

A look at the Population Survey Monitor

In the July issue of *FNM News* we published some of the questions currently being evaluated as possible key indicators for national nutrition monitoring. In this issue we look at a survey vehicle that could be used as part of a regular program for monitoring key indicators based on such questions. We also look at some results from the five nutrition-related questions included in the August 1995 Population Survey Monitor.

What is the Population Survey Monitor?

The Population Survey Monitor (PSM) is a quarterly household survey, of approximately 2000 households, conducted throughout Australia. The PSM is a user-funded survey run by the Australian Bureau of Statistics (ABS) in response to the needs of government agencies and non-profit organisations. Each survey asks a core set of socio-demographic questions of each usual resident aged 15 years and over within the selected household. Questions on commissioned topics can be asked of either a randomly selected adult or of a specific person within the selected household.

The survey covers rural and urban areas across all States and Territories of Australia except for sparsely settled areas. For each survey, an initial sample of approximately 2,700 private dwellings is chosen. Persons living in non-private dwellings are excluded from the PSM. The ABS considers that the sample is

Table 1: Population Survey Monitor sample distribution, August 1995

State/Territory	Number	Age group	Number
New South Wales	433	18-24 years	227
Victoria	436	25-34 years	458
Queensland	358	35-44 years	504
South Australia	263	45-54 years	373
Western Australia	255	55-64 years	250
Tasmania	143	65 and over	352
Northern Territory	130		
Australian Capital Territory	146		
Total	2164	Total	2164

sufficiently large to provide detailed information for Australia and relatively detailed data for capital city, urban and rural areas for Australia, at an acceptable level of accuracy. Data can also be aggregated over several surveys to obtain more detailed information. The sample distribution, by State and Territory and by age group, in the August 1995 PSM is shown in table 1.

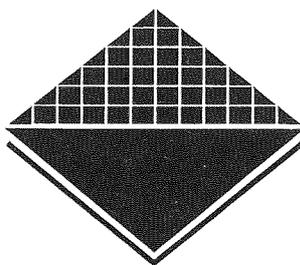
Data collection

Information in the PSM is obtained by face-to-face interviews with adult members (18 years and over) of selected households conducted

by ABS interviewers who have extensive household survey training. Selected households are initially approached using a letter and information brochure which explain the nature and purpose of the survey, and include a guarantee of confidentiality. Every effort is made to contact the occupants of each selected dwelling and to conduct the survey in those dwellings. Interviewers make at least three call-backs in rural areas and at least five call-backs in urban areas before a dwelling is classified as 'non-contact'.

Possibilities for nutrition monitoring

The principal advantages of the PSM are that it is conducted several times each year, that the data are comparable with other ABS household survey data and that the



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results become available within two months of the completion of the interviews. The principal disadvantages are ABS restrictions on the geographic level of detail at which output is available and the apparently high cost. Cost is based either on the number of questions or minutes of interviewing time. The current charge is \$2,500 for a simple question and \$10,000 for one minute of interviewing time. Averaged over 2,000 respondents, this amounts to \$1.25 per respondent per question for data collection, entry and editing, plus access to 18 items of socio-demographic data.

Translated into an annual cost for a national monitoring program comprising 10 questions four times per year, the current cost would be around \$100,000. This format would account for seasonal variation and provide detailed estimates at capital city, urban and rural levels. If monitoring were conducted biennially rather than annually, and cost apportioned on a pro rata population basis, the annual cost of such a national

program would range from less than \$3,000 in the Territories to less than \$25,000 in New South Wales and Victoria.

August 1995 PSM

As part of the process of evaluating key indicator questions, the Nutrition Monitoring Unit commissioned five nutrition-related questions in the August 1995 PSM to:

- establish whether there are any practical problems with such questions when asked in the context of the PSM;
- determine if responses differ when questions are self-completed or interviewer administered; and
- determine which questions are likely to be most useful for assessing progress towards the achievement of dietary recommendations or for identifying differentials between population subgroups.

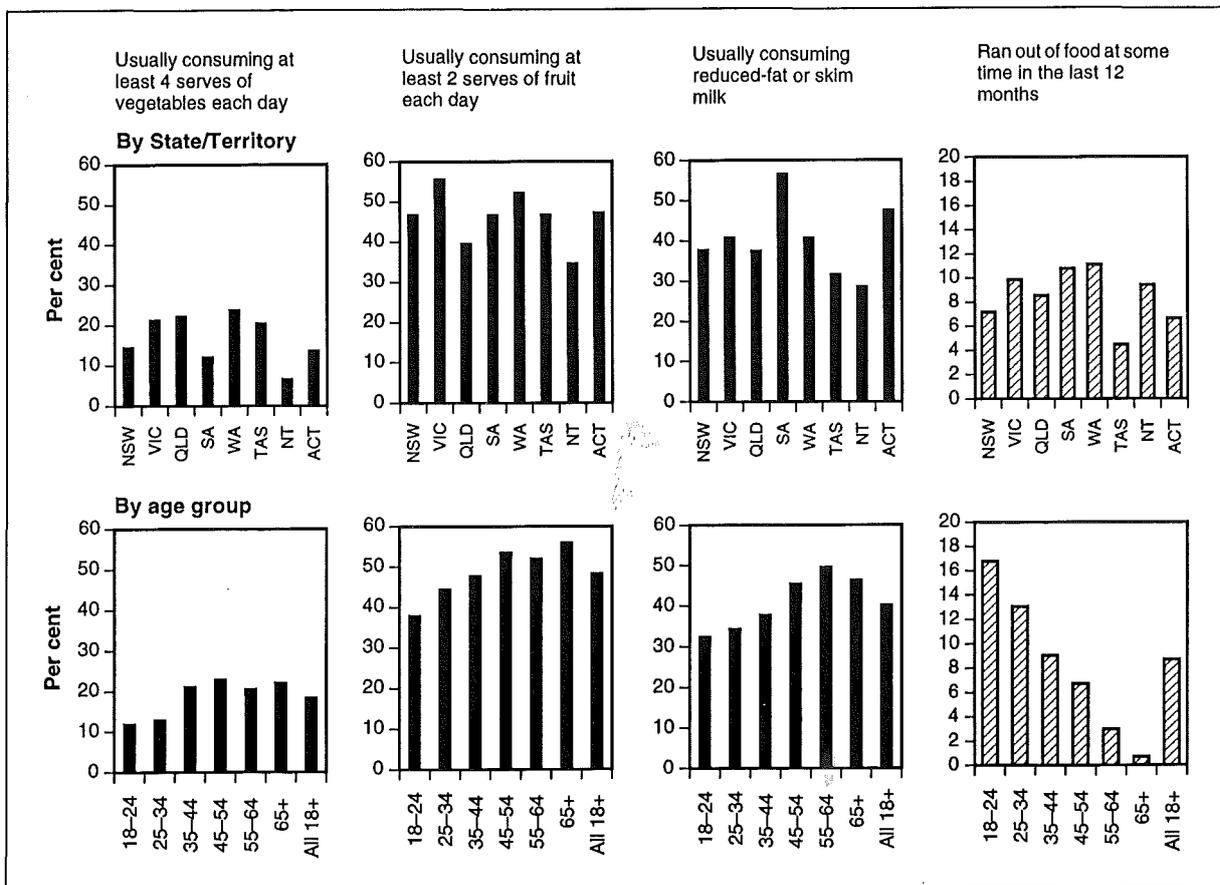
The five questions selected for inclusion in the August 1995 PSM were as follows:

- In the last 12 months, were there any times that you ran out of food and couldn't afford to buy any more?
- How many serves of vegetables do you usually eat each day?
- How many serves of fruit do you usually eat each day?
- What type of milk do you usually consume?
- How often is the meat you eat trimmed of fat either before or after cooking?

The response format for each of these questions was set out in the July issue of *FNM News*.

State and Territory differences

The first row of charts shows State and Territory differences for selected data from four of these five questions. Differences for the meat questions were smaller, with 78%



(ranging from 67% (NT) to 83% (ACT)) of the Australian population 18 years and over reporting usually eating meat that has been trimmed of fat either before or after cooking and 4% reporting not eating any meat.

Overall, 48% of the Australian population (ranging from 35% (NT) to 56% (Vic)) reported usually consuming at least two serves of fruit each day while only 18% (ranging from 6% (NT) to 24% (WA)) reported consuming at least four serves of vegetables each day. In the questions, a 'serve' of fruit was defined as 1 medium piece, 2 small pieces or 1 cup of diced pieces and a 'serve' of vegetables as 1/2 cup cooked vegetables or 1 cup of salad vegetables.

Overall, 40% of the Australian population (ranging from 28% (NT)

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to 56% (SA)) reported usually consuming reduced-fat or skim milk and 4% reported not consuming any milk. The proportion in South Australia who reported usually consuming reduced-fat or skim milk was almost 10% higher than in any other State or Territory.

Overall, 9% of the Australian population 18 years and over (ranging from 4% (Tas) to 11% (WA)) reported having run out of food at some time in the last 12 months and not being able to afford to buy any more.

Age differences

The second row of charts shows the same data analysed by age group. Clear trends with age were evident

for all five questions, but in particular for the question relating to food security.

Whereas less than 1% of those aged 65 years and over reported having run out of food at some time during the last 12 months, 17% of those aged 18-24 years reported having done so. This suggests that income is unlikely to be the main factor influencing food insecurity as assessed by this question.

While differences with age group were less for the other dietary questions, older groups consistently reported dietary habits more in line with current recommendations than did younger groups. These data suggest a clear need for relevant and effective programs to improve the nutrition knowledge and skills of younger people.

Changes in the thiamin content of the food supply

The fortification of bread-making flour with thiamin became mandatory from 1 January 1991 (Amendment no. 6 to the Food Standards Code, 1990). The impetus for this regulatory change arose from concerns about thiamin deficiency in relation to alcohol-related brain disease in Australia (NHMRC, 1990). To date, the effect of this regulatory change has not been calculated.

Data sources

The reporting of total flour available for consumption in the Apparent Consumption series (ABS Cat. no. 4306.0) is based on data supplied to the ABS by member companies of the Australian Flourmillers' Council. The council also collates more detailed information on the national flour mix supplied voluntarily by its members, including data on the amount of bread-making flour in the food supply. Recently, Menz et

al. (1995) reported analyses by the Bread Research Institute of Australia of the thiamin content of bread flour and bread samples obtained in Melbourne since the introduction of mandatory fortification. Together, these data enable us to estimate the impact of a regulatory change in the thiamin

content which affects only a proportion of the flour supply.

Rationale

Flour for bread baking

Australian Flourmillers' Council data show that around 45% of flour for human consumption (including flour used for gluten or starch manufacture) is used for bread baking. This is the portion of the supply to which the provision for mandatory fortification with thiamin applies. As mandatory fortification was introduced in

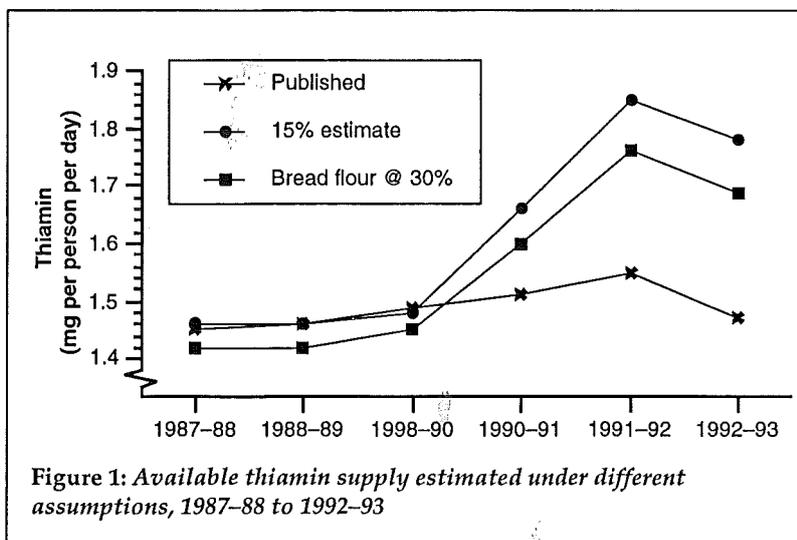


Figure 1: Available thiamin supply estimated under different assumptions, 1987-88 to 1992-93

January 1991 and the food supply data cover the financial year, we have assumed that 50% of the bread flour for 1990–91 was fortified.

Changes in thiamin content

Bread Research Institute analyses of flour used for bread making in Melbourne in 1993 showed that the average thiamin content of white flour ranged between 0.67 and 0.69mg per 100g (Menz et al., 1995). Consequently, we have taken the mandatory fortification level of 0.64mg per 100g as a reasonable minimum value. The reported concentration of thiamin in unfortified flour is 0.27mg per 100g. (English et al., 1990)

Thiamin content adjusted for processing losses

The nutrient estimates derived from Apparent Consumption data are calculated on the basis of an average 15% loss of thiamin due to processing. Menz et al. (1995) report about a 30% loss of thiamin when fortified white flour is baked into bread. Both estimates of loss have been used to calculate available thiamin shown in figure 1.

Available thiamin supply

The estimates of the available thiamin supply calculated from thiamin content information obtained after mandatory fortification show a significant change in the thiamin supply (figure 1). The lowest estimates for bread flour thiamin concentration calculated from a mean of the mandatory level since January 1991 (0.64mg per 100g), and a 30% loss when baking bread, show that the thiamin supply is now at least 13–14% higher than before fortification (table 1).

Discussion

The revised estimates show that the mandatory fortification of bread flour with thiamin has a large effect on the overall availability of thiamin, even allowing for higher estimates of processing losses. Menz et al. (1995) reported that,

although the food standards had been amended in 1992 to delete the requirement for a maximum water content, bread quality had not been affected. For this exercise, we have assumed that the Melbourne data reported by Menz et al. (1995) can be applied nationally and, since Food Standards are national in character, this is unlikely to introduce serious error.

With the regulatory change affecting thiamin content, it is obviously necessary to be able to differentiate between the fortified and unfortified parts of the flour supply to monitor the available thiamin supply. Ongoing monitoring of the flour supply depends on ongoing industry cooperation. The provision of bread flour data is a heartening example of the ability and willingness of industry to assist in food and nutrition monitoring and it is to the industry's credit that it is forthcoming on a voluntary basis.

The rationale for adding thiamin to flour was the relatively high incidence of Wernicke–Korsakoff Syndrome in Australia compared

with similar countries that fortified their flour. Preliminary data from Ma and Truswell (1995) on trends in the incidence of Wernicke–Korsakoff Syndrome in Sydney suggest a decrease in incidence from 1991 to 1993 'consistent with a preventive effect of the mandatory enrichment of bread with thiamin...This is encouraging, but not conclusive evidence'.

We await the availability of more detailed health data to complement the information we now have on the thiamin content of the food supply.

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Table 1: Revised and published estimates for thiamin available for consumption, 1987–88 to 1992–93

Year	Thiamin (mg per person per day)		Thiamin (per cent of RDI*)	
	Revised estimate†	Published level	Revised estimate	Published level
1987–88	1.42	1.45	160	163
1988–89	1.42	1.46	159	164
1989–90	1.45	1.49	162	167
1990–91	1.60	1.51	179	170
1991–92	1.76	1.55	197	174
1992–93	1.69	1.47	190	165

* Recommended Dietary Intake

† Based on bread flour fortification level of 0.64 mg thiamin/kg bread flour since January 1991, 30% loss of thiamin in bread making and 15% allowance for processing losses in other

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