

Appendices

Appendix 1: Personnel involved

Nutrition Director

Assoc Prof Winsome Parnell Department of Human Nutrition, University of Otago

Project Manager

John Harvey Department of Human Nutrition, University of Otago

Ministry of Health

Dr Barry Borman	Manager, Public Health Intelligence
Stephen Manning	Manager, Health and Disability Intelligence
Dr Jackie Fawcett	Manager, Health and Disability Intelligence
Dr Niki Stefanogiannis	Public Health Physician, Team Leader
Sally Mackay	Senior Advisor (Nutrition)
Kirsten McLachlan	Advisor (Nutrition)
Maria Turley	Principal Technical Specialist (Epidemiology)
Faith Roberts	Senior Advisor (Population Surveys)
Robert Templeton	Principal Technical Specialist (Statistics)
Dr Deepa Weerasekera	Senior Advisor (Statistics)
Dev Oza	Manager, Business Unit
Elizabeth Aitken	Team Leader and Senior Advisor (Nutrition)

Senior consultants

Prof David Russell	Former Director, LINZ Unit, University of Otago
Dr Noela Wilson	Former Director, LINZ Unit, University of Otago

Sample design

Robert Templeton	Ministry of Health
Dr Robert Clark	University of Wollongong

Investigators and consultants

Nutrition

Investigators

Prof Christine Thomson	Department of Human Nutrition, University of Otago
Dr Rachel Brown	Department of Human Nutrition, University of Otago
Dr Anne-Louise Heath	Department of Human Nutrition, University of Otago
Dr Rozanne Kruger	Institute of Food, Nutrition and Human Health, Auckland Campus, Massey University
Assoc Prof Welma Stonehouse	Institute of Food, Nutrition and Human Health, Auckland Campus, Massey University

Consultants

Prof Rosalind Gibson	Department of Human Nutrition, University of Otago
Prof Jim Mann	Department of Human Nutrition, University of Otago
Dr Sheila Skeaff	Department of Human Nutrition, University of Otago

Clinical measures

Investigator

Prof Murray Skeaff	Department of Human Nutrition, University of Otago
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Consultant

Dr Ted Nye	Department of Medicine, University of Otago
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Biostatisticians

Investigator

Andrew Gray	Department of Preventive and Social Medicine, Dunedin School of Medicine
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Consultant

Prof Peter Herbison	Department of Preventive and Social Medicine, Dunedin School of Medicine
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Māori

Consultant

Prof Mason Durie	Research Centre for Māori Health and Development, Massey University
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Pacific

Consultants

Dr Maika Veikune	Pacific Planning and Funding Team, Middlemore Hospital, Counties Manukau District Health Board
Dr David Schaaf	Pacific Health and School of Population Health, University of Auckland

University of Otago contract management

Dr Anna Barlow	Research and Enterprise, University of Otago
Dr Rachel Elliot	Research and Enterprise, University of Otago
Dr Jenny Shackelford	Research and Enterprise, University of Otago
Lisa Davis	Research and Enterprise, University of Otago

Canterbury Health Laboratories

Prof Peter George	Clinical Director
Kevin Taylor	Quality and Business Development Manager
Kirsten Beynon	Operations Manager
Barrie Edwards	Business Development Manager (until September 2008)
Trevor Walmsley	Section Head, Specialist Biochemistry
Christiaan Sies	Scientist, Analytical Processing
Sandy Slow	Scientist, Analytical Processing

CBG Health Research Ltd

Carol Boustead-Gibb	CBG Training and Development Director
Dr Barry Gribben	CBG Research Director
Angela Chong	CBG Survey Manager
Liz Gordon	CBG Survey Manager
Tom Robinson	Information Technology Specialist
Sarith Yorng	CBG Research Analyst

Plant and Food Research Ltd

Dr Lee Huffman	Science Group Leader, Food Solutions Group, Palmerston North
Dr Lucy Lesperance	Team Leader, Food Information Team, Palmerston North
Subathira Sivakumaram	Scientist, Food Information Team, Palmerston North
Samantha Martell	Technician, Food Information Team, Palmerston North
Kiri Sharp	Technician, Food Information Team, Palmerston North
Natala Gwiazdzinski	Personal Assistant, Food Solutions Group, Palmerston North
Zane Gilmore	Development and Web Infrastructure Team Leader, Science and Business Solutions Team, Lincoln
Thomas Schara	Software Developer (Contractor), Science and Business Solutions Team, Lincoln
Hannah Smith	Research Associate, Food Evaluation Unit, Palmerston North
Zachary Clarke	Research Associate, Food Information Team, Palmerston North
Colin Tod	IT Support Analyst, Customer Support Team, Palmerston North
John Shaw	IS Manager, Acting Science and Business Systems Development Manger, Information and Knowledge Services Group, Lincoln
Andrew King	Software Developer (Contractor)
Dr Megan Woods	Business Manager, Food Innovation Portfolio, Lincoln
Dr Kieran Elborough	General Manager of Science, Food Innovation Portfolio, Auckland

Active team members

Project office (University of Otago)

Wendy Aitken	Nutritionist
Charles Blakey	Computer Scientist
Liz Fleming	Leader of Nutrition Team
Elizabeth Gray	Administrative Secretary
Chris Linwood	Assistant to Computer Scientist
Taryn McLeod	Nutritionist
Jude Mahood	Nutritionist
Nick Prosser	Nutritionist
Hayley Stevenson	Nutritionist
Anita van Rij	Assistant Research Fellow
Heather Walker	Biostatistician
Sisi Xin	Nutritionist
Asher Regan	Nutritionist
Rosemarie Petermann	Technical Assistant

Field staff

Auckland:

Maggie Calvert (Supervisor)
Matt Bannan
Robyn Carley
Leonie Caulfield
Salome Kavaliku
Kevin Mellon
Kathryn Patchett
Jodi Sinkovich
Jessica Torres
Susan Stoddart

Hamilton:

Meg Davies
Fred Gould
Pauline Lazarus

Palmerston North:

Rochelle Brennan
Sonya Mudgway
Gloria Whitson

Wellington:

Sonja Pierce (Supervisor)
Paul Bennett
Jodine Waghorn
Lesley Waite

Christchurch:
Cindy Aitcheson
Karina Barney
Justine Fallon

Dunedin:
Heather Gruppelaar

Tradestaff Ltd

Jacqui Lucas

External Technical Advisory Group

Dr Barry Borman	Chair, Ministry of Health
Dr Niki Stefanogiannis	Chair, Ministry of Health
Dr Elaine Ferguson	Department of Human Nutrition, University of Otago
Professor Jim Mann	Department of Human Nutrition, University of Otago
Assoc Prof Cliona Ni Mhurchu	Clinical Trials Research Unit, University of Auckland
Assoc Prof Winsome Parnell	Department of Human Nutrition, University of Otago
Hiki Pihema	Te Runanga o Ngāti Porou Iwi Social Services
Jenny Reid	New Zealand Food Safety Authority
Assoc Prof Robert Scragg	School of Population Health, University of Auckland
Prof Murray Skeaff	Department of Human Nutrition, University of Otago
Kirsten McLachlan	Ministry of Health
Robert Templeton	Ministry of Health
Maria Turley	Ministry of Health
Sally Mackay	Ministry of Health
Elizabeth Aitken	Ministry of Health

Assistance with recruitment of Pacific people

Dr Debbie Ryan	Pacific Perspectives
Dr Api Talemaitoga	Ministry of Health
Luama Fereti	University of Otago

Peer review of *A Focus on Nutrition: Key findings of the 2008/09 New Zealand Adult Nutrition Survey*

Elizabeth Aitken	Ministry of Health
Beverley Braybrook	Ministry of Health
Natalie Talamaivao	Ministry of Health
Prof Lynne Cobiac	CSIRO Australia
Assoc Prof Geoffrey Marks	University of Queensland
Emeritus Prof Stewart Truswell	University of Sydney
Assoc Prof Cliona Ni Mhurchu	Clinical Trials Research Unit, University of Auckland

Appendix 2: Participant feedback

Dear

We are very grateful for your willingness to take part in the 2008/09 New Zealand Adult Nutrition Survey. Your involvement has been extremely helpful and we appreciate your availability and co-operation.

Results of your assessments are listed below and an explanation is given over the page. If any of your values are outside the desirable range we suggest you approach your regular doctor to discuss these results.

Height (cm):

Weight (kg):

Body mass index (BMI):

Waist (cm):

Systolic blood pressure (mmHg):

Diastolic blood pressure (mmHg):

Total cholesterol (mmol/L):

HDL cholesterol (mmol/L):

Haemoglobin (g/L):

Ferritin ($\mu\text{g/L}$):

Remember to check the explanation over the page and if any of these results concern you please discuss them with your doctor.

Please find enclosed your supermarket vouchers.

Again, very many thanks for your help.

Yours sincerely

Dr Winsome Parnell
Nutrition Director

Appendix 3: Analytical techniques for nutrients in the New Zealand Food Composition Database (NZFCDB)

Table A4.1: Analytical techniques for nutrients

Nutrient	INFOODS tagname ¹	Units	Method
Energy	ENERC	kJ	Calculated as follows: protein = 16.7 kJ/g; total fat = 37.7 kJ/g; available carbohydrate = 16.7 kJ/g; alcohol = 29.3 kJ/g. Energy from fibre is not included.
Protein	PROCNT	g	Calculated from total nitrogen; generally FAO/WHO conversions factors
Total fat	FAT	g	Several methods depending on food matrix
Saturated fat	FASAT	g	Sum of individual saturated fatty acids; GC of methyl esters
Monounsaturated fat	FAMS	g	Sum of individual monounsaturated fatty acids; GC of methyl esters
Polyunsaturated fat	FAPU	g	Sum of individual polyunsaturated fatty acids; GC of methyl esters
Cholesterol	CHOLE	mg	GC
Carbohydrate	CHOAVL	g	Available carbohydrate; sum of mono-, di- and oligosaccharides, starch and glycogen; or enzymatic digestion and colorimetry
Dietary fibre	PSACNS	g	Non-starch polysaccharides/fibre; Englyst method
Total sugars	SUGAR	g	Total available sugars, sum of individual mono- and disaccharides; GC or HPLC
Fructose	FRUS	g	Available fructose, sum of individual d-fructose monosaccharides; GC or HPLC
Sucrose	SUCS	g	Available sucrose, sum of individual sucrose disaccharides; GC or HPLC
Lactose	LACS	g	Available lactose, sum of individual lactose disaccharides; GC or HPLC
Alcohol	ALC	g	Alcohol / ethyl alcohol, hydrometer or GC
Vitamin A equivalents	VITA	µg	Total vitamin A equivalents / retinol equivalents; equals (µg retinol) + (0.166 x µg β-carotene equivalents); HPLC. Conversion factors used for vitamin A equivalents were 6 for β-carotene and 12 for other carotenoids
Retinol	RETNOL	µg	All trans retinol only, HPLC
β-carotene	CARTBEQ	µg	Beta-carotene equivalents; equals (µg β-carotene) + (0.5 x µg other provitamin A carotenoids); HPLC
Vitamin C	VITC	mg	HPLC and titration
Vitamin E	VITE	mg	Vitamin E/α-tocopherol equivalents; equals (mg α-tocopherol) + (0.4 x mg β-tocopherol) + (0.1 x mg gamma-tocopherol) + (0.01 x mg delta-tocopherol) + (0.3 x mg alpha-tocotrienol) + (0.05 x mg β-tocotrienol) + (0.01 x mg gamma-tocotrienol); HPLC
Thiamin	THIA	mg	HPLC, fluorescence detection of thiochrome
Riboflavin	RIBF	mg	HPLC, fluorescence detection
Niacin equivalents	NIAEQ	mg	Total niacin equivalents; equals (mg preformed niacin (HPLC, UV detection)) + (1/60 x mg tryptophan (HPLC))
Vitamin B ₆	VITB6C	mg	HPLC, fluorescence detection

Nutrient	INFOODS tagname ¹	Units	Method
Vitamin B ₁₂	VITB12	µg	Microbiological
Folate	FOLDFE	µg	Dietary folate equivalents (a combination of synthetic and naturally occurring folate); radioassay or microbiological. Dietary folate equivalents (FOLDFE) = food folate (FOLFD) + folic acid (FOLAC) x 1.67
Calcium	CA	mg	Biological material digestion, ICP-OES
Phosphorus	P	mg	Biological material digestion, ICP-OES
Magnesium	MG	mg	Biological material digestion, ICP-OES
Iron	FE	mg	Biological material digestion, ICP-OES
Zinc	ZN	mg	Biological material digestion, ICP-MS
Potassium	K	mg	Biological material digestion, ICP-OES
Selenium	SE	µg	TMAH (tetra methyl ammonium hydroxide) micro digestion, ICP-MS

Notes:

GC = gas chromatography

HPLC = high performance liquid chromatography

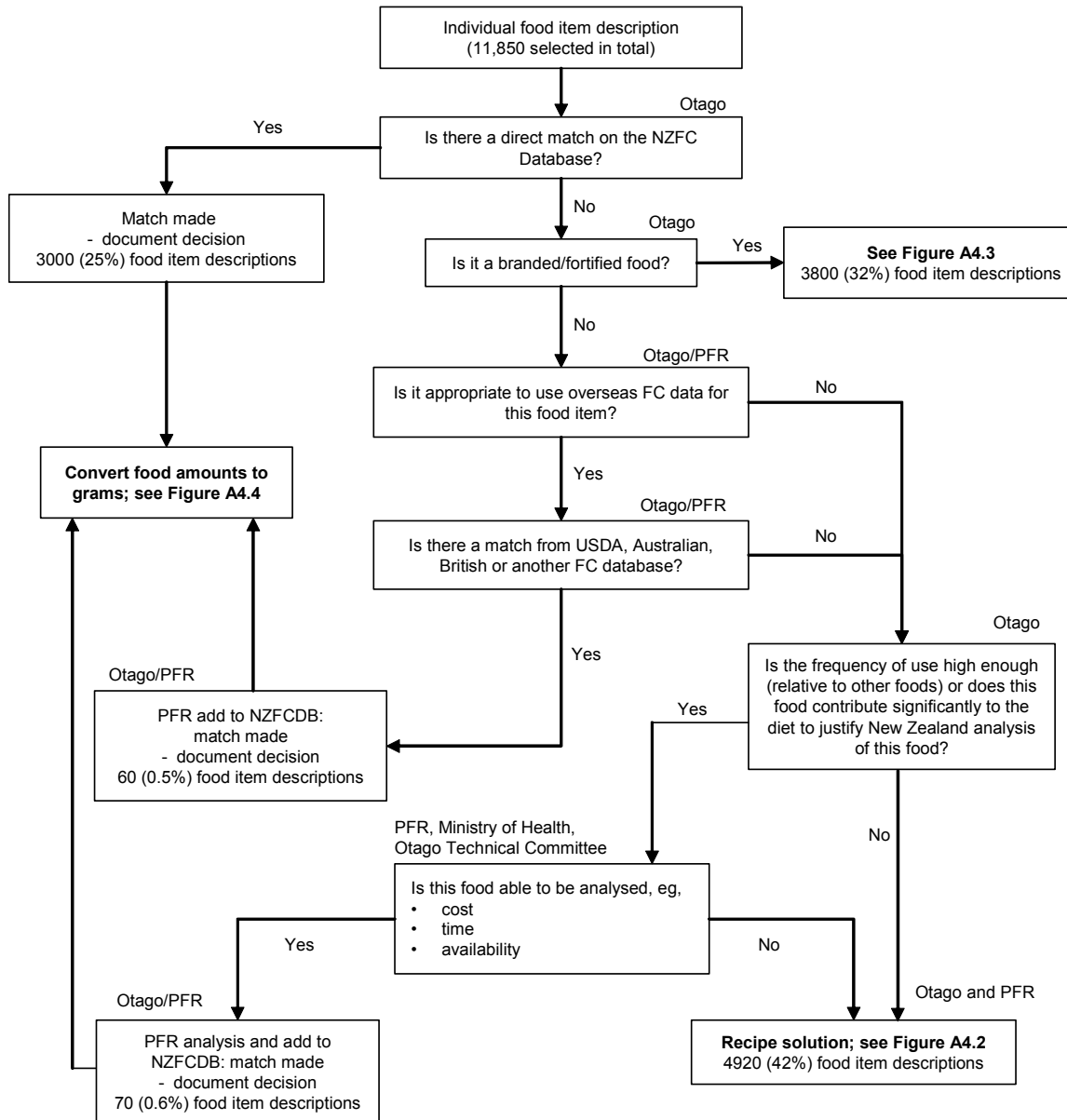
ICP-OES = inductively coupled plasma–optical emission spectroscopy

ICP-MS = inductively coupled plasma–mass spectroscopy

1 Klensin et al 1989. The up-to-date listing can be found on: <http://www.fao.org/infoods/>

Appendix 4: Nutrient matching

Figure A4.1: Matching foods to nutrient lines from food composition databases



Key:

Otago—University of Otago

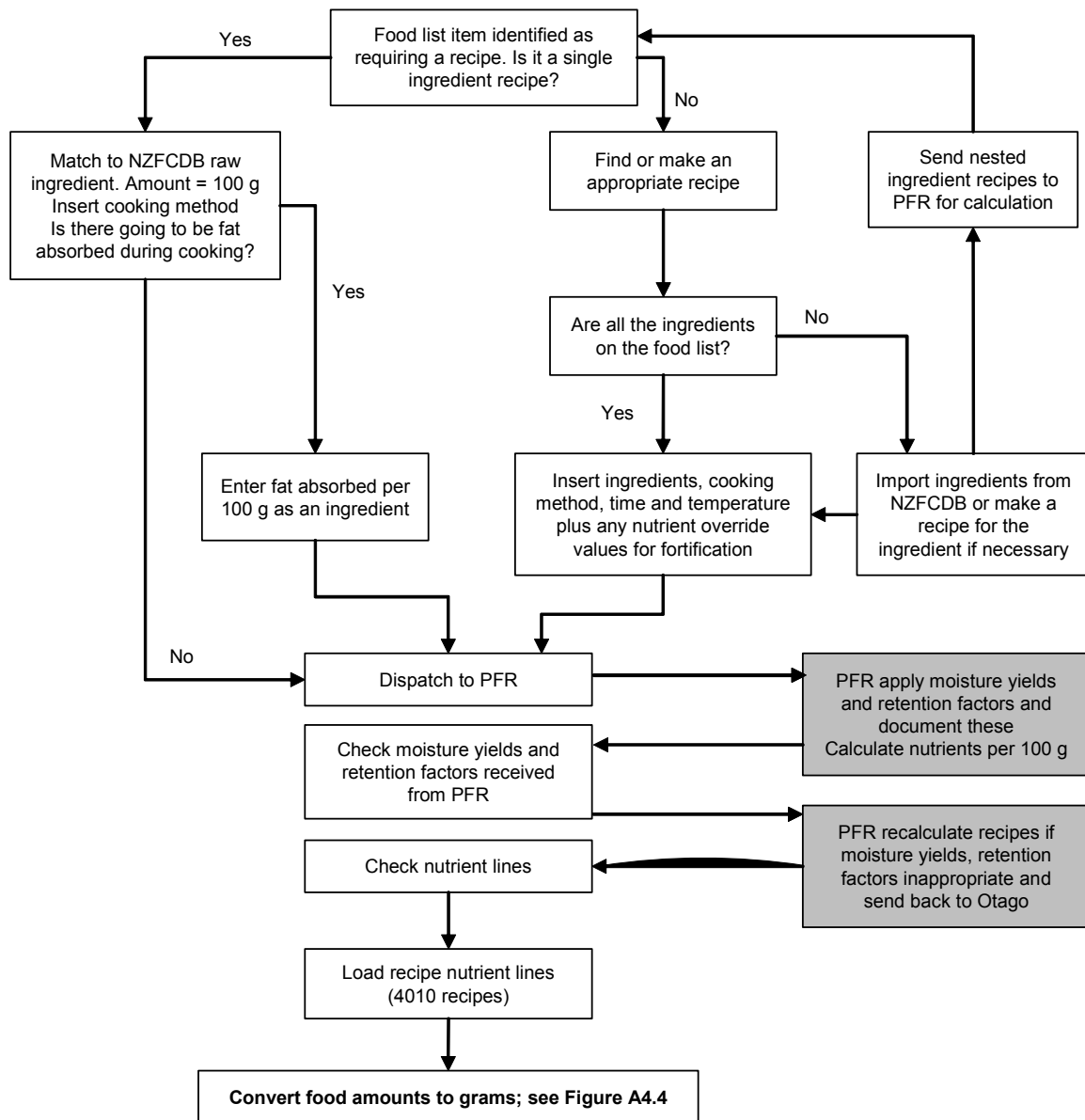
PFR—Plant & Food Research Ltd

FC—food composition

USDA—United States Department of Agriculture

NZFCDB—New Zealand Food Composition Database

Figure A4.2: 2008/09 NZ Adult Nutrition Survey recipes



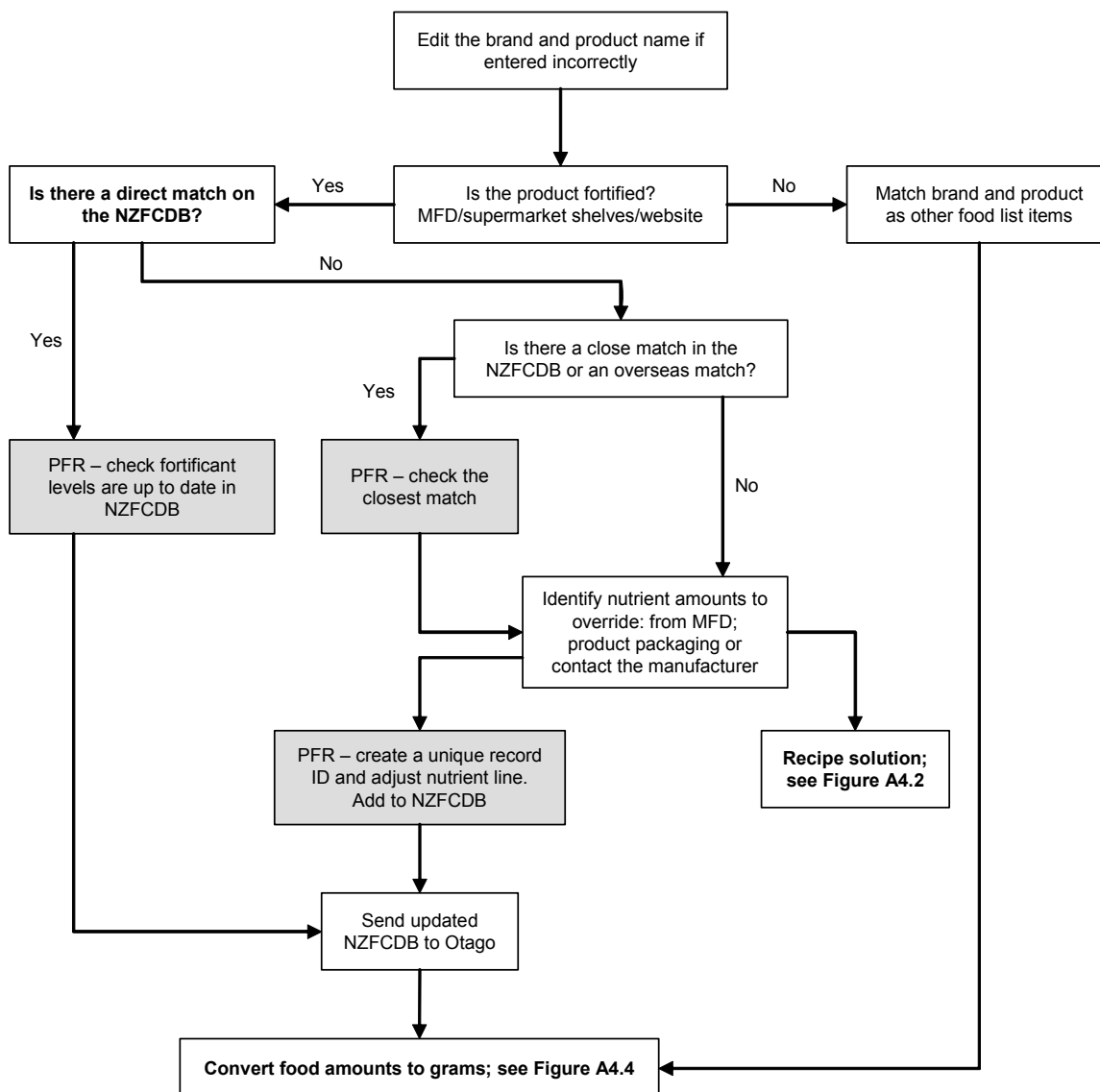
Key

Otago—University of Otago

PFR—Plant & Food Research Ltd

NZFCDB—New Zealand Food Composition Database

Figure A4.3: Brand and product name nutrient matching



Key

MFD–Manufactured Food Database

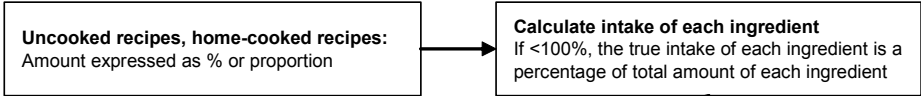
PFR–Plant & Food Research Ltd

NZFCDB–New Zealand Food Composition Database

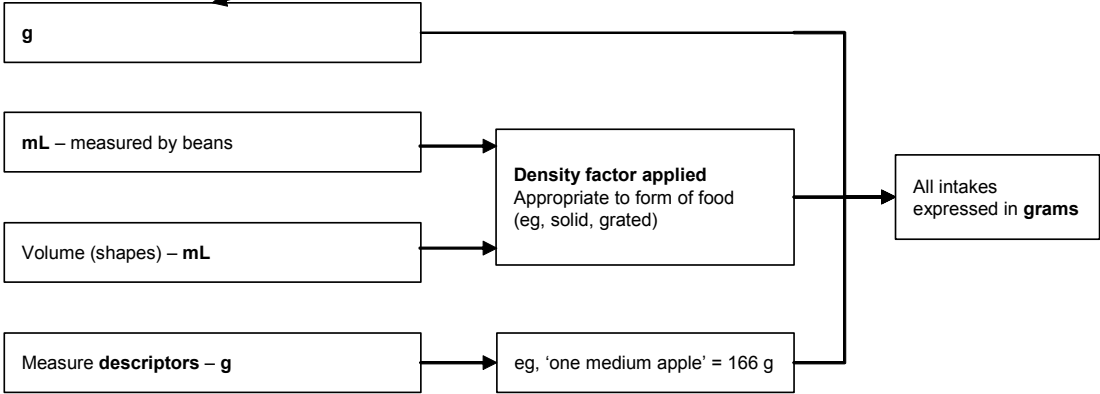
Record ID–unique alphanumeric number for each food item

Figure A4.4: Food amounts converted to grams

a) Recipes



b) Foods



Appendix 5: Cell sizes

The following table shows the distribution of the sample numbers of final interviews and measurements. The sample size includes respondents who provided any valid data for a section (eg, answered at least one question or had at least one measurement).

Pregnant women were excluded from the examination component (anthropometry, blood pressure, biochemical indices). Note that the sample size for some population subgroups was small, particularly for Māori and Pacific aged 15–18 years.

Table A5.1: Number of respondents for each component of the survey, by age group, sex, ethnic group and NZDep2006

		Number of respondents										
		Initial demography	24-hour diet recall		Dietary habits	Nutrition- related health	Additional sociodemography	Food security ¹	Blood pressure	Anthropometry BMI ²	Blood analysis HbA1c ³	Urine analysis sodium ⁴
			Initial	Repeat								
Total New Zealand sample		4721	4721	1180	4718	4714	4713	4635	4407	4503	3348	3315
By age group (years)												
Males	15–18	326	326	88	326	326	326	299	319	321	195	192
	19–30	284	284	63	284	283	283	282	274	277	152	150
	31–50	598	598	140	598	598	598	595	577	583	381	379
	51–70	378	378	98	378	377	377	377	354	368	319	314
	71+	480	480	123	480	480	480	478	450	454	423	418
	Total	2066	2066	512	2066	2064	2064	2031	1974	2003	1470	1453
Females	15–18	373	373	90	373	373	373	347	359	359	228	220
	19–30	434	434	101	434	434	434	429	392	395	240	239
	31–50	746	746	176	745	745	745	740	675	698	508	508
	51–70	517	517	142	517	516	516	512	482	495	420	419
	71+	585	585	159	583	582	581	576	525	553	482	476
	Total	2655	2655	668	2652	2650	2649	2604	2433	2500	1878	1862
Māori												
Males	15–18	49	49	18	49	49	49	45	48	49	27	27
	19–30	94	94	22	94	94	94	93	89	89	41	41
	31–50	161	161	37	161	161	161	160	153	154	103	102
	51+	101	101	31	101	100	100	100	93	96	75	75
	Total	405	405	108	405	404	404	398	383	388	246	245
Females	15–18	62	62	15	62	62	62	59	59	58	38	37
	19–30	177	177	33	177	177	177	177	155	157	82	82
	31–50	250	250	57	250	250	250	249	223	235	161	161
	51+	146	146	47	146	146	146	144	133	139	113	113
	Total	635	635	152	635	635	635	629	570	589	394	393

		Number of respondents										
		Initial demography	24-hour diet recall		Dietary habits	Nutrition-related health	Additional sociodemography	Food security ¹	Blood pressure	Anthropometry BMI ²	Blood analysis HbA1c ³	Urine analysis sodium ⁴
			Initial	Repeat								
Pacific												
Males	15–18	29	29	10	29	29	29	27	27	27	13	13
	19–30	82	82	14	82	82	82	82	80	82	35	35
	31–50	166	166	35	166	166	166	166	160	163	97	97
	51+	72	72	20	72	71	71	70	67	66	58	57
	Total	349	349	79	349	348	348	345	334	338	203	202
Females	15–18	44	44	11	44	44	44	40	41	40	15	15
	19–30	120	120	24	120	120	120	119	106	105	61	60
	31–50	167	167	41	167	167	167	164	150	157	107	107
	51+	77	77	20	77	77	77	74	69	72	52	52
	Total	408	408	96	408	408	408	397	366	374	235	234
NZEO												
Males	15–18	275	275	71	275	275	275	253	270	271	170	167
	19–30	161	161	40	161	160	160	160	155	158	96	94
	31–50	343	343	80	343	343	343	341	334	338	225	223
	51+	718	718	179	718	718	718	717	675	691	634	625
	Total	1497	1497	370	1497	1496	1496	1471	1434	1458	1125	1109
Females	15–18	312	312	77	312	312	312	291	303	304	201	194
	19–30	224	224	62	224	224	224	220	208	210	148	148
	31–50	425	425	107	424	424	424	423	389	399	304	304
	51+	916	916	248	914	912	911	907	838	874	764	757
	Total	1877	1877	494	1874	1872	1871	1841	1738	1787	1417	1403

		Number of respondents										
		Initial demography	24-hour diet recall		Dietary habits	Nutrition-related health	Additional sociodemography	Food security ¹	Blood pressure	Anthropometry BMI ²	Blood analysis HbA1c ³	Urine analysis sodium ⁴
			Initial	Repeat								
By NZDep2006 quintile												
Males	1	341	341	85	341	341	341	335	335	336	266	263
	2	352	352	91	352	352	352	340	342	344	262	257
	3	349	349	87	349	348	348	345	332	339	254	254
	4	448	448	103	448	447	447	443	418	427	317	309
	5	576	576	146	576	576	576	568	547	557	371	370
	Total	2066	2066	512	2066	2064	2064	2031	1974	2003	1470	1453
Females	1	323	323	85	322	322	322	310	307	308	245	242
	2	477	477	127	477	476	475	467	447	456	355	351
	3	412	412	102	411	411	411	407	381	398	313	312
	4	624	624	166	624	623	623	614	559	583	434	429
	5	819	819	188	818	818	818	806	739	755	531	528
	Total	2655	2655	668	2652	2650	2649	2604	2433	2500	1878	1862

Notes: Includes respondents who provided valid data for each section (ie, answered at least one question or had at least one measurement).

Dietary habits includes eating habits and dietary supplements.

- 1 Cell sizes are based on the final food security categories.
- 2 Other components of anthropometry may have different cell sizes.
- 3 n = 3359 gave blood but the greatest number for an individual component was HbA1c (n = 3348).
- 4 Other components of urinary analysis may have different cell sizes.