	34	39	41	43	48
Wore sunscreen	39	31	37	45	51	51
Wore sunglasses	58	43	54	57	54	61
<b>Attitudes towards suntanning</b>						
Agree "A suntan makes me feel better about myself"	46	41	44	53	44	44
Agree "Most of my friends think a suntan is a good thing"	46	48	53	54	50	47
Agree "I feel more healthy with a suntan"	31	30	42	37	35	39
Agree "This summer I intend to sunbathe regularly to get a suntan"	9	11	14	15	12	8
<b>Advertising awareness</b>						
Recalled sun safety advertising	79	73	59	59	70	88

Note: the data presented in this table represents respondents aged 18 – 54 years. Because previous surveys included respondents aged up to 69 years, the figures presented here will not be the same as in the reports for the TSPS in previous years.

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The Expert Reference Group members are:

- Dr Tony Reeder (Cancer Society Social and Behavioural Research Unit, University of Otago)
- Dr Mary-Jane Sneyd (Department of Preventive and Social Medicine, University of Otago)
- Professor Brian Cox (Department of Preventive and Social Medicine, University of Otago)
- Jen Makin (Centre for Behavioural Research in Cancer, Cancer Council Victoria)
- Dr Suzanne Dobbison (Centre for Behavioural Research in Cancer, Cancer Council Victoria)
- Dr Judith Galtry (Cancer Society of New Zealand)
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- Dr Sue Walker (Health Sponsorship Council)
- Wayde Beckman (Health Sponsorship Council)
- Rebecca Gray (Health Sponsorship Council)
- Kay Haughey (Health Sponsorship Council)

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Initial drafts of the report were reviewed by Dr Rhiannon Newcombe (HSC), Wayde Beckman and Dr Judith Galtry.

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## 2.0 Background

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### 2.1 Purpose

The Health Sponsorship Council (HSC) in conjunction with the Cancer Society of New Zealand (CSNZ) conducts the Sun Exposure Survey (SES) every three years. The overall goal of the SES is to:

*Improve evidence available on prevalence and trends in sun safety behaviour, inclusive of both risk factors and protective strategies in multivariable analyses that will aid future sector decision making.*

The SES was developed in 2009 following a review of the Triennial Sun Protection Survey (TSPS), which had been conducted in 1994, 1997, 2000, 2003 and 2006. The SES questionnaire focuses on activities on the previous sunny weekend (as defined using weather data for each area to be surveyed – explained later in the report in section 3.1.1) and contains measures of weekend behaviour, sunburn, risk factors and attitudes that can be compared with TSPS measures, along with some new questions.

The SES survey population is adults aged 18-54 years and teens aged 13-17 years.

### 2.2 History: the Triennial Sun Protection Survey

The TSPS was initiated in 1994 by the CSNZ, along with the Department of Preventive and Social Medicine at the University of Otago. The survey was based on a seminal study from Victoria, Australia. The aims of the survey were to describe patterns and associations between outdoor behaviour – activities, sun protection, attitudes, knowledge, tanning preferences – and sunburn.

At that time it was recognised that, although sun safety campaigns to increase public knowledge of the risks of excessive UVR and to encourage sun protection behaviour had been in place for some time, little was known about sun behaviour and risk factors for over-exposure across the community. The purpose of the TSPS was to provide regular and consistent prevention information to inform skin cancer control programmes in New Zealand. Five waves of the survey were administered every three years (1994, 1997, 2000, 2002/2003, 2005/2006).

The survey population (largely driven by a need for cost-effectiveness) for the TSPS was adults (15 to 69 years, approximately n=1,250 per wave) and some children (12 to 14 years, inclusion varied across years). New Zealand's five largest metropolitan centres (Auckland, Hamilton, Wellington, Christchurch, and Dunedin) were included. The exclusion of rural and other urban populations inhibited the generalisability of the findings.

Each wave of the survey has included measures of prevalence of sunburn, skin type, outdoor activities, sun protection and risk behaviours, attitudes to tanning, and awareness of sun protection communications.

## 2.3 Review of the Triennial Sun Protection Survey

After the 2005/2006 wave of the TSPS, a number of issues were identified. These included dropping response rates (down to 21% in the 2006 survey) and associated response bias issues, along with issues about representativeness of the sample and consistent data collection and analysis across surveys. A decision was made to conduct a review process of the TSPS.

An Expert Reference Group (ERG), including academics and representatives from government and non-government agencies involved in skin cancer research, was convened in 2009 to provide advice on methodology and questionnaire content. Additionally a review of 'global' practice and options for a sun exposure survey was conducted by an independent research company (*Review of Practice and Options for the New Zealand Sun Exposure Survey*, Watts, Heinemann, Marsh and Graham 2009).

The aim of the review process was to inform the development of a new quantitative survey vehicle to improve evidence available on prevalence and trends in sun safety behaviour to aid future sector decision making.

Based on the review of the TSPS, the renamed Sun Exposure Survey (SES) was conducted in 2010. The SES is to be conducted every three years, with the data collected being used to inform the work of the skin cancer control sector in New Zealand, including the sun safety programmes administered by HSC and CSNZ.

### 2.3.1 Changes to the survey in context of the 2009 Review of Practice

Following the Review of Practice and consultation with the ERG, changes to the SES were proposed that included:

- expanding the SES to a nationwide survey (rather than the five main urban centres surveyed in the TSPS)
- making every effort to increase response rates
- changing the age range for the adult sample from 15 – 69 years to 18 – 54 years
- surveying 1,250 adults (aged 18-54 years) and 500 teenagers (13-17 years)
- revising the questionnaire, including advice from the Expert Reference Group (the resulting changes are listed in section 3.4)
- interviewing on Monday, Tuesday and Wednesday nights only, to aid recall of the previous weekend
- instead of applying age and gender quotas, use benchmarking to post-stratify the sample, and
- collecting data from late January to the end of February.

In addition to the changes outlined on the basis of the Review of Practice, the following were decided:

- Continue to repeat the SES every three years.
- Continue to conduct a telephone survey, the most cost-effective method for the SES.

- Continue to use the “fine weekend” approach used in the TSPS (see explanation in chapter 3.1.1).

A table showing key features of each survey between 1994 and 2010 is attached as Appendix 3.

## **2.4 Pilot survey for the SES**

To facilitate the development of the SES, a pilot survey was undertaken. The questionnaire pilot of 52 adults and 70 teenagers was carried out over two weeks in December 2009. This assessed the changes in methodology to the new survey vehicle, as well as piloting the suggested questionnaire content. Results from the pilot survey were then reviewed by the ERG to determine the make-up of the final survey. More information on the pilot SES survey can be obtained from the HSC.

## 3.0 Methodology

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Following is a summary of the main aspects of the methodology used for the SES. A more detailed account can be found in the full methodology report (*2010 Sun Exposure Survey Documentation*, National Research Bureau 2010).

### 3.1 Sampling

Two samples were collected for the 2010 SES, the adult sample and the teen sample. The target population for the adult sample was 18–54 years and the target population for the teen sample was 13–17 years.

A total of 1,250 adult (18-54 years) and 500 teen (13-17 years) interviews were carried out. The sample frame was all residential phone numbers contained in the White Pages telephone directories. A set quota of interviews was set for each regional directory, based on the size of the adult population in these areas, to ensure a nationwide spread of interviews. A systematic sample was then taken using every 15th residential number from the first and third columns of each directory.

A sample list was drawn from two strata. In Stratum 1, a residential number was sampled for each of the adult sample and teen sample. In Stratum 2, a residential number was selected for the teen sample only. A total of 10,000 households were drawn, with 7,500 of these assigned to Stratum 1 and 2,500 assigned to Stratum 2.

#### 3.1.1 Fine weather criteria

During the period of the survey fieldwork, every Monday morning the MetService provided meteorological data to inform the survey provider, NRB. This data included hourly temperature, sky condition and Ultraviolet Index (UVI) readings from 11am to 4pm, for the preceding Saturday and Sunday, for 29 sites around New Zealand. This data was then put into a 'Fine Weather Criteria' spreadsheet provided by HSC, in order to calculate weather scores for each area to determine where interviewing may take place.

Scores were allocated for each hour between 11am and 4pm, as follows:

- Temperature: 20 degrees or more = 1.0 point; at least 15 degrees but less than 20 degrees = 0.5 point; less than 15 degrees = 0.0 point.
- Sky conditions: fine = 1.0 point; cloudy = 0.5 point; any precipitation = 0.0 point.
- Ultraviolet Index: 10 or more = 1 point; at least 6 but less than 10 = 0.5 point; less than 6 = 0.0 point.

Interviewing only took place in areas in which at least one day at the weekend had achieved a score of 10 or more out of the maximum possible score of 15 (1 point per hour for five hours, on all three criteria). Phone directory areas were matched to the nearest weather station.

## **3.2 Data weighting**

Data from this survey were weighted to ensure that no particular population group was over- or under-represented in the survey sample.

### **3.2.1 Selection weights**

Selection weights adjust for the probability of the respondent being selected for the survey. In the case of this survey it was the probability of a respondent being selected for the survey, out of all of the people in the household who were eligible for selection. For example, if a household had two eligible people in it (aged 18–54 years) then a respondent from that household would have a probability of selection of one out of two people.

### **3.2.2 Benchmarking**

After the selection weights had been applied, the data were adjusted to ensure they were representative of the usually resident New Zealand population aged 18–54, this is called benchmarking.

Benchmarks for this survey were gender by age groups (18–24, 25–34, 35–44, and 45–54 years) by prioritised ethnic groups (Māori, Pacific peoples, Asian, Other ethnicities except European, Europeans).

Prioritised ethnic groups are created by including each respondent in only one ethnic group, rather than for each ethnicity they identify with. This means, for example, that if someone identifies as being Māori and Japanese, then they have been grouped into the Māori ethnic group for the benchmarking weighting process.

### **3.2.3 Age Standardisation**

The age structure of the population has changed over the years, and this can impact on the comparability of health-related data. To ensure that this doesn't affect any comparisons across time in this report we have age-standardised the data to the World Health Organization (WHO) standard population (Ahmad et al 2000). The WHO standard population adjustments were made to each gender by ethnic group used in the benchmarking (see above).

Age-standardised estimates have been presented in this report for comparisons of the 2010 results with results from previous TSPSs. This has been indicated in the text or figure or table when appropriate.

### 3.3 Data collection

The data collection method for the survey was a paper-based questionnaire. Interviews were conducted by telephone to sampled households, by approximately 60 NRB interviewers who were specifically trained in the sampling and interviewing procedure.

#### 3.3.1 Interviewing

The interviews were carried out between 25 January and 3 March 2010, on Monday, Tuesday and Wednesday nights only.

Both initial calls and call backs were made to areas that had met the ‘fine weather’ criteria for the previous weekend. Callbacks could be made in subsequent weeks, provided fine weather criteria had been met for the previous weekend. Interviewing hours were 4.30pm until 8.30pm. Each respondent received an initial call and then up to five callbacks at different times/days if they could not be contacted.

#### 3.3.2 Interview duration and response rate

The average interview duration was 14.6 minutes for adults and 15.0 minutes for teens.

The response rate for the survey was 63%.

The response rate for a group of interviewers was calculated as the average of the response rate for the individual interviewers, weighted by the estimated eligible households for each.

The response rate calculations use variables recorded on the sampling sheets by interviewers. The outcome of the final call to each sampled household (phone number) is the particular variable used in the response rate calculation. These outcomes are allocated to categories in the following manner for each interview in the sample.

<b>Category</b>	<b>Outcomes</b>
Interviews ( $a_i$ )	Interviews (I)
Not Eligible ( $b_i$ )	Not eligible (NE), Business (B), Unavailable during survey period (U)
Eligibility Not Established ( $c_i$ )	No reply (NR), Answerphone/Fax (AP), Engaged (E), Household Refusal (HR)
Eligible Non Response ( $d_i$ )	Respondent Refusal (RR), Not Available at time of call (NA), Broken Appointment (APT), Language difficulty (L), Partial (P), Other (OTH)

An estimate of the eligible households is calculated for the  $i$ th interviewer.

$$a_i + d_i + \frac{c_i \times (a_i + d_i)}{(a_i + b_i + d_i)}$$

The response rate for the  $i$ th interviewer is the number of interviews achieved divided by the estimated eligible households.

$$\frac{a_i}{a_i + d_i + \frac{c_i \times (a_i + d_i)}{(a_i + b_i + d_i)}}$$

This reduces to the following for the  $i$ th interviewer:

$$\frac{a_i \times (a_i + b_i + d_i)}{(a_i + d_i)(a_i + b_i + c_i + d_i)}$$

It is important to recognise that telephone interviewing can lead to self selection into the 'not eligible' category that is at a rate higher than would be the case in a face-to-face survey. This can apply to those surveys that restrict the eligible age range. As well, there is the influence of the possible disproportionate representation of age range households listed in the White Pages. Both of these variables will have had the impact of raising the calculated response rate.

Table 1 shows the total outcome counts for the two samples. Note that respondents were selected into either an adult (18-54 year) sample or a teen (13-17 year) sample. It should be noted that the response rate for the survey was calculated as the average of the response rate for the individual interviewers, weighted by the estimated eligible households for each. For this reason, the achieved response rates of 63% for adults and 64% for teens will differ slightly to those obtained when calculating response rates from the total counts given below.

**Table 1: SES Response Rate Outcomes - Total Counts**

	<b>Adult - 18-54 years</b>	<b>Teen - 13-17 years</b>
<b>Interviews:</b>	<b>1250</b>	<b>498</b>
Interviews	1250	498
<b>Not Eligible:</b>	<b>2257</b>	<b>5095</b>
Not eligible	2135	4977
Business	71	88
Unavailable during survey period	51	30
<b>Eligibility Not Established:</b>	<b>715</b>	<b>882</b>
No reply	123	143
Answerphone/fax	161	231
Engaged	10	21
Household refusal	421	487
<b>Eligible Non-Response:</b>	<b>412</b>	<b>165</b>
Respondent refusal	265	63
Not available at time of call	76	38
Broken appointment	-	-
Language difficulty	61	56
Partial	-	-
Other	10	8

### **3.4 Questionnaire development**

Two questionnaires were developed, one for Adults (aged 18-54 years) and one for Teens (aged 13-17 years). Although these were separate questionnaires, many of the questions were common to both.

To provide benchmark data for a possible future SunSmart campaign aimed at 13 to 24-year-olds, it was decided to include questions from the teenage questionnaire in the adult questionnaire, but to only ask these questions of 18 to 24-year-olds. This meant that 18 to 24-year-olds were asked some extra questions on tanning and melanoma knowledge that 25 to 54-year-olds were not, and some questions on vitamin D and demographics (such as income and education level) that 13 to 17-year-olds were not.

Where previous questions existed and continuity with their previous use was desirable, these were included in the survey unchanged.

Demographic questions were consistent with those in use by Statistics New Zealand and recommended for Government surveys, or those previously used in the TSPS.

Most of the new questions were developed by the HSC Research and Evaluation Unit, in consultation with CSNZ and NRB. HSC also took advice from individuals in the Expert Reference Group, as well as drawing on international sun protection surveys.

New question areas in the 2010 SES questionnaire include:

- Any actions (including sun exposure) taken to improve vitamin D levels.
- Whether outdoor activities took place by water.
- Whether respondents had spent the same amount of time outdoors as they had intended, whether they were prepared to protect from the sun, and whether they thought that they could get sunburnt on the day in question.
- Conscious choices about staying indoors or using shade.
- Knowledge of risk factors for skin cancer, and self-perceived risk of developing skin cancer.

#### **3.4.1 Final Questionnaires**

The final questionnaires can be found in Appendix 1. Appendix 2 presents the sections included in the final questionnaires and shows whether these were also included in previous TSPS waves between 1994 and 2006.

## 3.5 Points to note when reading time-series analysis

### 3.5.1 Caution advised when interpreting comparisons between years

This report compares the 2010 Sun Exposure Survey results for adults aged 18-54 to those of the 1994, 1997, 2000, 2003 and 2006 TSPs, for questions that were asked in all, or most, of these surveys.

Results presented in this report from the 1994–2006 TSPs may differ from those reported previously. This is because the 1994–2006 data have been:

- recalculated using the same formulae or questions that are comparable with the 2010 SES
- reanalysed using only data from respondents aged 18–54, to maintain comparability with the 2010 adult data
- weighted by age, gender and ethnicity to be representative of the five metropolitan areas<sup>1</sup> that respondents were selected from, and
- age-standardised, to ensure that the different distributions of age over the different years do not affect the comparisons (see 3.2.3 for further explanation).

Changes to the methodology of the survey or to the way questions were asked are discussed whenever these changes may be expected to have affected the comparability of the data.

A number of questions were asked for the first time in the SES. The statistics for responses to these have not been age-standardised and are presented without any comparisons.

### 3.5.2 “The day in question” as referred to in the text

In the SES, respondents were asked about their activities on either Saturday or Sunday the previous weekend. In order to decide the day to ask about, respondents were first asked whether they had spent 15 minutes or more outdoors on either day at the weekend, and then whether they had been sunburnt on either day. The response to this question then determined the subsequent questions a respondent was asked. For example:

- If they had only been outdoors for 15 minutes or more on one weekend day, then that day was chosen.
- If they had been outdoors both days, but only sunburnt on one day, then the day they were sunburnt was chosen.
- If they had been outdoors both days and not sunburnt at all, then a day was randomly chosen. Half of the paper questionnaires were printed with “Saturday” and half with “Sunday” in one corner, so in the event that the interviewer had to choose, they would ask about the day that was written on the questionnaire.
- If they had been outdoors both days and sunburnt on both days, then a day was randomly chosen.
- If they had not been outside for 15 minutes or more on either day, then a day was randomly chosen to ask a reduced set of questions about.

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<sup>1</sup> These were taken to be Auckland, Waikato, Capital & Coast, Hutt Valley, Canterbury and Otago District Health Boards.

The main outdoor activity that each respondent had taken part in, or the activity during which they had spent the most time in the sun, was recorded. They were then asked about the ways that they had been protected from the sun, and what body parts were exposed or protected, while doing that activity.

In 2006, the day to ask about had been randomly selected by a computer (in the instance that a random selection was necessary), whereas in 2010 the survey was filled in on paper and the interviewer randomly selected the day.

### **3.5.3 Significance testing**

Only differences that are statistically significant (that is, for which the p-value is less than 0.05) have been commented on in the text of this report. Statistical significance was measured either by looking at 95% confidence intervals or using t-tests.

### **3.5.4 Presentation of results**

For some questions, a breakdown in responses for 2010 only will be presented, followed by a comparison with previous years. These sections will be clearly marked. All data being compared with previous years has been age-standardised. In keeping with previous reports on the TSPS, significant differences have been calculated between 2010 responses and those from the previous survey (2006) and then, if change over time has been too gradual to show differences since 2006, with the earlier surveys.

Questions that were only asked in 2010 are presented alone, using data that has not been age-standardised. Sub-group analyses are not presented in this report, but will be explored in future publications.

In the tables comparing responses between surveys, an asterisk indicates that there is no data.

Below the graphs and tables, the “base” is defined – this relates to the group of respondents for which the responses are being presented (for example “outside during the previous weekend” or “sunburnt the previous weekend”).

### 3.6 Sample profile

Table 3.1 presents the adult 18 to 54-year-old samples from each of the TSPS waves and the 2010 SES.

**Table 3.1: Sample profile, 18-54 years, 1994-2010, age-standardised proportions**

	1994	1997	2000	2003	2006	2010
	%	%	%	%	%	%
<b>Gender</b>						
Male	49	49	49	50	49	49
Female	51	51	51	50	51	52
<b>Age</b>						
18 to 24 years	22	20	19	19	20	19
25 to 34 years	31	30	29	29	26	25
35 to 44 years	27	28	28	28	29	30
45 to 54 years	20	21	23	24	25	26
<b>Ethnicity*</b>						
Māori	10	11	11	11	10	14
Pacific	3	5	5	4	5	6
Asian	6	7	8	9	12	10
Other	2	2	0		1	2
European	79	76	76	77	73	69
<b>Skin type**</b>						
Very Fair			25	25	21	11
Fair			27	29	34	32
Medium			22	24	19	28
Olive			23	21	22	22
Dark			2	2	4	5
Very dark/ black			0	0	1	1
<b>Highest qualification</b>						
Nothing/None	15	14	10	7	3	10
Secondary qualification	49	44	43	46	33	36
Other tertiary qualification except Degree	17	19	17	17	32	23
Degree	17	20	27	27	29	30
Other (includes overseas qualification)	1	2	1	1	1	0
Don't know/Refused	1	1	3	1	1	1
Base = all respondents (n)	978	930	911	927	873	1,250

\* Note: for 2000–2010 respondents who identified with more than one ethnic group have been assigned to one of their ethnic groups in order of Māori, Pacific, Asian, Other, European (prioritisation). This means, for example, that someone who identifies with both Māori and Pacific ethnic groups were analysed as part of the Māori ethnic group. In the 1994 and 1997 TSPS waves a single-response ethnicity question was used, so no prioritisation has been done.

\*\* Note: skin type was not asked about in 1994 or 1997.

# 4.0 Skin type, sun sensitivity and sunburn

## 4.1 Skin type

All respondents were asked how they would describe their natural, untanned skin colour at the end of winter.

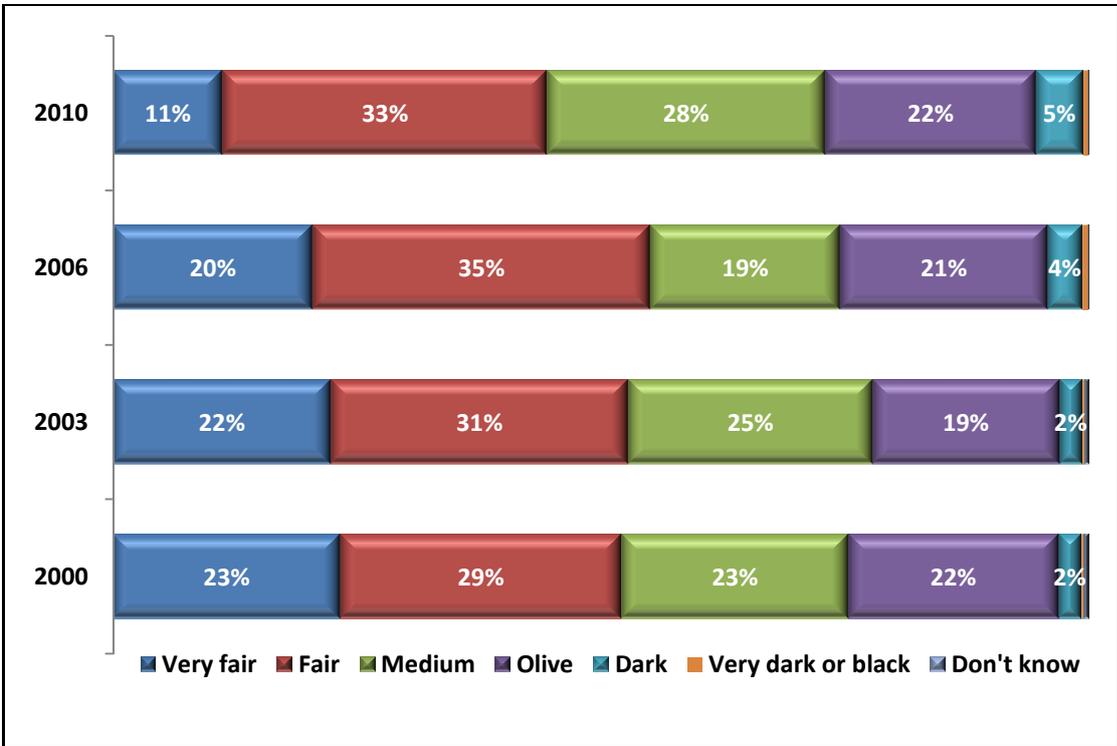
### 2010

In 2010, one-third (33%) of respondents reported that they were fair skinned, while around one out of 10 (11%) reported that their skin was very fair. Around three out of 10 (28%) reported that their skin type was “medium”, with around two out of 10 (22%) identifying their skin type as “olive” and smaller proportions reporting dark (5%) or very dark (1%) skin (see Figure 4.1).

### Time-series

The skin type question was only asked from 2000 onwards. In 2010, respondents were significantly less likely to report that their skin type was “very fair”, compared with 2006 (11% compared with 20%) and were significantly more likely to say that their skin type was “medium”, compared with 2006 (28% compared with 19%).

**Figure 4.1: Self-described skin type, 18-54 year olds, age-standardised proportions, 2000-2010**



Base: all respondents

The change to the sampling frame in 2010 may have resulted in a sample in which the fairest skin types were less represented than in the previous years when only the main metropolitan areas were surveyed.

## 4.2 Skin sensitivity to sun

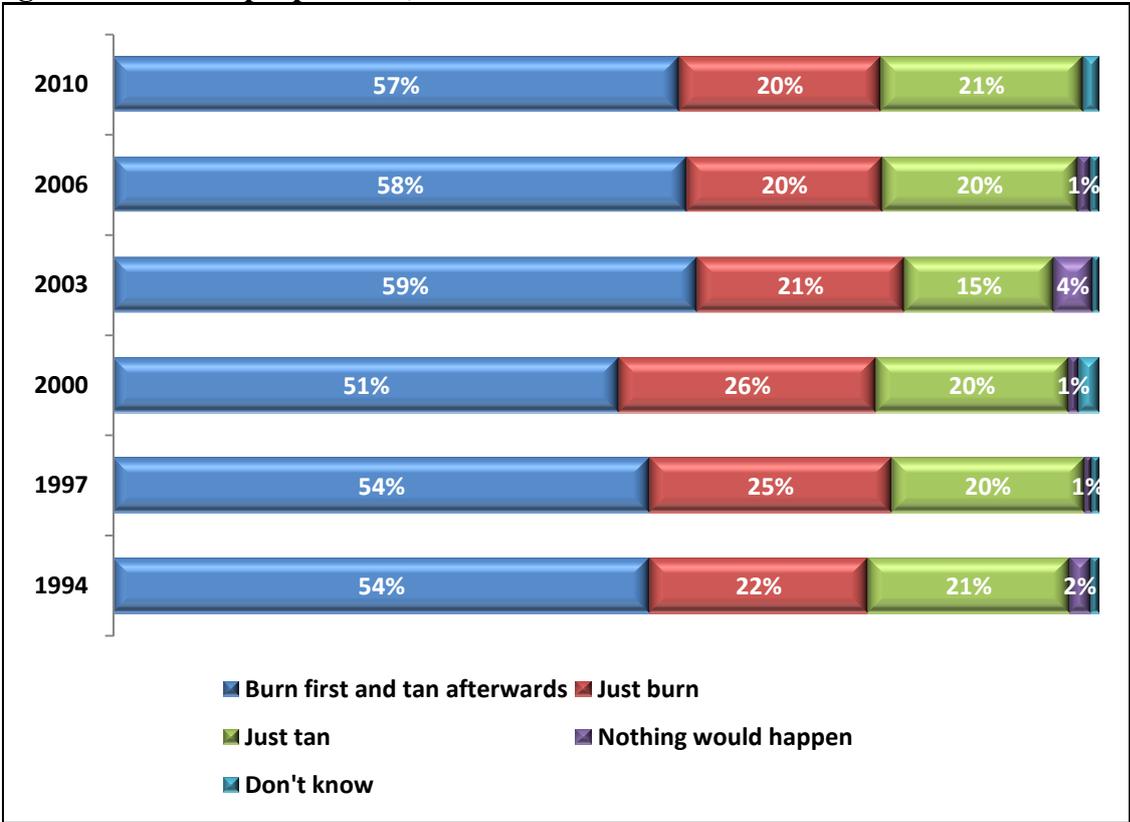
All respondents were asked what would happen if their untanned skin was exposed to strong sunshine at the start of summer, using no sun protection, for 30 minutes.

### 2010

In 2010, nearly six out of 10 (57%) respondents said they would *burn first and tan afterwards*, while two out of 10 (20%) respondents said they would *just burn* and another two out of 10 (21%) said they would *just tan* (see Figure 4.2).

### Time-series

**Figure 4.2: Untanned skin’s reaction to 30 minutes of strong sunshine, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: all respondents

In previous years, small proportions of respondents had said “nothing would happen” to their skin if it was exposed to sunshine without protection. In 2010, this response was not read out as an option and was not reported by any respondents.

### 4.3 Weekend sunburn

All respondents who had spent at least 15 minutes outside during the previous weekend (see Section 5.1) were asked whether they had been sunburnt (that is, experienced reddening of the skin after being in the sun) on Saturday or Sunday of the weekend just passed.

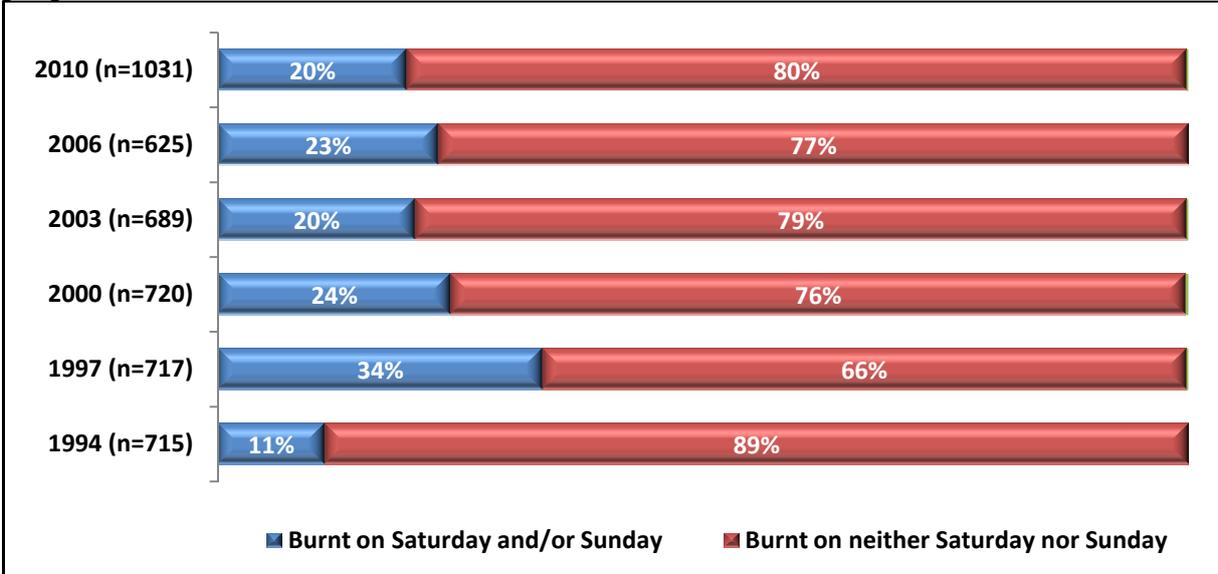
#### 2010

In 2010, two out of 10 (20%) respondents reported that they had been sunburnt on either Saturday or Sunday during the previous weekend (see Figure 4.3).

#### Time-series

The proportion of respondents reporting previous weekend sunburn has not changed significantly since 2000.

**Figure 4.3: Sunburn during previous weekend, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: outdoors during weekend

### 4.3.1 Body parts sunburnt

Respondents who had been sunburnt on either or both days during the previous weekend were asked which parts of their body were sunburnt.

#### 2010

In 2010, as shown in Table 4.4, the body part most likely to have been sunburnt was the face, for four out of 10 (40%) respondents who reported sunburn. Other body parts that were reported by at least three out of 10 respondents as having been sunburnt were: the lower arms (37%), the neck (33%), the shoulders (31%) and the nose (30%).

#### Time-series

**Table 4.4: Areas of the body sunburnt, 18-54 year olds, age-standardised proportions, 1994-2010**

	1994	1997	2000	2003	2006	2010
	%	%	%	%	%	%
Face	31	38	38	29	32	40
Arms - below elbows	*	36	29	30	27	37
Neck	29	33	26	19	36	33
Shoulder	15	15	26	31	33	31
Nose	8	29	25	16	15	30
Arms - above elbows	*	28	19	24	21	27
Chest	5	5	10	6	15	18
Legs - below knees	*	20	17	12	15	16
Back	13	14	12	21	22	15
Hands	*	11	6	8	4	12
Ears	1	9	7	3	6	10
Legs - above knees	*	14	9	6	12	9
Feet	3	4	7	3	6	9
Stomach	1	1	6	3	7	8
Scalp	*	23	9	2	5	8
Other	*	0	1	*	*	2
Arms	28	*	*	*	*	*
Legs	27	*	*	*	*	*
Head	2	*	*	*	*	*
Back of knees	1	*	*	*	*	*
Don't know	*	0	*	1	*	*
<b>Base: Sunburnt previous weekend (n)</b>	<b>104</b>	<b>177</b>	<b>159</b>	<b>126</b>	<b>139</b>	<b>198</b>

### 4.4 Previous sunburn history

All respondents were asked whether, apart from the previous weekend, they had ever experienced moderate to severe sunburn (defined as sunburn that results in blisters or pain for at least two days).

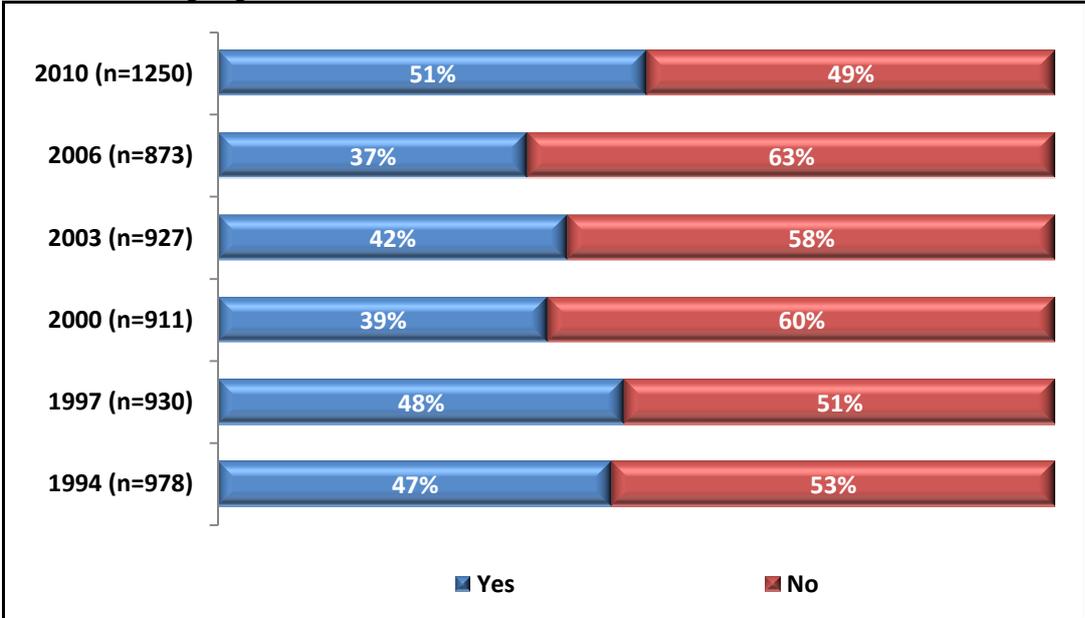
#### 2010

In 2010, one-half (51%) of respondents said that they had experienced moderate to severe sunburn in the past (see Figure 4.5).

#### Time-series

Reporting of past moderate to severe sunburn in 2010 was significantly higher than in 2006 (51% compared with 37%), however the level of recall of moderate to severe sunburn has fluctuated over previous years.

**Figure 4.5: Previous history of moderate/severe sunburn, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: all respondents

In 2010, this question was moved near to the end of the interview along with demographics and questions about skin type, whereas in previous surveys it was one of the first questions asked. Question placement may affect recall.

# 5.0 Outdoor Activity

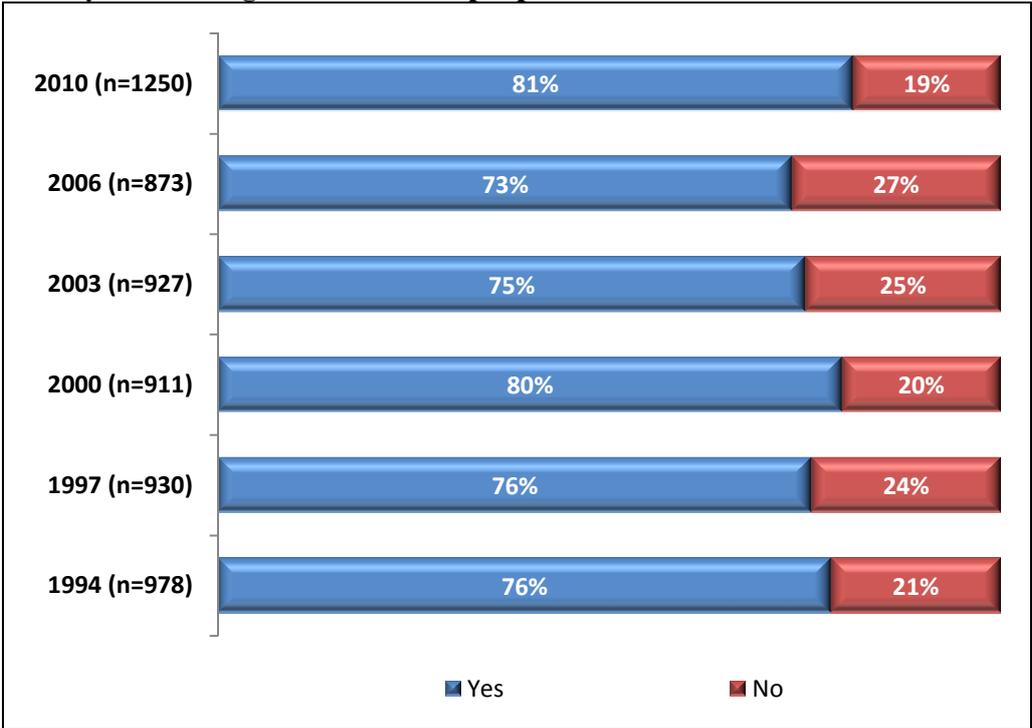
## 5.1 Being outdoors

All respondents were asked whether they had spent 15 minutes or more outdoors between 11am and 4pm on the previous Saturday and/or Sunday. One of these days was then chosen to ask about in more detail (see Section 3.5). Some of the respondents in 2010 reported having gone outside earlier than 11am, or stayed out later than 4pm, but all recorded as being outside at the weekend had been out between those hours as well.

### Time-series

In 2010, eight out of 10 (81%) respondents spent more than 15 minutes outside on either Saturday or Sunday during the previous weekend (see Figure 5.1). After adjusting for age, this was significantly higher than in 2006 (81% compared with 73%).

**Figure 5.1: Spent 15 minutes or more outside during previous Saturday and/or Sunday, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: all respondents

Since 1994 there has been a significant increase in the proportion of respondents who spent 15 minutes or more outdoors on both Saturday *and* Sunday during the previous weekend (30% in 1994 increasing to 53% in 2010).

It should be noted that in 2010 respondents were selected from locations around New Zealand, including rural and urban areas. This difference in the way respondents were selected might have contributed to a difference in the proportions of people spending time outdoors between the 1994–2006 surveys and 2010.

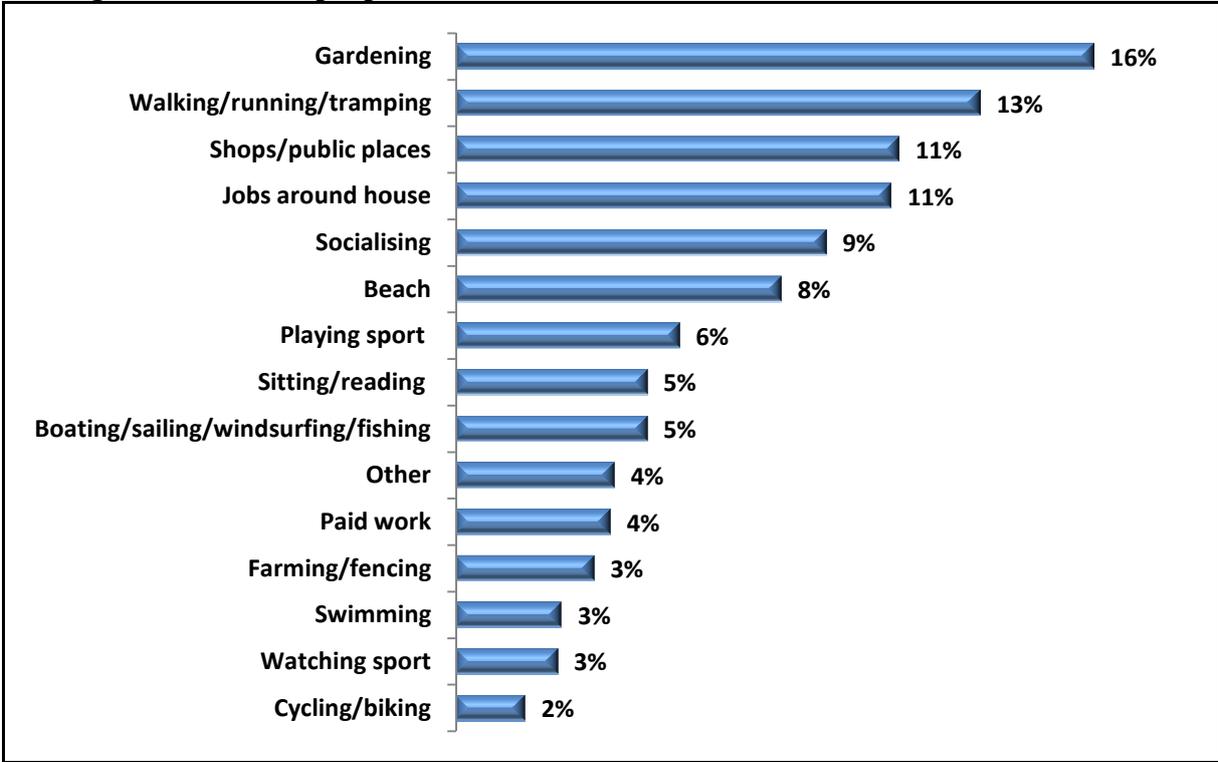
## 5.2 Type of activity

Respondents who had spent at least 15 minutes outdoors during the previous weekend were asked about which activity they had spent the most time doing.

### 2010

In 2010, gardening remained a popular outdoor activity, with one out of six (16%) respondents participating in this activity (see Figure 5.2). In 2010, over one out of 10 (13%) respondents who had been outdoors had been walking, running or tramping. Other popular activities participated in by around one out of 10 respondents who had been outdoors were: shopping or socialising in public places (11%), jobs around the house (11%), and socialising at home or at someone else's home (9%).

**Figure 5.2: Main outdoor activity participated in during previous weekend, 18-54 year olds, age-standardised proportions, 2010**



Base: outdoors during previous weekend (n=1013)

## Time-series

The main outdoor activities done by those who had been outdoors the previous weekend are shown for all six surveys in Table 5.3.

In 2010, a significantly higher proportion of respondents had spent most of their time outdoors shopping or socialising in public places, compared with 2006 (11% compared with 3%). There was also a significant decrease in the proportion of respondents whose main activity had been playing sport (6% in 2010, compared with 10% in 2006).

**Table 5.3: Main outdoor activities participated in during previous weekend, 18-54 year olds, age-standardised proportions, 1994-2010**

	1994	1997	2000	2003	2006	2010
	%	%	%	%	%	%
Gardening	27	25	17	15	18	16
Walking/running/tramping	14	16	18	17	16	13
Shops/public places	2	*	2	6	3	11
Jobs around house	8	10	11	10	8	11
Socialising	6	2	11	7	10	9
Beach	2	6	4	6	9	8
Playing sport	7	17	9	11	10	6
Sitting/reading	18	7	8	7	7	5
Boating/sailing/windsurfing/fishing	3	1	4	3	2	5
Other	2	7	7	3	4	4
Paid work	3	2	3	4	3	4
Farming/fencing	2	2	*	1	1	3
Swimming	1	1	2	4	4	3
Watching sport	3	1	1	4	4	3
Cycling/biking	1	*	1	1	2	2
Don't know	3	*	1	4	*	*
<b>Base: Outdoors during the previous weekend (n)</b>	<b>715</b>	<b>717</b>	<b>720</b>	<b>689</b>	<b>625</b>	<b>1013</b>

### 5.2.1 Water-based activities

#### 2010

In 2010, respondents who reported taking part in an activity that was not specifically water-based were asked whether their activity was based in, or next to, water. This was then used to calculate the proportion of respondents who were in, on, or around, water while they were doing their main activity outside on the previous weekend.

Overall, around one-third (32%) of respondents had been based by or in the water while doing their main outdoor activity, while two-thirds (68%) had not. Of those who had been based in or by water, over half (17%) had been doing a specifically water-based activity such as swimming, boating, sailing, fishing, or being at the beach.

### 5.3 Time spent

Respondents who had spent 15 minutes or more outdoors during the previous weekend were asked how long they had spent outside doing the main activity they mentioned, and the approximate times during the day that they began and finished the outdoor activity.

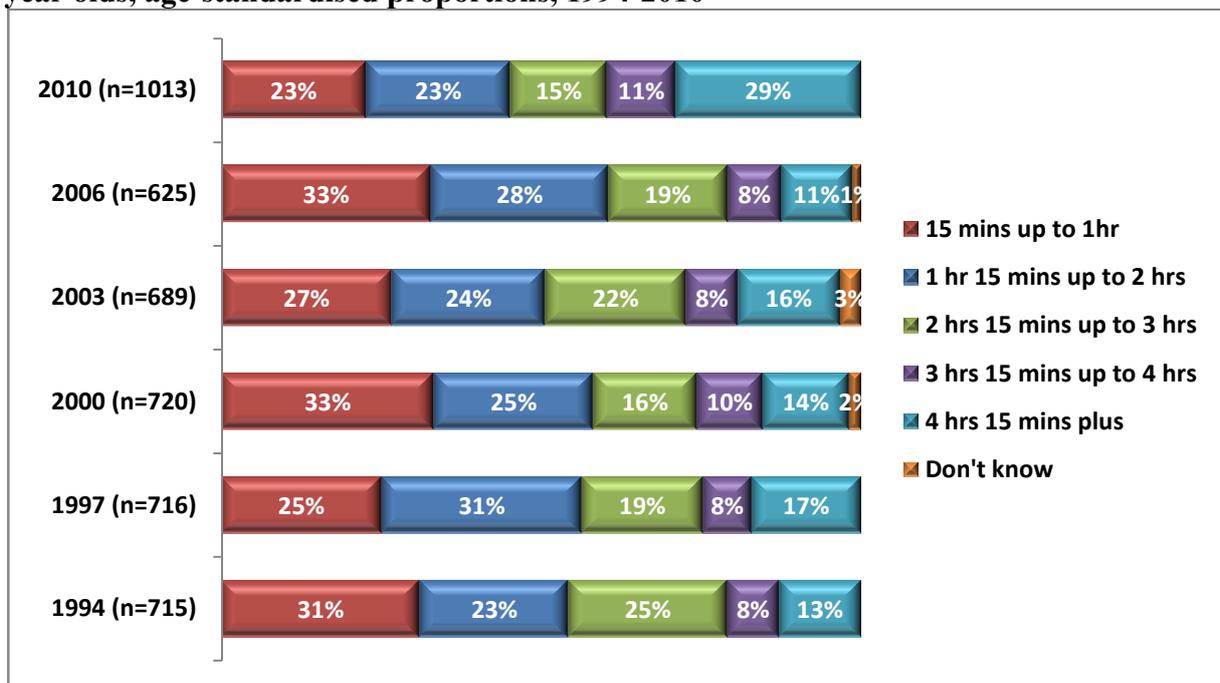
#### 2010

In 2010, nearly one-half (46%) of the respondents who had been outdoors spent two hours or less doing their main activity. Three out of 10 (29%) respondents in 2010 spent at least four hours and 15 minutes outside doing their main activity (see Figure 5.4).

#### Time-series

The proportion of respondents who had spent at least four hours and 15 minutes doing their outdoor activity was significantly higher in 2010 than in 2006 (29% compared with 11%). However, caution is advised when interpreting this finding.

**Figure 5.4: Amount of time spent doing outdoor activity during previous weekend, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: outdoors during previous weekend

This question was asked differently in 2010 than in the 1994–2006 surveys in which respondents were only asked for times between 11am and 4pm. In 2010, respondents were able to nominate any start and finish time, to the nearest 15 minutes. The difference noted earlier regarding the way respondents were selected (that is, the sample in 2010 included people in rural as well as urban areas) may also be relevant for this question.

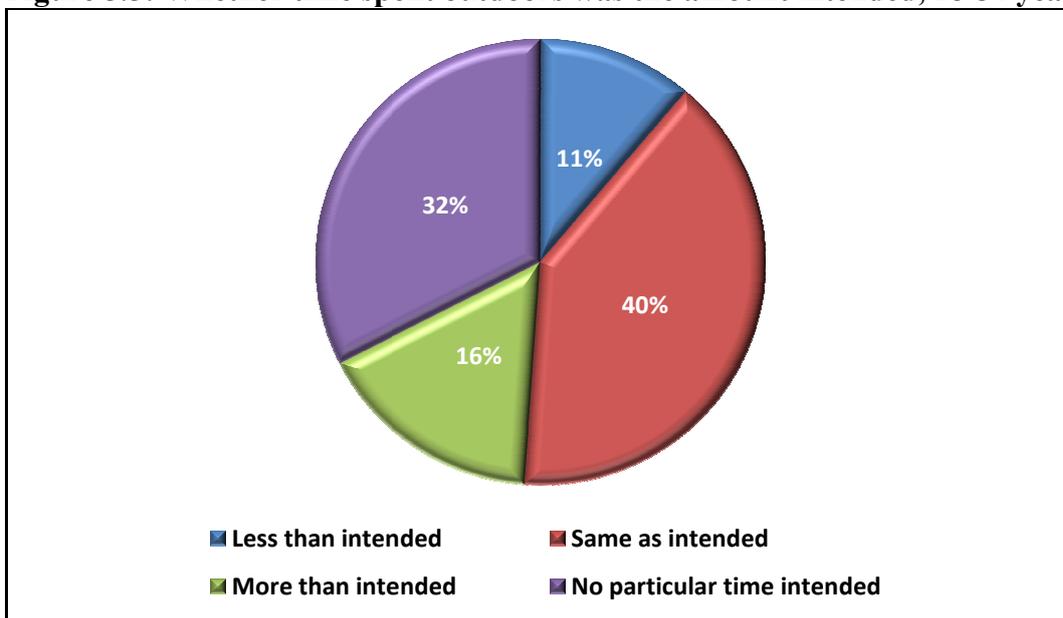
### 5.3.1 Time planned to be outdoors

#### 2010

In 2010, respondents who had spent 15 minutes or more outdoors during the previous weekend were asked to think about the amount of time they intended to spend outdoors on the day in question, and the amount of time they actually spent outdoors.

Four out of 10 (40%) respondents spent *about the same amount of time outdoors as they intended*. Around three out of 10 (32%) said that they *had not intended any particular time* when they went outside. Under two out of 10 (16%) respondents spent *more time outdoors than they intended*, and around one out of 10 (11%) spent *less time outdoors than intended* (see Figure 5.5).

**Figure 5.5: Whether time spent outdoors was the amount intended, 18-54 year olds, 2010**



Base: Outdoors during previous weekend (n=1013)

## 6.0 Sun Exposure and Sun Protection Behaviours

### 6.1 Preparation to protect from the sun

In 2010, respondents who had spent 15 minutes or more outdoors during the previous weekend were asked whether they *had things on hand to protect themselves from the sun if they needed to* on the day in question.

Nearly six out of 10 (57%) respondents said that they had had things on hand, while around four out of 10 (42%) had not.

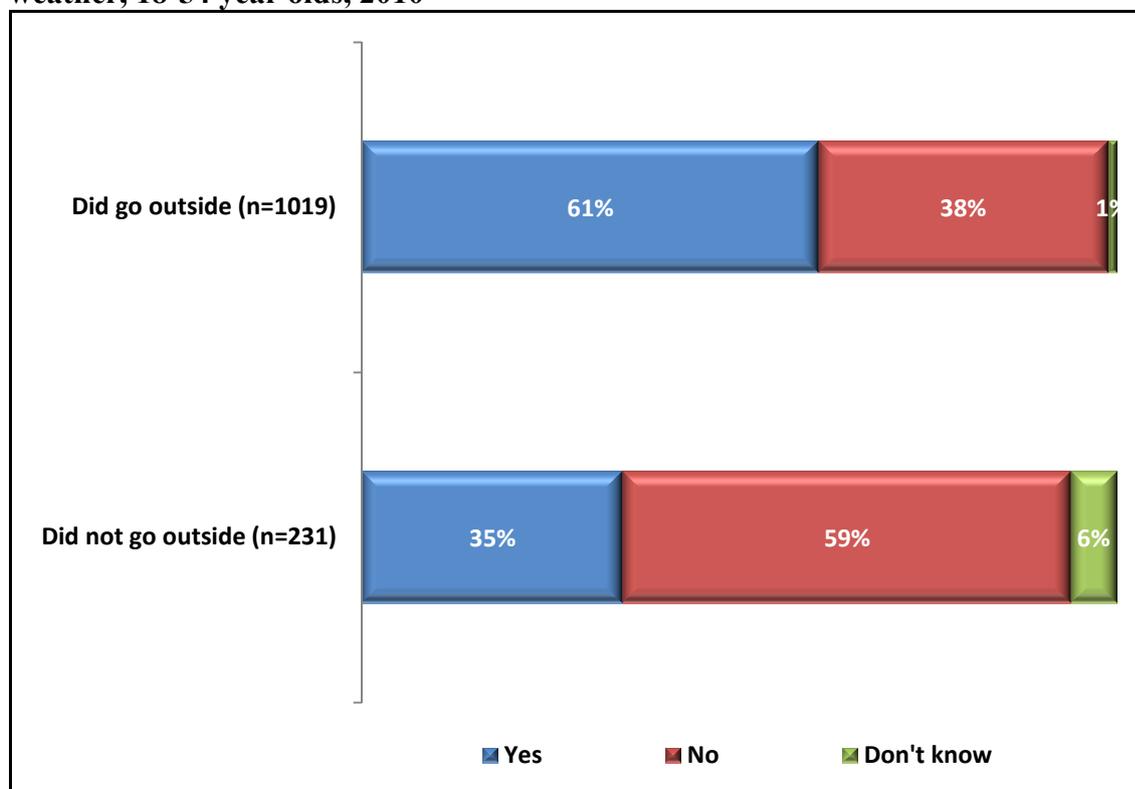
#### 6.1.1 Perception of weather

In 2010, all respondents were asked whether the weather on Saturday or Sunday *had made them think that they could get sunburnt if they went outside without sun protection*.

Of those respondents who had been outdoors at the weekend, six out of 10 (61%) said that the weather on the day in question had made them think they could get sunburnt, while around four in 10 (38%) said it had not (see Figure 6.1).

Over three out of 10 (35%) respondents who had not been outdoors for 15 minutes or more at the weekend said that the weather had made them think they could get sunburnt, while nearly six out of 10 (59%) said that it had not. The remainder (6%) said that they did not know.

**Figure 6.1: Whether thought could get sunburnt during previous weekend due to the weather, 18-54 year olds, 2010**



Base: all respondents (n=1250)

## 6.2 Use of clothing to cover up

Respondents who had spent 15 minutes or more outdoors during the previous weekend were asked which parts of their body were covered or shaded by clothing.

### 2010

In 2010, around nine out of 10 respondents reported that their stomach (92%), back (92%), legs above the knee (92%), and chest (89%) had been covered by clothing (see Table 6.2).

### Time-series

A significantly higher proportion of respondents in 2010 reported that their legs above the knee had been covered by clothing, compared with 2006 (92% compared with 79%). There was also a significant increase in the proportion of respondents whose shoulders had been covered by clothing, compared with 2006 (75% compared with 62%).

The proportion of respondents reporting that their neck had been covered by clothing dropped every year from 1997 (52%). In 2010, two in 10 (19%) respondents reported that their neck had been covered with clothing, a significantly lower proportion than in any other year.

**Table 6.2: Body parts covered up by clothing while outdoors during previous weekend, 18-54 year olds, age-standardised proportions, 1997-2010**

	1997	2000	2003	2006	2010
	%	%	%	%	%
Stomach	90	88	87	87	92
Back	87	80	80	81	92
Legs - above knees	33	81	78	79	92
Chest	85	85	82	81	89
Shoulders	78	73	67	62	75
Arms - above elbows	79	68	65	55	66
Feet	54	35	37	41	49
Legs - below knees	37	37	40	32	28
Neck	52	41	34	30	19
Arms - below elbows	24	20	25	20	16
Hands	13	9	11	11	7
Scalp	33	32	36	37	3
Ears	21	24	23	23	3
Face	27	28	27	32	2
Nose	23	24	24	25	2
None	*	1	1	0	1
Buttocks	76	*	*	*	*
Don't know	*	0	*	*	*
<b>Base: Outdoors during the previous weekend (n)</b>	<b>717</b>	<b>720</b>	<b>689</b>	<b>625</b>	<b>1013</b>

In 2010, the description of clothing was expanded to note that “clothing” included towels, scarves and covered shoes, but *not* hats. This will account for some difference in responses.

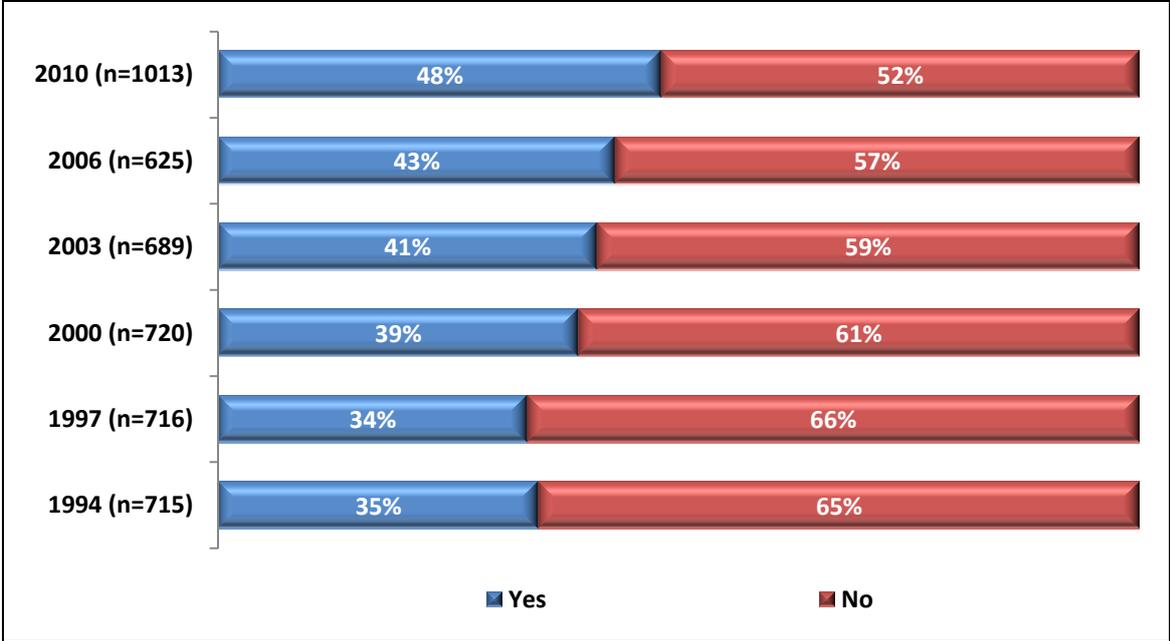
### 6.3 Hat use

All respondents who had spent 15 minutes or more outdoors during the previous weekend were asked which parts of their body were shaded by a hat, cap or visor.

In earlier surveys, respondents had been asked firstly whether they had worn a hat, and then what type of hat it was. In 2010, the focus on hat type was moved to more explicitly ask about the amount of coverage provided by the hat.

In 2010, around one-half (48%) of respondents who had been outdoors reported that they had worn a hat (see Figure 6.3). This proportion has increased, and in 2010 was significantly higher than in 1994 (48% compared with 35%).

**Figure 6.3: Use of hat while outdoors during previous weekend, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: outdoors during previous weekend

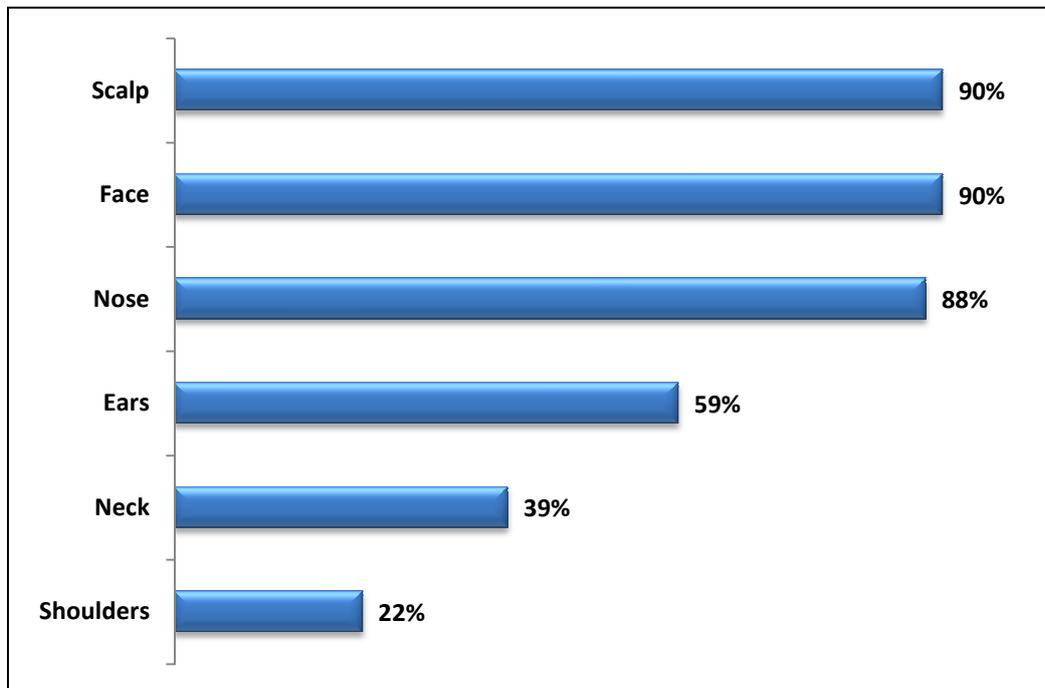
### 6.3.1 Coverage from hat

In 2010, respondents who had worn a hat while outdoors during the previous weekend listed the parts of their body were covered or shaded by the hat, cap or visor most of the time while they were doing their main outdoor activity.

A range of combinations of body parts were covered by hats. Three-quarters (76%) of respondents wearing a hat reported that at least their face, nose and scalp had been covered, and eight out of 10 (81%) reported that at least their face and nose had been covered. One in seven (14%) hat-wearing respondents described their hat as providing the maximum coverage listed, that is, covering their face, nose, scalp, ears, neck and shoulders.

Most hats that respondents wore covered the scalp (90%), face (90%) and nose (88%), and more than half of the hats covered ears (59%), while smaller proportions covered the neck (39%) and shoulders (22%) (see Figure 6.4).

**Figure 6.4: Coverage by hats worn while outdoors during previous weekend, 18-54 year olds, 2010**



Base: wore a hat outdoors during previous weekend (n=523)

### 6.4 Sunscreen use

All respondents who had spent at least 15 minutes outdoors during the previous weekend were asked what parts of their body were covered by sunscreen for most of the time while they were doing the main activity mentioned.

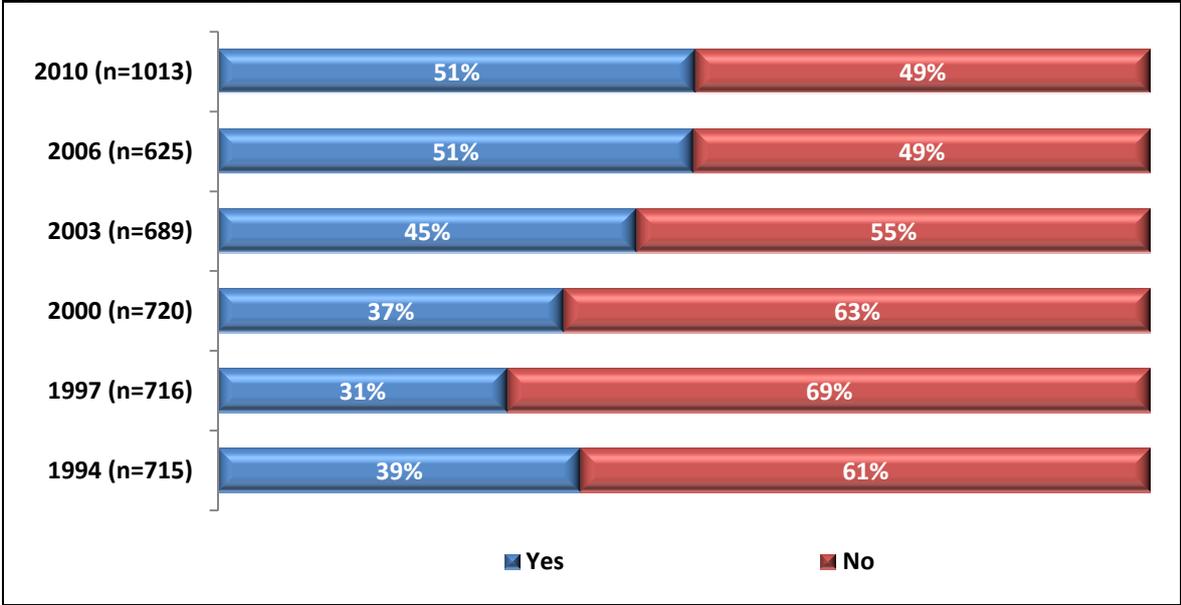
#### 2010

In 2010, one-half (51%) of respondents who had been outdoors used sunscreen to cover up (see Figure 6.5).

#### Time-series

This proportion of respondents using sunscreen in 2010 had not changed since 2006, when there was a significant increase from 1994 (51% compared with 39%).

**Figure 6.5: Use of sunscreen while outdoors during previous weekend, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: outdoors during previous weekend

In 2010 respondents were simply asked which body parts were covered and how many times they applied sunscreen. In previous surveys a longer list of questions was asked, including firstly whether sunscreen was used and then a range of questions about the type of sunscreen. In 2010, the SPF rating of the sunscreen used was not asked about.

## 6.4.1 Body coverage

### 2010

In 2010, the body parts most likely to be covered by sunscreen were the face, by nearly one-half (47%) of the respondents who were outdoors and the nose, by four out of 10 (41%) of those who were outdoors (see Table 6.6).

Between 2010 and 2006 there was a significant increase in the proportion of respondents who put sunscreen on their neck (35% compared with 28%) and on their ears (27% in 2010 compared with 17% in 2006).

**Table 6.6: Body parts covered by sunscreen while outdoors during previous weekend, 18-54 year olds, age-standardised proportions, 1994-2010**

	1994	1997	2000	2003	2006	2010
	%	%	%	%	%	%
Face	31	38	38	29	32	40
Neck	29	33	26	19	36	33
Shoulder	15	15	26	31	33	31
Arms - below elbows	*	36	29	30	27	37
Back	13	14	12	21	22	15
Arms - above elbows	*	28	19	24	21	27
Legs - below knees	*	20	17	12	15	16
Legs - above knees	*	14	9	6	12	9
Nose	8	29	25	16	15	30
Chest	5	5	10	6	15	18
Stomach	1	1	6	3	7	8
Feet	3	4	7	3	6	9
Ears	1	9	7	3	6	10
Scalp	*	23	9	2	5	8
Hands	*	11	6	8	4	12
Arms	28	*	*	*	*	*
Legs	27	*	*	*	*	*
Head	2	*	*	*	*	*
Back of knees	1	*	*	*	*	*
Don't know	*	0	*	1	*	*
Other	*	0	1	*	*	2
<b>Base: Sunburnt previous weekend (n)</b>	<b>104</b>	<b>177</b>	<b>159</b>	<b>126</b>	<b>139</b>	<b>198</b>

## 6.4.2 Reapplication of sunscreen

### 2010

In 2010, respondents who had spent 15 minutes or more outdoors during the previous weekend were asked how many times they applied sunscreen during the day in question.

In 2010, as shown in Table 6.7, one in three (31%) respondents who were outdoors applied sunscreen once, while over one in 10 (12%) applied it twice. Smaller proportions applied sunscreen three times (6%) four times (1%) or more than four times (2%).

### Time-series

**Table 6.7: Number of times sunscreen applied, 18-54 year olds, age-standardised proportions, 1997-2010**

	1997 %	2000 %	2003 %	2006 %	2010 %
Did not apply sunscreen	69	63	55	49	49
Applied sunscreen once	21	23	30	29	31
Applied sunscreen twice	5	6	7	8	12
Applied sunscreen three times	4	5	4	9	6
Applied sunscreen four times	1	2	2	3	1
Applied sunscreen more than four times	1	1	2	2	2
Don't know				1	0
<b>Base: Outdoors during previous weekend (n)</b>	<b>716</b>	<b>719</b>	<b>688</b>	<b>625</b>	<b>1013</b>

Between 1997 and 2006 respondents were asked whether they had reapplied sunscreen and, if so, how many times. In 2010 the questions were combined into one question about the overall number of times sunscreen had been applied (meaning that if respondents answered “once” they confirmed that they had not reapplied sunscreen).

## 6.5 Use of shade

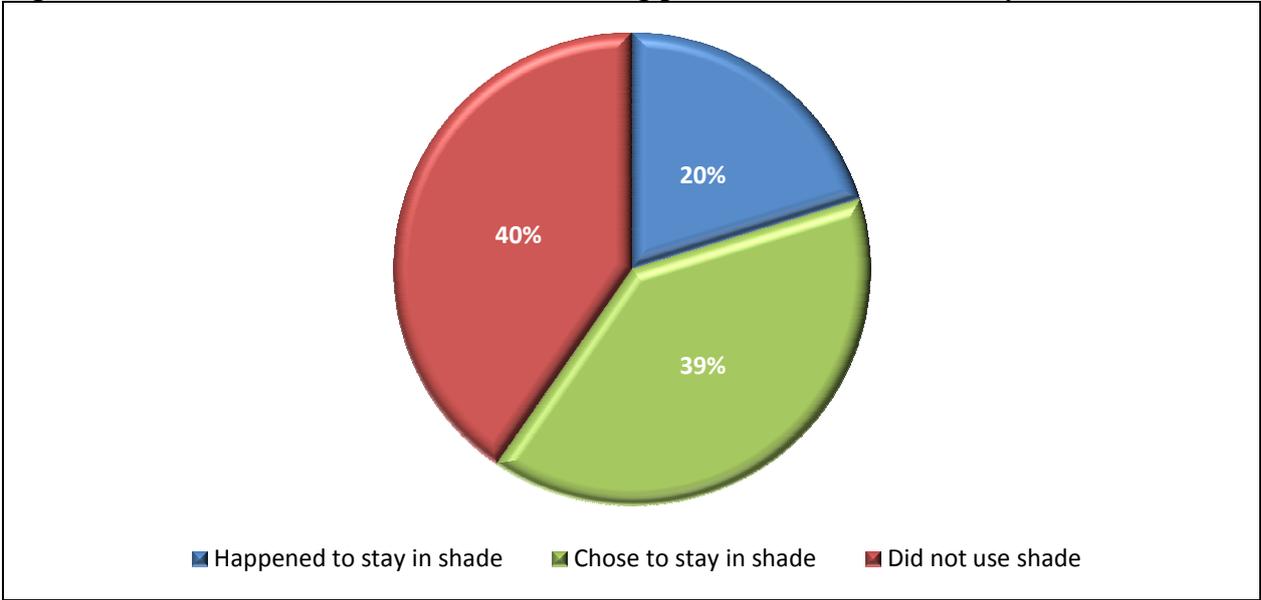
### 2010

In 2010, respondents who had spent 15 minutes or more outdoors during the previous weekend were asked whether they had stayed out of the sun, or in the shade, at any time while doing their main outdoor activity.

Six out of 10 respondents (59%) said that they had stayed out of the sun or in the shade at some time while they were outside. Four out of 10 (40%) had not.

Those who had stayed in the shade or out of the sun were asked whether they had *made a choice to use the shade*, or whether *it had just happened*. Of those who had been in the shade, the majority (39%) had chosen to stay in the shade, and the remainder (20%) said they *just happened to be in the shade* (see Figure 6.8).

**Figure 6.8: Use of shade, while outdoors during previous weekend, 18-54 year olds, 2010**



Base: outdoors during previous weekend (n=1013)

## 6.6 Choice to stay indoors 11am – 4pm

### 2010

In 2010, respondents who hadn't been outside for 15 minutes or more between 11am and 4pm the previous weekend were asked whether they had made a conscious choice to not go outside between 11am and 4pm in order to avoid being sunburnt, on the day being asked about.

Around two out of 10 (18%) of these respondents said that they had made a choice to not go outside between 11am and 4pm, while around eight out of 10 (78%) said that they had not made such a choice. The remainder did not know.

# 6.7 Sunglass use

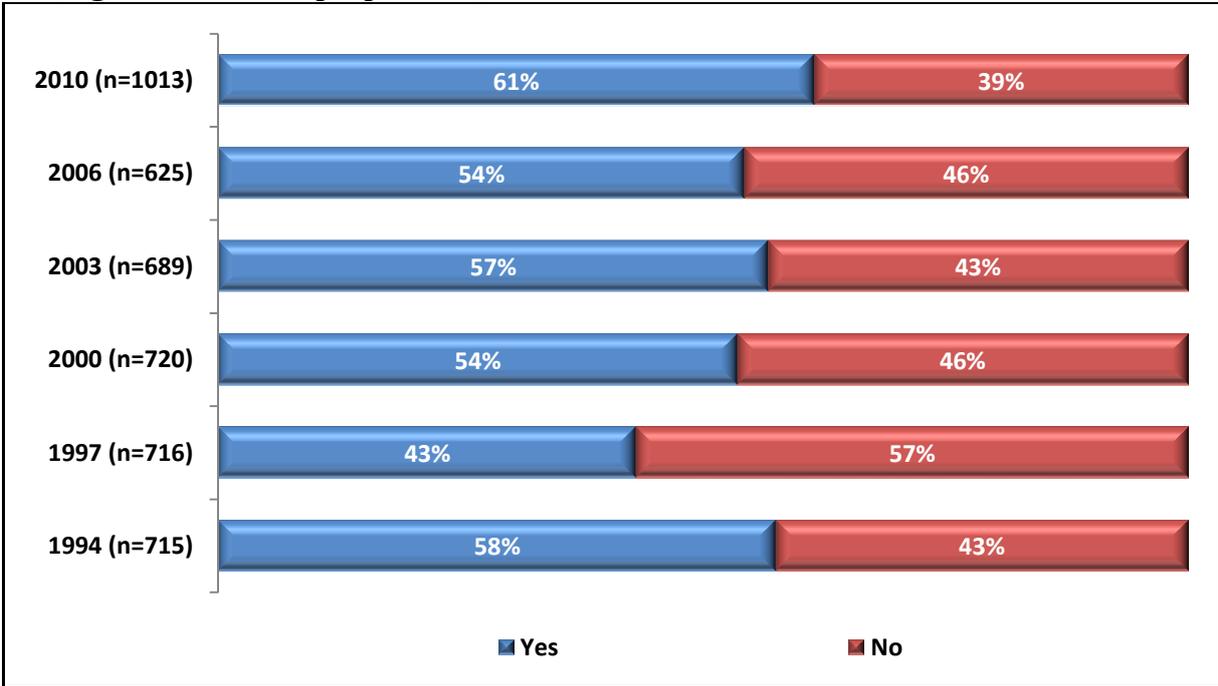
Respondents who had spent 15 minutes or more outdoors during the weekend were asked whether they had been wearing any sunglasses while doing their main outdoor activity.

## 2010

In 2010, six out of 10 (61%) respondents who had been outdoors had worn sunglasses, while four out of 10 (39%) had not (see Figure 6.9).

### Time-series

**Figure 6.9: Wearing of sunglasses while outdoors during previous weekend, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: outdoors during previous weekend

# 7.0 Sun Exposure Knowledge and Attitudes

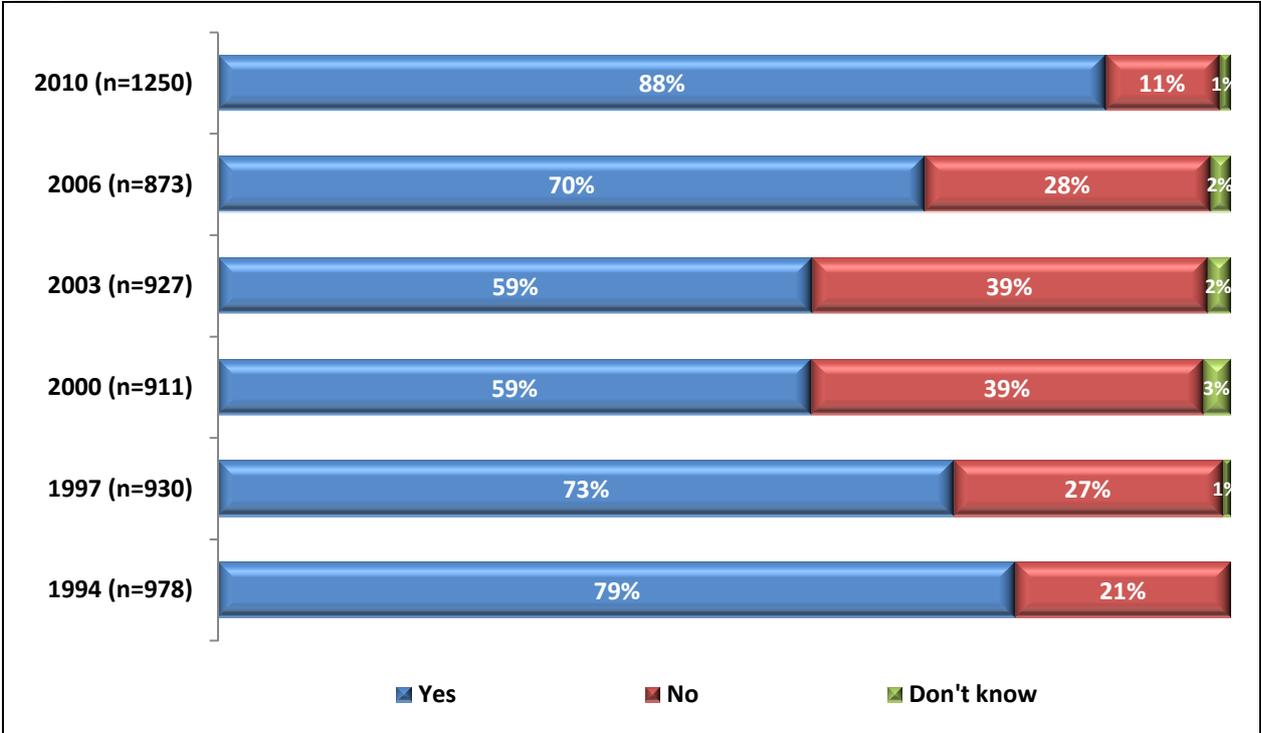
## 7.1 Recall of advertising

All respondents were asked whether they had seen any advertising in recent summers about the dangers of exposure to the sun.

### Time-series

In 2010, nearly nine out of 10 (88%) respondents recalled some advertising about sun safety. This was a significant increase compared with 2006, when seven out of 10 (70%) had recalled advertising (see Figure 7.1).

**Figure 7.1: Recall of sun safety advertising, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: all respondents

The level of HSC advertising in 2010 was lower than in 2005/06 and 2002/03 (data was not available for the earlier years). However, the Never Let Your Child Get Sunburnt advertisement had been shown more heavily in the previous summer of 2008/09, which may account for some of its recall. In addition, these statistics do not take into account advertising by other organisations. More details about the advertising in these years can be found in Appendix 5.

### 7.1.2 Messages recalled

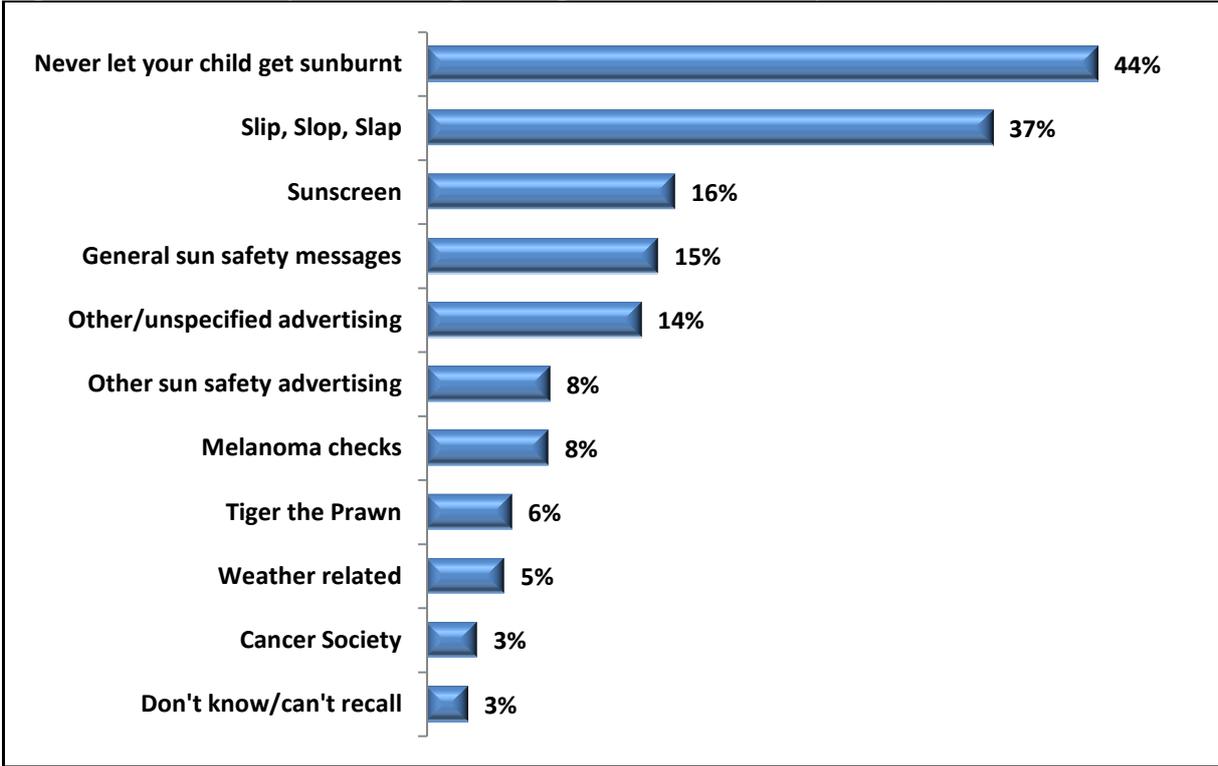
Respondents who recalled sun safety advertising were asked to describe what they had seen.

#### 2010

In 2010, the most commonly recalled sun safety advertising images and messages related to the HSC’s mass media campaign *Never Let Your Child Get Sunburnt*, which was screening in January while the survey fieldwork commenced, but had gone off air at the start of February. The advertisement shows three young children with painful red sunburns, and then a woman, also in pain, in a hospital bed. A voiceover explains that sunburn as a child can cause melanoma skin cancer later in life and urges parents and caregivers to use sun safety strategies to ensure that children never get sunburnt.

Over four out of 10 (44%) of those who recalled an advertisement described this advertisement. The other advertising that was commonly recalled included “Slip, Slop, Slap” messages, by nearly four out of 10 (37%) respondents who recalled an advertisement (see Figure 7.2).

**Figure 7.2: Sun safety advertising messages recalled, 18-54 year olds, 2010**



Base: Recalled sun safety advertising (n=1113)

## 7.2 Skin Cancer Knowledge – Risk Factors

### 2010

In 2010, all respondents were asked about what they thought would increase a person’s chances of getting skin cancer. Respondents could mention as many things as they could think of, which were then coded to a list of possible risk factors. Most responses were grouped into five overall themes: sun exposure, not using sun protection, sunburn, skin type or genetics, and tanning or sunbathing (see Figure 7.3).

Seven out of 10 (69%) respondents mentioned *sun exposure* as a risk factor. These responses included “being in the sun” (52%), “being in the sun too long” (31%) and “being in the sun during peak times” (2%).

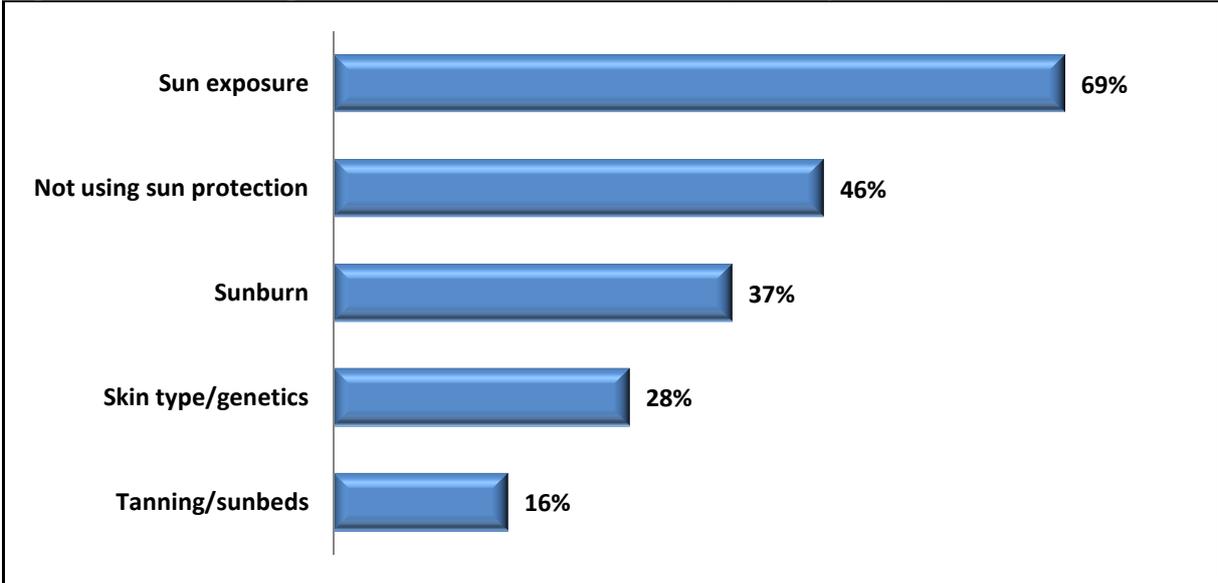
Nearly one-half (46%) of the respondents mentioned *not using sun protection* as a risk factor. These responses included “not using sunscreen” (43%), “not covering up” (4%), “not using sun protection or taking care in the sun” (3%), “not wearing a hat” (3%), “not wearing clothing” (2%) and several factors mentioned by fewer than 2% of respondents.

Around four out of 10 (38%) respondents mentioned *sunburn* as a risk factor. These responses included “getting sunburnt” (14%), “getting sunburnt frequently” (13%), “getting severe sunburn” (10%), “getting sunburnt as a child” (9%) and “getting sunburnt as an adult” (1%).

Around three out of 10 (28%) respondents mentioned *skin type or genetics* as a risk factor. These responses included “family history or genetics” (14%), “having fair or light skin” (12%), “having a lot of moles or freckles” (4%) and “ethnicity” (0.3%).

One out of six (16%) respondents mentioned *tanning or sunbathing* as a risk factor. These responses included “sunbathing” (11%), “tanning generally” (2%), “using sun beds/solaria” (6%) and “using oils for tanning” (1%).

**Figure 7.3: Knowledge of risk factors for skin cancer, 18-54 year olds, 2010**



Base: all respondents (n=1250)

### 7.3 Perceived individual risk of skin cancer

#### 2010

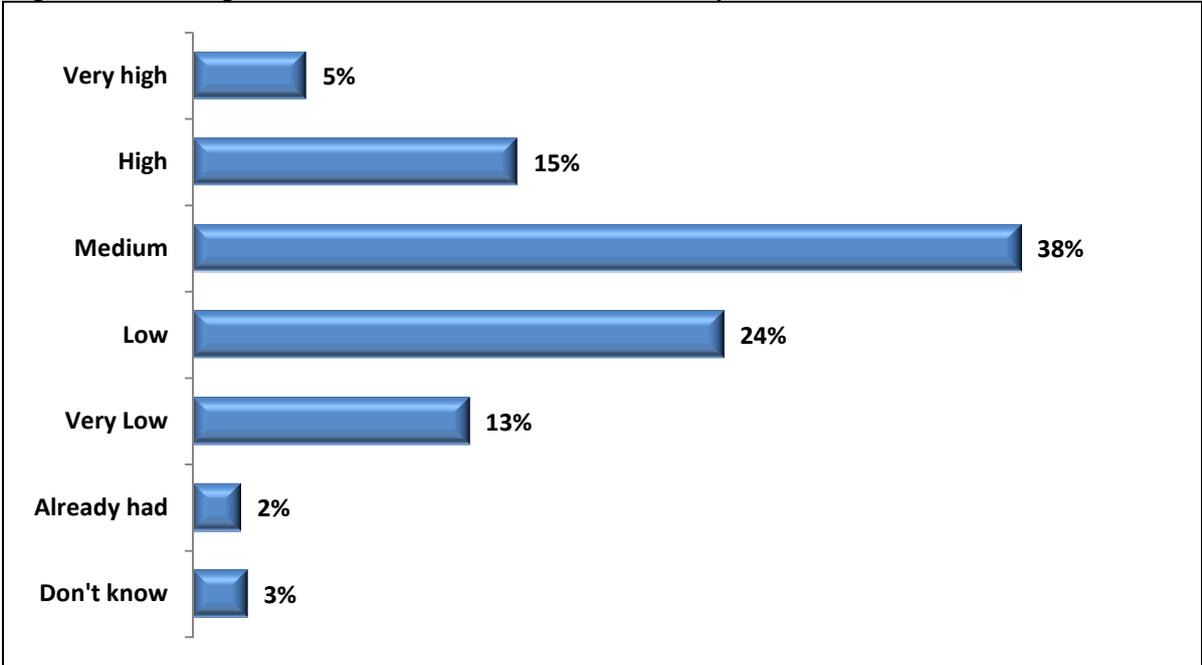
In 2010, all respondents were asked what they thought was their likelihood of getting skin cancer in the future.

Two out of 10 (20%) respondents thought that they had a high risk of getting skin cancer in the future. This total included 5% who thought their risk was very high.

Under four in 10 (37%) respondents thought that they had a low risk of getting skin cancer in the future. This total included 13% who thought that their risk was very low.

Around four out of 10 (38%) respondents thought that they had a medium risk of getting skin cancer in the future, while a small proportion (2%) had already had skin cancer (see Figure 7.4).

**Figure 7.4: Self-perceived risk of skin cancer, 18-54 year olds, 2010**



Base: all respondents

# 8.0 Tanning

Among the adult sample in the 2010 SES, only 18-24 year olds were asked about their tanning activities, because young people are of most interest to the SunSmart programme in terms of tanning behaviours. These responses will, along with those of the 13-17 year old sample, be reported on separately. A range of attitudinal statements were, however, asked of all adults.

## 8.1 Agreement with suntanning statements

All respondents were asked to indicate their agreement with four statements about their attitudes to tanning, choosing responses from a five-point scale.

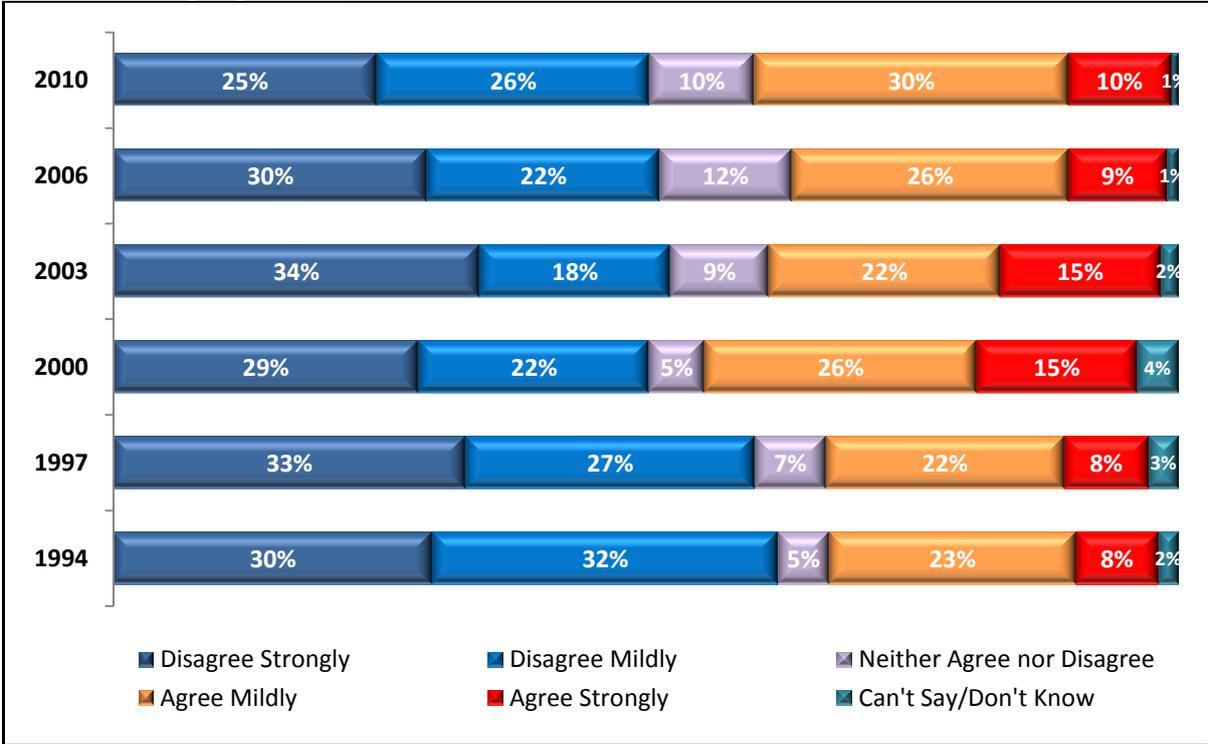
### “I feel more healthy with a suntan”

#### 2010

In 2010, four out of 10 (40%) respondents agreed with this statement, including one in 10 (10%) who strongly agreed. One-half (51%) of the respondents disagreed, including one quarter (25%) who strongly disagreed. One in 10 (10%) respondents neither agreed nor disagreed with this statement (see Figure 8.1).

#### Time-series

**Figure 8.1: Agreement with “I feel more healthy with a suntan”, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: all respondents

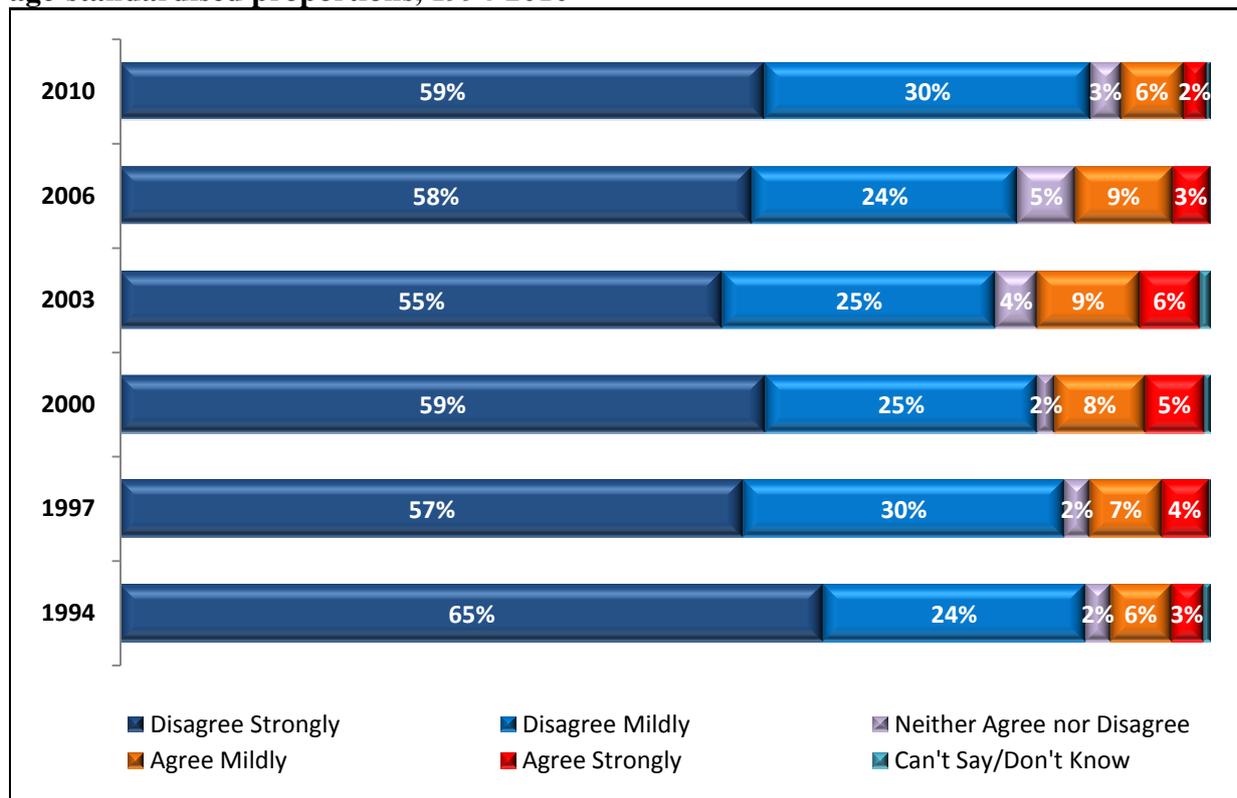
## “This summer I intend to get a suntan”

### 2010

In 2010, nine out of 10 (89%) respondents disagreed with this statement, including six out of 10 (59%) who strongly disagreed. Nearly one out of 10 (8%) respondents agreed with this statement, including 2% who strongly agreed (see Figure 8.2).

### Time-series

**Figure 8.2: Agreement with “This summer I intend to get a suntan”, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: all respondents

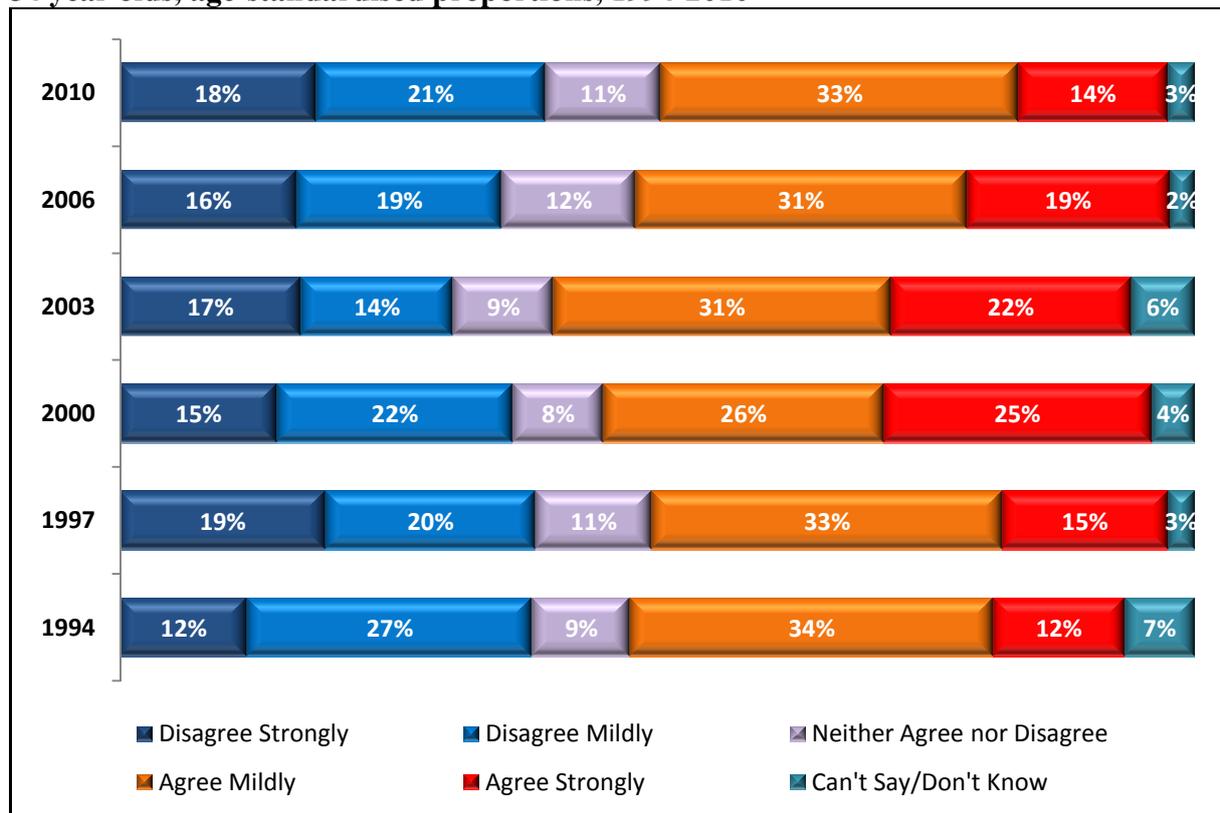
## “Most of my friends think that a suntan is a good thing”

2010

In 2010 nearly one-half (47%) of respondents agreed with this statement, including 14% who strongly agreed. Four out of 10 (39%) respondents disagreed, including 18% who strongly disagreed (see Figure 8.3).

### Time-series

**Figure 8.3: Agreement with “Most of my friends think that a suntan is a good thing”, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: all respondents

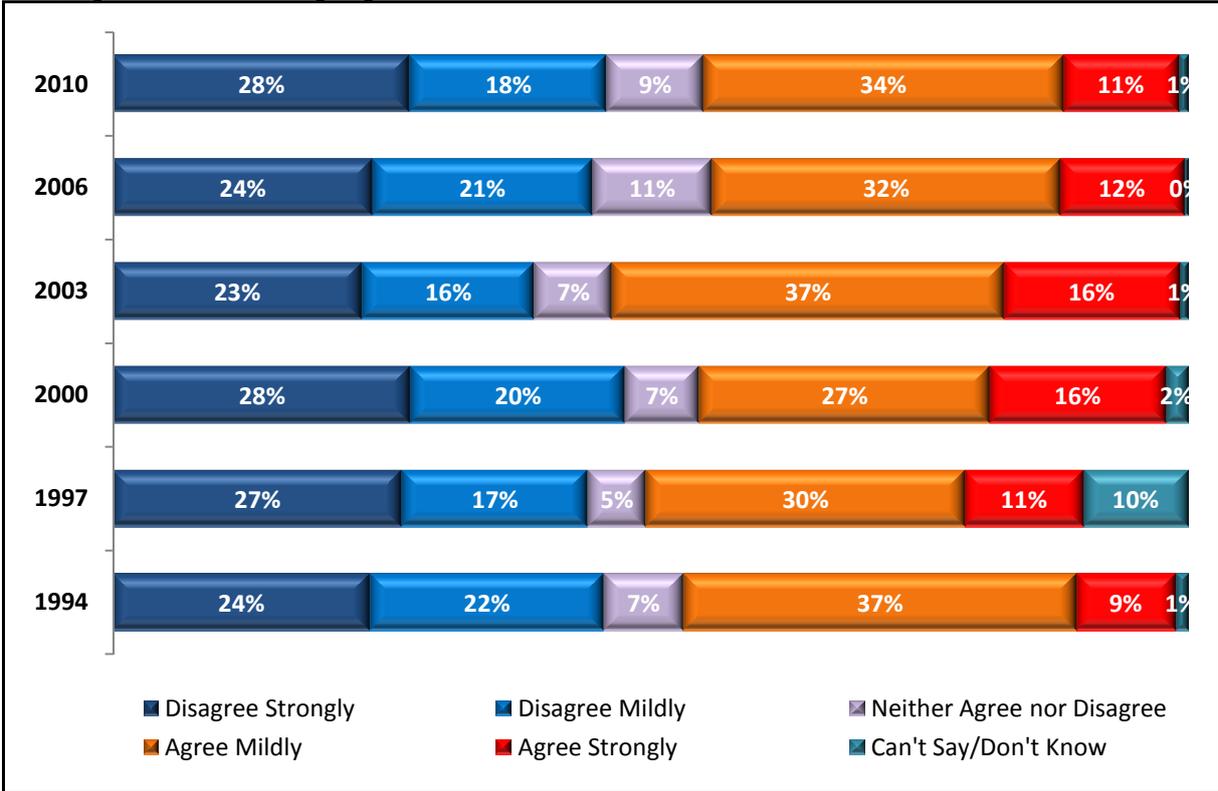
**“A suntan makes me feel better about myself”**

**2010**

In 2010, as in previous years, responses to this statement were fairly evenly split, with nearly one-half (45%) agreeing, including 11% who strongly agreed, and nearly one-half (46%) disagreeing, including 28% who strongly disagreed (see Figure 8.4).

**Time-series**

**Figure 8.4: Agreement with “A suntan makes me feel better about myself”, 18-54 year olds, age-standardised proportions, 1994-2010**



Base: all respondents

# 9.0 Vitamin D

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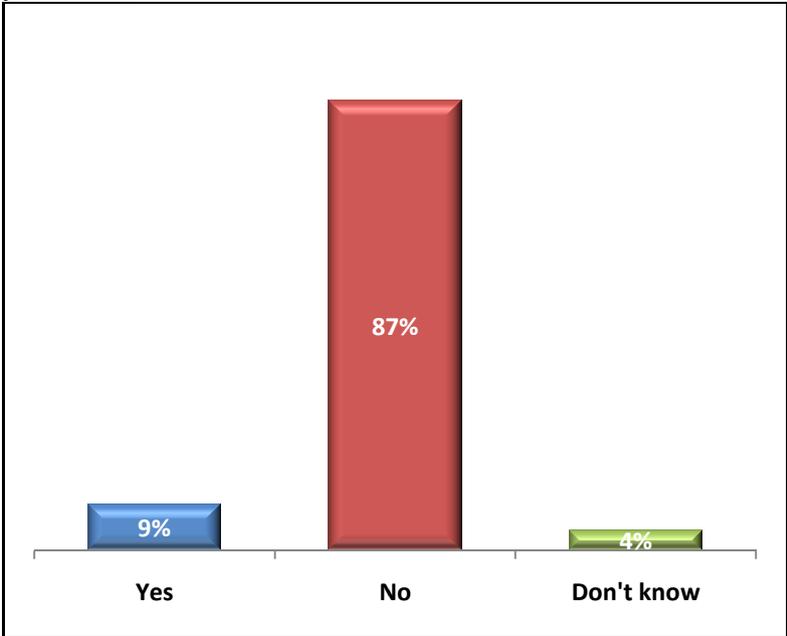
## 9.1 Actions to improve vitamin D levels

2010

All respondents who had spent at least 15 minutes outdoors during the weekend were asked whether they had done anything specific in order to improve their vitamin D levels on the day in question.

One out of 10 (9%) respondents said that they had done something to improve their vitamin D levels. Nearly nine out of 10 (87%) had not, and the remainder (4%) did not know (see Figure 9.1).

**Figure 9.1: Taken action to improve vitamin D levels during previous weekend, 18-54 year olds, 2010**



Base: outdoors during previous weekend (n=1013)

Those who said they had done something to improve their vitamin D levels were asked what that action was (see Figure 9.2). Readers should note the small sample size (n=93).

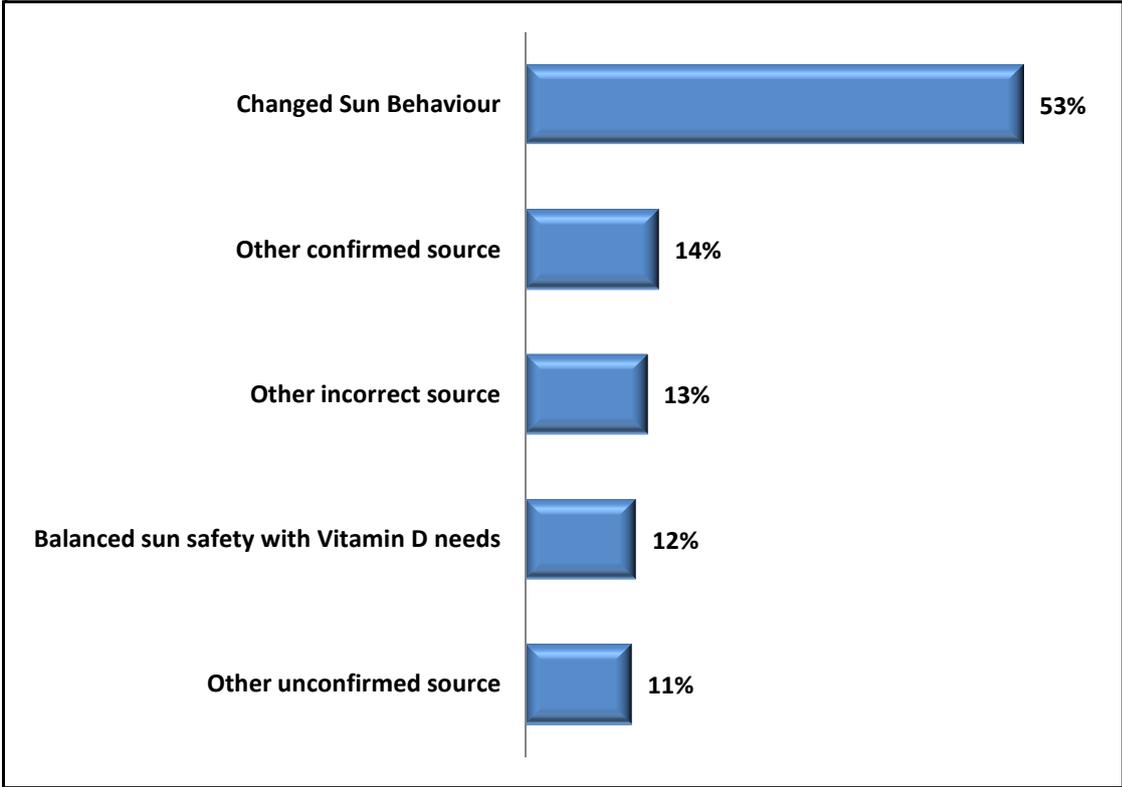
Of those who said they had done something to improve their vitamin D levels, over one-half (53%, n=49) had *changed their behaviour in the sun*. Most (47%, n=43) of these respondents had spent time outdoors in the sun, while the remainder had sunbathed or tried to tan (3%, n=3) or not worn sunscreen (3%, n=2).

Over one out of 10 (14%, n=13) had taken a supplement or food fortified with vitamin D (that is, they described a *confirmed vitamin D source*), while one out of 10 (11%, n=10) reported they had taken a multi-vitamin or supplement but did not specify that it contained vitamin D (coded as an *unconfirmed source*).

Over one out of 10 (13%, n=12) reported that they had got vitamin D from an *incorrect source* (that is, foods or drinks that do not contain vitamin D).

Around one out of 10 (12%, n=11) said they had *balanced sun safety with vitamin D considerations*, by spending time in the sun: outside of peak UVR hours (early or late in the day) (3.2%), for short periods of time (4.8%), or exposing only part of their skin (4.3%).

**Figure 9.2: Actions taken to improve vitamin D levels during previous weekend, 18 – 54 year olds, 2010**



Base: Did something to improve vitamin D levels while outdoors during weekend (n=93)\*

\* Note small sample size

## **Appendices**

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Appendix 1: Questionnaire, Sun Exposure Survey 2010, Adult sample (18 – 54 year olds)

Appendix 2: Summary of main variables collected, 1994, 1997, 2000, 2003, 2006, and 2010

Appendix 3: Summary of key survey features, 1994, 1997, 2000, 2003, 2006, and 2010

Appendix 4: Climate summary, Summer 2009/10, NIWA National Climate Centre

Appendix 5: Summary of HSC SunSmart advertising at time of 2003, 2006 and 2010 surveys

## **APPENDIX 1**

## APPENDIX 2

## Main Variables Collected in the 1994, 1997, 2000, 2003 and 2006 Surveys

Note: ticks mean that question areas were covered in the survey that year – they do not necessarily mean that the questions were asked in an identical fashion. Some differences between the ways that questions were asked between surveys are noted in the report when comparing responses to these questions.

Section/module	Included in:							
	1994	1997	2000	2003	2006	2010 18 – 24 year old sample	2010 Adult (18-54 year old) sample	2010 Teen (13-17 year old) sample
<b>Demographics</b>								
Age	√	√	√	√	√	√	√	√
Gender	√	√	√	√	√	√	√	√
Employment status/ setting	√	√	√	√	√			
Household composition			√	√	√	√	√	√
“Socio-economic status” (based on occupation of main income earner)			√	√	√			
Household income						√	√	
Education	√	√	√	√	√	√	√	√
Ethnicity	√	√	√	√	√	√	√	√
Area of residence	√	√	√	√	√	√	√	√
City, town or rural area						√	√	√
<b>Phenotypic factors</b>								
Skin type (sensitivity to the sun)	√	√	√	√	√	√	√	√
Skin type (colour)			√	√	√	√	√	√
Hair colour	√							
Previous severe sunburn	√	√	√	√	√	√	√	√
Frequency of previous severe sunburn	√	√	√	√	√			
<b>Weekend sunburn</b>								
Body sites burnt	√	√	√	√	√	√	√	√
Worst area burnt	√	√	√	√	√			
Severity of the burn	√	√	√	√	√			
Day (s) of occurrence	√	√	√	√	√	√	√	√
<b>Behavioural factors</b>								
Outdoors at weekend	√	√	√	√	√	√	√	√
Location of outdoor activity (may be different from location of residence)	√	√	√	√	√	√	√	√
Main activity	√	√	√	√	√	√	√	√
Duration of activity	√	√	√	√	√	√	√	√

		1994	1997	2000	2003	2006	2010 18 – 24 year old sample	2010 Adult (18-54 year old) sample
Timing of activity	√	√	√	√	√	√	√	√
Total time spent outdoors	√	√	√	√	√	√	√	√
Amount of time spent outside versus amount of time intended						√	√	√
Choice to stay out of the sun for a period	√	√	√	√	√			
Whether activity took place in a setting with shade provided	√	√	√	√	√			
Type of shade chosen			√	√	√			
Staying out of the sun/ in the shade and whether this was a conscious choice						√	√	√
Whether activity took place by water						√	√	√
Coverage by clothing	√	√	√	√	√	√	√	√
Wearing of hat	√	√	√	√	√	√	√	√
Type of hat	√	√	√	√	√			
Body parts covered by hat						√	√	√
Wearing of sunglasses	√	√	√	√	√	√	√	√
Type of sunglasses			√	√	√			
Use of sunscreen	√	√	√	√	√	√	√	√
Areas covered by sunscreen	√	√	√	√	√	√	√	√
Reapplication of sunscreen	√	√	√	√	√	√	√	√
Use of separate makeup/moisturiser with sunscreen				√	√			
Type of sunscreen (SPF/broad spectrum)	√	√	√	√	√			
Time of application of sunscreen	√	√	√	√	√			
Use of UPF clothing			√	√	√			
Preparation to protect from the sun						√	√	√
Action taken to improve vitamin D levels						√	√	
<b>Weather perception</b>								
Perception of cloud cover	√	√	√	√	√			
Perception of temperature	√							

		1994	1997	2000	2003	2006	2010 18 – 24 year old sample	2010 Adult (18-54 year old) sample
Perception that weather could cause sunburn						√	√	√
<b>Information on sun protection - advertising</b>								
Awareness of advertising/ promotions	√	√	√	√	√	√	√	√
Message outtake	√	√	√	√	√			
Item recall - description				√	√	√	√	√
Setting of advertising	√	√	√	√	√			
<b>Melanoma/ Skin Cancer knowledge</b>								
<b>Agreement with statements about what could happen</b>								
“It may mean loss of a limb”						√		√
“It would only leave a small scar, the size of the melanoma”						√		√
“It could lead to the loss of life”						√		√
“It could reappear on your organs, such as your lungs, liver or brain”						√		√
“It could get into your bloodstream and travel to other parts of your body”						√		√
Knowledge of which size melanoma could be deadly						√		√
Knowledge of risk factors for skin cancer						√	√	√
<b>Tanning/ attitudes</b>								
Like to get a suntan	√	√	√	√	√			
Attempted to get suntan	√	√	√	√	√	√		√
Likelihood of trying to get a tan during rest of summer						√		√
Depth of preferred suntan	√							
Use of sunbed			√	√	√			
Use of tanning products			√	√	√			
Use of fake tan			√	√	√			
“I feel more healthy with a suntan”	√	√	√	√	√	√	√	√

	1994	1997	2000	2003	2006	2010 18 – 24 year old sample	2010 Adult (18-54 year old) sample	2010 Teen (13-17 year old) sample
“This summer I intend to sunbathe regularly to get a suntan”	√	√	√	√	√	√	√	√
“Most of my friends think a suntan is a good thing”	√	√	√	√	√	√	√	√
“A suntan makes me feel better about myself”	√	√	√	√	√	√	√	√
“A suntan makes me feel more attractive to others”	√	√	√	√	√			
“Most of my close family think that a suntan is a good thing”	√	√	√	√	√			
“A suntan protects you against melanoma and other skin cancers”	√	√	√	√	√			
“A tan shows I care about my appearance”						√		√
“Seeing tanned people on TV, in films and in magazines makes me want to have a tan”						√		√
“Tanning is part of the kiwi summer”						√		√
<b>Attitudes and risk perception</b>								
Barriers to sunscreen use	√	√	√	√	√			
Reasons for sunscreen reapplication			√	√	√			
Self-perceived risk of skin cancer in future						√	√	√

## **APPENDIX 3**

## Features of Triennial Sun Protection Surveys/Sun Exposure Survey, 1994-2010

Feature	1994 Survey	1997 Survey	2000 Survey	2003 Survey	2006 Survey	2010 Survey
Data provider	The Roy Morgan Research Centre Pty Ltd	MRL Research Group	CM Research	NFO New Zealand (formerly CM Research)	TNS New Zealand (formerly NFO New Zealand)	National Research Bureau Ltd
Completed interviews (age 15-69)	1,243	1,198*	1,250	1,250	1,257	1,250
No of child/youth interviews	380	440	81*	80*	67*	500**
Call backs	up to 3 attempts	up to 3 attempts	up to 3 attempts	up to 3 attempts	Up to 5 attempts	Up to 5 attempts
Participation rate	68%	47%	55%	47%	21.2%	63%
Survey period	22/1 to 27/3 1994	11/1 to 16/3 1997	06/12 1999 to 07/3 2000	09/12 2002 to 11/3 2003	5/12 2005 to 7/3 2006	25/1 to 3/3/2010
Sequence of places surveyed	Auck (22-23/01) Ham (29-30/01) Wgtn (05-06/02) Wgtn (12-13/02) Chch (19-20/02) Dun (26-27/02) Dun (05-06/03) Ham (12-13/03) Auck (19-20/03) Chch (27/03)	Ham (11-12/01) Ham (18-19/01) Dun (25-26/01) Wgtn (01-02/02) Auck (08-09/02) Dun (15-16/02) Wgtn (22-23/02) Chch (01-02/03) Chch (08-09/03) Auck (15-16/03)	Ham (06-07/12) Chch (13-14/12) Chch (20-21/12) Dun (17-18/01) Auck (24-25/01) Ham (07-08/02) Wgtn (14-15/02) Dun (21-22/02) Wgtn (28-29/02) Auck (06-07/03)	Chch (09-10/12) Wgtn (16-17/12) Auck (21-22/01) Ham (28-29/01) Chch (03-04/01) Auck (11-12/02) Ham (17-18/02) Wgtn (24-25/02) Dun (03-04/03) Dun (10-11/03)	Auck (05-06/12) Auck (12-13/12) Wgtn (16-17/01) Ham (23-24/01) Dun (30-31/01) Ham (07-08/02) Chch (13-14/02) Dun (20-21/02) Chch (27-28/02) Wgtn (06-07/03)	Not applicable in 2010. A wider range of areas were surveyed provided they met fine weather criteria for the previous weekend. See table below.

\* Interviews were with 12-14 year olds

\*\* Interviews were with 13-17 year olds

### 2010 SES places surveyed and number of respondents for each

White Pages Directory	Adults	Teens
Northland	41	16
Auckland	425	170
Waikato	113	45
Bay of Plenty	78	31
Gisborne	12	5
Hawkes Bay	43	18
Taranaki	30	12
Wanganui	19	8
Manawatu	42	17
Wairarapa	16	6
Wellington	131	52
Nelson and Bays	26	10
West Coast	10	4
Marlborough	12	5
Christchurch	145	58
Timaru/Oamaru	20	8
Otago	59	24
Southland	28	11
<b>Total</b>	<b>1250</b>	<b>500</b>

## **APPENDIX 4**

## APPENDIX 5

## Summary of HSC SunSmart media activity, 2002/03, 2005/06 and 2009/10

<b>Summer</b>	<b>HSC Advertisement</b>	<b>Months screened on TV</b>	<b>Estimated reach*</b>	<b>Estimated frequency**</b>	<b>TARPs***</b>	<b>Months on radio</b>
2002/03	Tiger the Prawn (first year on air)	Oct-Jan	89%	8.6	769	none
2005/06	Tiger the Prawn (fourth year on air)	Oct-Jan	88%	9.6	844	Dec-Jan
2009/10	Never Let Your Child Get Sunburnt (third year on air)	Dec-Jan	84%	6.8	576	Nov-Feb

\* Each viewer aged 18-49 years assumed to have seen advertisement at least once

\*\* Average frequency of views per person reached

\*\*\* Target Audience Rating Points