Nutrition Information 營養資料	 Heate
Per 100g or Per 100m / 每100克或每100毫升 Energy /熱量 kcal / kJ 千卡 (千焦) Protein /蛋白質 克 g /克 Fat total / 脂肪總量 g /克 - Saturated fat /飽和脂肪 g /克 Cholesterol /膽固醇 mg /毫克 Carbohydrate / 碳水化合物 g /克 Dietary fibre /膽食纖維 g /克 Sodium /銷 mg or g /毫克 Calcium /鈣 mg /毫克 Insert nutrient(s) involved in claim(s) / 填入涉及聲稱的營養素 g, mg µg/	



Economic Analysis and Business Facilitation Unit Regulatory Impact Assessment on Labelling Scheme on Nutrition Information

May 2005

Environmental Resources Management

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FINAL REPORT

Economic Analysis and Business Facilitation Unit

Regulatory Impact Assessment on Labelling Scheme on Nutrition Information

May 2005

Reference 0019937

For and on behalf of	
Environmental Resources Management	
Approved by: Dr Andrew Jackson Signed: Position: Managing Director Date: 19 May 2005	

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1.1 INTRODUCTION

ERM has been commissioned by the Economic Analysis and Business Facilitation Unit, Financial Secretary's Office, to undertake a Regulatory Impact Assessment (RIA) to consider options for a labelling scheme for nutrition information.

1.2 OBJECTIVES OF THE STUDY

The objective of the RIA is to assess the health and economic impacts of introducing a nutrition labelling scheme in Hong Kong. The assessment will provide policy makers with information on:

- the health and economic impacts of implementing the proposed requirements for the labelling scheme; and
- the relative merits of alternative options in terms of the variations in the phased approach, core nutrients and exemptions from nutrition labelling.

1.3 This Report

This document is the *Final Report* for the *Regulatory Impact Assessment on Labelling Scheme on Nutrition Information*.

NEEDS ANALYSIS AND OPTIONS

2.1 BACKGROUND

2

The HKSAR Government has put ongoing effort into enhancing public health. Nutrition-related diseases are important public health problems in many parts of the world, including Hong Kong. For example, local research studies have shown that the number of individuals who are obese is increasing, due to poor dietary habits and inactivity⁽¹⁾.

Overseas, nutrition labelling either on general food types or specified foods is increasingly becoming mandatory among some countries. Argentina, Australia, Brazil, Canada, Israel, Malaysia, New Zealand, Paraguay, the US and Uruguay have developed mandatory nutrition labelling schemes⁽²⁾ and have implemented or are planning to implement mandatory schemes within the next two years. Moreover, at least 27 countries have nutrition labelling schemes on nutrition claims and 18 countries have nutrition labelling schemes on certain foods with special dietary uses. Of particularly note, and relevance to Hong Kong, is the fact that Mainland China has drafted legislation requiring nutrition labelling and is currently considering implementation details. With the Hong Kong prepackaged food market dominated by imported products, nutrition information will become more available for Hong Kong consumers as more trading partners adopt or implement a wider scope of mandatory nutrition labelling schemes. Further information on legislative approaches taken in the US, Australia/New Zealand, Japan and Thailand is provided in Section 3.3 and Annex B.

Nutrition labelling is an important tool to help change the eating behaviours. To this end in 2001/2002, the Food and Environmental Hygiene Department (FEHD) conducted a feasibility study on the implementation of a nutrition labelling scheme in Hong Kong. The study concluded that the Hong Kong policy objectives of protecting public health, ensuring food safety and promoting healthy eating could best be achieved through the implementation of a phased mandatory nutrition labelling scheme. As a result of this finding, the Administration developed a proposed labelling scheme and in November 2003 the Health, Welfare and Food Bureau (HWFB) initiated a public consultation exercise to obtain feedback on the proposals.

2.2 OBJECTIVE OF PROPOSED LABELLING SCHEMES

"Labelling", in relation to a food, as defined in the *Food and Drugs (Composition and Labelling) Regulations*, includes any words, particulars, trade mark, brand

Studies on Student Health Service, Department of Health, HKSAR Government.

Hong Kong Cardiovascular Risk Factor Prevalence Study 1995-96/ Janus Ed. Edward Denis. Department of Biochemistry, Queen Mary Hospital, Hong Kong, 1997.

⁽²⁾ Source: Dr Corinna Hawke. Nutrition labels and health claims: the global regulatory environment, World Health Organization, 2004.

name, pictorial matter or symbol relating to the food and appearing on the packaging of the food or on any document, notice, label, ring or collar accompanying the food. The label is an important communication channel, whereby consumers can obtain specific information on individual food products.

Existing legislation in Hong Kong does not include specific provision for standardised nutrition information on food labels. In addition, the data to support the nutrition information displayed on food labels is often not available and nutrition claims on packages are sometimes misleading.⁽¹⁾

Overseas, mandatory nutrition labelling either on general food types or specified foods are becoming a norm among developed countries in North America, Europe, Australasia and Asia. Consistent with worldwide trends, the Administration proposes to introduce a mandatory nutrition labelling scheme in phases to enhance public health by:

- facilitating consumers in making healthy food choices;
- encouraging food manufacturers to apply sound nutrition principles in the formulation of foods which would benefit public health; and
- regulating misleading or deceptive nutrition labels and claims.

2.3 NUTRITION LABELLING OPTIONS FOR HONG KONG

2.3.1 Introduction

- Based on experience overseas and the proposal outlined in the consultation exercise launched in November 2003, the Steering Group for the Study proposed eight possible implementation options (Option I to VIII). Each option provides for a two-phased approach, requires a number of different nutrients to be labelled and includes exemptions.
- The options are summarised in *Table 2.1* while the subsequent sections provides further details.

^(!) Source: 統一營養標簽有助「揀飲擇食,」(Standardisation of nutrition labels facilitate the "promotion of healthy eating"), Choice Magazine Issue 326, December 2003.

Table 2.1Definition of Options

Options	Phase I Approach	Number of nutrients
Option I	Specified requirements for labels with claims	Energy + 9 core nutrients
Option II	Specified requirements for labels with claims	Energy + 7 core nutrients
Option III	Specified requirements for labels with claims	Energy + 5 core nutrients
Option IV	Specified requirements for labels with claims	Energy + 3 core nutrients
Option V	Specified requirements for all labels	Energy + 9 core nutrients
Option VI	Specified requirements for all labels	Energy + 7 core nutrients
Option VII	Specified requirements for all labels	Energy + 5 core nutrients
Option VIII	Specified requirements for all labels	Energy + 3 core nutrients

2.3.2 Phase I Approach

For each of the eight options, nutrition labelling in a specified format is required for any pre-packaged food product that includes a nutrient-related claim.

For Options I to IV, prepackaged foods that do not include a nutrient-related claim can voluntarily provide nutrition labelling in any format.

However, for Options V to VIII, this format must also be followed for any prepackaged food product that includes any form of nutrition labelling.

2.3.3 Phase II Approach

In Phase II, which is the same for all options, mandatory nutrition labelling is required for all prepackaged foods, excepted for those granted with an exemption.

2.3.4 Number of Nutrients Requiring Labels

The Study examines four possible variations on the number of core nutrients requiring labels. These are as follows:

- Energy plus 9 core nutrients, including protein, available carbohydrate, fat, saturated fat, sodium, cholesterol, sugars, dietary fibre and calcium.
- Energy plus 7 core nutrients, including protein, available carbohydrate, fat, saturated fat, sodium, cholesterol and sugars.
- Energy plus 5 core nutrients, including protein, available carbohydrate, fat, saturated fat and sodium.
- Energy plus 3 core nutrients, including protein, available carbohydrate and fat.

2.3.5 Exemptions

The exemptions proposed in the Consultation document are shown in *Box 2.1.* It is understood that these are based, in part, upon the current exemptions under the *Food and Drugs (Composition and Labelling) Regulations.* Other possible exemptions have been considered during the course of this Study.

Box 2.1 List of Exemptions Proposed in the Consultation Document

1.	Prepackaged drinks with an alcoholic strength by volume of more than 1.2% as
	determined under section 53 of the Dutiable Commodities Ordinance (Cap. 109)
	(L.N 85 of 2004, L.N. 139 of 2004);

- 2. Prepackaged food sold at a catering establishment for immediate consumption;
- 3. Individually wrapped confectionery products in a fancy form intended for sale as single items;
- 4. Individually wrapped preserved fruits which are not enclosed in any further packaging and which are intended for sale as single items;
- 5. Prepackaged food packed in a container of which the aggregated surface area is less than 100 cm²;
- 6. Fresh fruit and fresh vegetables;
- 7. Spring water, mineral water, carbonated water to which no ingredient other than carbon dioxide has been added;
- 8. Vinegar which is derived by fermentation exclusively from a single basic product and to which no other ingredient has been added;
- 9. Flavourings;
- 10. Single unprocessed ingredient of raw meat (except when ground), poultry (except when ground), fish and seafood ; and
- 11. Raw prepackaged ready-to-cook dishes.

2.4 CURRENT COSTS OF IMBALANCED DIET IN HONG KONG

2.4.1 Introduction

Nutrition is essential for growth, tissue repair and maintenance of good health. An imbalanced diet contributes to obesity and many chronic degenerative diseases such as coronary heart disease, diabetes, strokes and certain types of cancer. These nutrition-related diseases are important public health problems in many parts of the world including Hong Kong.

An analysis undertaken by the Department of Community Medicine at the University of Hong Kong⁽¹⁾ identified a number of costs associated with these nutrition-related diseases, as well as the likely reduction in these costs that could be achieved through nutrition labelling and corresponding changes in consumer behaviour. These costs were quantified in dollar terms by valuing:

- savings from avoided public hospital admissions for each of the nutrient-related conditions;
- corresponding spending on General Practitioner (GP) visits and medicines associated with each of the nutrient-related conditions;
- lost productivity due to hospital admissions under age 65 and due to deaths avoided under age 75; and
- premature deaths avoided due to a reduction in nutrient-related diseases.

^(!) The report prepared by the Department of Community Medicine at The University of Hong Kong was reviewed by the following professors during its drafting and their comments were accounted for: Professor G. Guldan, Department of Biochemistry, The Chinese University of Hong Kong; Professor C.M. Leung, School of Public Health, Faculty of Medicine, The Chinese University of Hong Kong; and Professor S.F. Leung, Economics Department, The Hong Kong University of Science and Technology.

This analysis is provided in detail in *Annex A* of this report, while the following sections summarise its findings.

2.4.2 Nutrition-Related Diseases in Hong Kong

Obesity-Related Conditions (1)

In Hong Kong, a 1997 study estimated that approximately 36% of the population are obese ⁽²⁾. The World Health Organization (WHO) notes that obesity and overweight pose a major risk for serious diet-related chronic diseases, including type 2 diabetes, cardiovascular disease, hypertension and stroke, and certain forms of cancer ⁽³⁾. The health consequences range from increased risk of premature death, to serious chronic conditions that reduce the overall quality of life. For the obese, a reduction in energy intake can have significant benefit in terms of reducing the risk of incurring these health consequences.

The Department of Community Medicine conservatively ⁽⁴⁾ estimated that, every year, obesity and overweight-related conditions result in annual hospital inpatient costs of up to HK\$ 645 million, require HK\$1 billion to be spent on GP visits and medicines, result in HK\$7 billion in lost productivity and cause 2,292 premature deaths (ie deaths in those under 75).

Other Nutrition Related Diseases

In addition to obesity-related conditions, nutrient intake has known impacts on the risk of various diseases, including renal diseases, diabetes, cardiovascular disease, hypertension and stroke, osteoporosis and hip fracture, as well as various cancers. For example, excess carbohydrate or too little dietary fibre can increase the risk of developing diabetes while reduced sodium (salt) intake can notably reduce the risk of strokes and coronary heart disease (CHD) particularly for those with hypertension. A full examination of the links between nutrients and individual disease categories can be found in *Annex A*.

Overall, the Department of Community Medicine conservatively ⁽⁵⁾ estimated that, every year, other diseases which have a nutrition-related component result in annual hospital inpatient costs of around HK\$ 3 billion, require HK\$ 1 billion to be spent on GP visits and medicines, result in HK\$ 12 billion in lost productivity and cause around 4 thousand premature deaths (ie deaths in

- (2) Janus ED, Hong Kong Cardiovascular Risk Factor Prevalence Study, Hong Kong, 1997.
- (3) WHO fact sheet on Obesity and Overweight, 2003
- (4) The Department of Community Medicine's quantification of health costs includes only those effects for which the current evidence is sufficient to draw quantifiable conclusions. Thus not all health costs have been included. For a full discussion of what costs have and have not been quantified please see *Annex A*, while *Section 2.5.4* summarise the costs that have not been included.
- (5) Ibid

^(!) Obesity is associated with a spectrum of costly conditions that greatly impact lifespan and quality of life. These effects are largely mediated through changes in a few, identifiable risk factors such as high blood pressure, blood lipid levels and impaired glucose metabolism. Due to the many interrelationships between these risk factors and their overlapping and synergistic effects on final health care outcomes, the practical approach is to treat obesity as one dietrelated condition. The main dietary factor affecting obesity is the energy value of food.

those under 75). Preventing nutrition-related diseases will avoid some of these costs.

2.5 POSSIBLE BENEFITS FROM EACH OPTION

2.5.1 Approach

Reduction in Nutrition-Related Diseases due to Nutrition Labelling

The provision of nutrition labels allows for consumers to make healthy food choices, resulting in lower costs for nutrition-related diseases. The Department of Community Medicine has identified the likely reduction in disease burden achievable from each of the 8 options. This analysis included consideration of:

- likely changes in nutrition labelling practices and consumer behaviour in Hong Kong (including consideration of the baseline);
- the proportion of food consumed that is likely to be pre-packaged;
- the percentage of the population who would benefit from the labelling of a particular nutrient (eg the obese, diabetics, hypertensive etc); and
- the likely health effect of reduced or increased nutrient intake.
- The analysis resulted in the identification of possible reductions in the percentage of the Hong Kong population with various nutrition-related diseases achievable through the introduction of the eight options under consideration.

Valuing the Financial Benefits

The changes in nutrient-related conditions were quantified in dollar terms by valuing:

- savings from avoided public hospital admissions for each of the nutrient-related conditions;
- corresponding savings from GP visits and medicines associated with each of the nutrient-related conditions;
- savings from a reduction in lost productivity due to hospital admissions under age 65 and due to deaths avoided under age 75; and
- premature deaths avoided due to a reduction in nutrient-related diseases.

Saving in Lives

In addition, the Department of Community Medicine analysis identified the number of premature deaths avoided due to a reduction in nutrient-related diseases and included a valuation of human life associated with premature death. The dollar value used was taken as HK\$ 10 million per premature death, irrespective of age at death. This nominal value is based on an estimate from the World Health Organisation's Three European Cities study on health impacts of air pollution ⁽¹⁾ which concluded after a thorough literature review that the value of 1.4 million euros was a feasible estimate and was in the lower part of the range of the majority of empirical evaluations and was considered a rather conservative estimate of the real costs. The validity of this estimate as a value of a life in Hong Kong was assessed by a questionnaire survey to determine whether the local population would accept a value for avoiding a risk of death that would multiply up to give the same value as used in the European study (1.4 million euros = HK\$10 million at 1999 exchange rates)⁽²⁾. This study showed that \$10 million was well within most local people's valuation of a life.

A further review during this Study of values derived in Hong Kong also suggested that this value of HK\$ 10 million is conservative. For example, a 1998 paper ⁽³⁾ estimated that the 'statistical value of a life' in Hong Kong at the equivalent to HK\$ 17 million in today's prices.

2.5.2 Summary of Quantifiable Benefits

Using the approach outlined above, and detailed in *Annex A*, the Department of Community Medicine assessed the maximum quantifiable benefits of each of the eight options, as summarised in *Table 2.2* and *Table 2.3*. Please note that the absolute and relative values of the benefits available from each option are subject to limitations in the data. The data limitations are discussed further in *Sections 2.5.3* and *2.5.4*.

⁽¹⁾ Sommer H, Sheehtaler R, Chanel O, Herry M, Masson S, Vergnaud JC. Health Costs due to Road Traffic-related Air Pollution. WHO Regional Office for Europe, 1999.

⁽²⁾ McGhee SM, Yeung R, Wong LC, Chau J, Wong CM, Ho LM, Fielding R. The health benefits of reduced air pollution: value and trade-offs. Report submitted to the Health Care and Promotion Fund, Hong Kong SAR Government, 2003.

⁽³⁾ Siebert, W.S. and X. Wei. (1998). "Wage Compensation for Job Risks: The Case of Hong Kong," Asian Economic Journal 12(2), 171-181. The estimated 'statistical value of a life' in this paper was approximately HK\$10.8m in 1990 prices. In 2004 prices this is roughly equivalent to HK\$ 16.9 million (using CPI adjustment).

Group (Options) Benefits based on Benefits based on GP Benefits based on lost hospital utilisation care and medicines productivity Main Estimate 37,120,032 **Options I&V** 52,296,026 292,829,587 **Options II&VI** 18,835,657 88,060,386 36,643,901 **Options III&VII** 31,768,807 18,591,903 78,749,468 **Options IV&VIII** 3,326,162 5,722,684 34,409,180 Lower Estimate **Options I&V** 25,715,555 12,752,477 73,558,889 **Options II&VI** 43,466,682 22,021,944 9,814,636 **Options III&VII** 19,584,397 9,692,758 38,811,223 **Options IV&VIII** 1,543,464 2,604,695 14,009,668 Upper Estimate **Options I&V** 93,258,231 60,953,652 485,804,594 **Options II&VI** 68,058,204 31,284,988 152,277,672 **Options III&VII** 60,745,564 30,919,356 138,311,295 **Options IV&VIII** 5,554,417 9,655,167 60,330,143

Table 2.2Summary of Expected Annual Monetary Benefits of Labelling According to
each Proposed Group of Nutrients (HK\$)

Table 2.3Summary of Expected Annual Monetary Benefits of Labelling According to
each Proposed Group of Nutrients including Savings in Productivity and
Premature Deaths Avoided

Group (Options)	Total Benefits (hospital	Premature deaths	Total value
	utilisation, GP care,	avoided	including \$ value* of
	medicines & productivity)		premature deaths
Main Estimate			
Options I&V	382,245,646	141	1,789,174,817
Options II&VI	143,539,944	107	1,214,779,785
Options III&VII	129,110,178	93	1,059,188,451
Options IV&VIII	43,458,026	11	151,587,957
Lower Estimate			
Options I&V	112,026,921	68	795,839,628
Options II&VI	75,303,261	59	666,888,285
Options III&VII	68,088,379	52	589,092,617
Options IV&VIII	18,157,827	5	70,801,104
Upper Estimate			
Options I&V	640,016,477	236	2,995,333,856
Options II&VI	251,620,864	182	2,074,839,259
Options III&VII	229,976,215	161	1,841,452,257
Options IV&VIII	75,539,727	18	252,875,734

2.5.3 Data Limitations due to Availability of Data on Health Benefits of Nutrients

As noted previously, this analysis of the possible health benefits of a mandatory labelling scheme is focused on those benefits that are readily quantifiable from available data sets. As detailed in *Annex A*, this means that the quantifiable benefits associated with each option are limited to those associated with the following diseases for which data sets are available.

Table 2.4Quantification of the Potential Effects of Labelling on Nutrient Categories

Nutrients	Quantifiable health benefits associated with the Nutrients	
Energy and fat	Obesity and overweight	
Protein	Renaldisease	
Carbohydrates	Diabetes	
Saturated Fat	Breast cancer and CHD	
Sodium	Stroke and CHD	
Cholesterol	Due to concerns regarding double counting, cholesterol	
	impact is considered under Saturated Fat/CHD	
Sugar	Colorectalcancer	
Fibre	CHD, Diabetes, Colorectal cancer & Prostate cancer	
Calcium	Colorectal cancer & Osteoporosis & Hip facture	

This limitation means that direct comparison of the *relative* health benefits arising from each option must be treated with caution, as if other disease categories were quantifiable then their relative performance would likely change. Furthermore, this means that the absolute benefit arising from the labelling of each nutrient might also be underestimated. For example, dietary fibre has also been reported to decrease the risk of breast cancer, although the data are insufficient for the quantification of this impact. Had this, and other quantifications of health benefits, been possible then both the *relative* and *absolute* performance of the options would likely change.

2.5.4 Excluded Benefits

In addition, to the limitations discussed above, the following financial and economic benefits have been excluded from the calculations due to a lack of reliable data.

- Avoided loss of quality of life due to fewer people suffering from diabetes, heart disease, strokes and other conditions which have a major impact on quality of life; and fewer people suffering from obesity and its consequences on mental health.
- Avoided deaths largely contributed to by diabetes and osteoporosis, two nutrient-related conditions but which do not usually feature as a cause of death in death registrations.
- Costs of care and rehabilitation that take place outside hospitals except for those covered by the estimates for GP visits and medicines for some conditions.
- Pre-packaged foods eaten outside the home which are not easily quantified; the estimate of the proportion of pre-packaged foods consumed may not cover this adequately.
- Changed behaviour over and above the conservative estimates made based on the data available. A highly successful public awareness campaign eg about the benefits of reducing salt in the diet may have a bigger impact than that estimated here since local consumption of salt is currently relatively high.

- The impact of dietary fibre on colorectal cancer in order to avoid double counting with the impact of sugar on colorectal cancer since high sugar foods tend to be low in fibre.
- Psycho-social costs such as loss of self-esteem, depression and loss of quality of life due to the health problems.
- Costs of use of intensive care facilities eg after a stroke are not included; however, many of the longer term costs of care are covered by the hospital costs because long-term hospital costs are included.
- Benefits from regulating claims, eg reduction of false claims and substitution of unhealthy products with products that have substantiated nutritional benefits and claims.
- Benefits from providing all nutrition labels in a common format. The analysis does not take into account the benefits that may be attainable from some of the existing labels being altered so that they meet the specified requirements. Consumer surveys overseas have indicated that standardisation of nutrition labelling information, including claims, would allow consumers to accurately interpret labelling information and adjust their purchasing habits accordingly. Such benefits have not been quantified in this Study although a FEHD opinion survey in 2004 indicated that 94.5% of the general public supported standardisation of format of nutrition labels for easy reference by consumers and to avoid confusion.

The estimates of benefits available from the implementation of nutrition labelling scheme are therefore considered conservative and the actual economic benefits would be greater than presented in *Table 2.3.*

2.5.5 Phase I Benefits

As discussed in *Section 2.3.2*, the proposed scheme is to be introduced in a phased manner. As the exact schedule for introducing Phase I has not been confirmed, and to allow analysis of the impact of altering this timing, this Study has sought to identify the benefits from introducing Phase I only. In this regard it is considered likely that benefits may arise during Phase I due to:

- Regulating existing claims. Phase I requires that anyone making claims supports such claims with nutrition labelling in the required form (Options I to VIII).
- Providing information on additional nutrient categories. Options V to VIII require that anyone providing nutrition labelling on a voluntary basis must do so in accordance with the specified requirements (eg format and number of nutrient categories) (Options V to VIII).

ERM's approach to modelling these issues is discussed further below.

Benefits from Regulating Nutrition Information

Benefits from regulating claims would be associated with either reduced consumption of products that are making false claims and/or substitution of unhealthy products with products that have substantiated nutritional benefits and claims (eg accurate claims). Thus any approach to estimating benefits arising from regulating claims would have to identify:

- The proportion of current claims that are inaccurate.
- The proportion of unhealthy products that would be substituted for by products with accurate claims.

As ERM is not aware of any information to support any assumptions regarding the second variable, the benefits from regulating claims have not been quantified in this analysis. It is however noted that a market survey and testing exercise carried out by FEHD in 2001, suggested that some proportion of nutrition claims did not meet the conditions set in the Codex Guidelines and as such it is reasonable to assume that upgrading of the quality of information available is likely through the regulating of nutrient claims. This could in turn provide benefits to consumers.

Benefits From Providing Information On Additional Nutrient Categories

Under Options V to VIII, anyone providing nutrient information would have to do so in accordance with the specified requirements (eg format and number of nutrient categories). This may result in both an increase in the amount of nutrient information on existing labelled products (depending on the option) and a clearer understanding by consumers (due to the specified format).

The market survey identified labelling practices for existing products. This exercise indicated that between 20% and 58% of current products would have to upgrade their label or packaging ⁽¹⁾ during Phase I to meet the requirements of Options I to VIII. The results of this analysis are presented below.

Table 2.5Summary of Market Survey Results on Label Changes in Phase I

	Percentage of Products Requiring Upgrade of Label
Option I	27%
Option II	27%
Option III	24%
Option IV	20%
Option V	58%
Option VI	55%
Option VII	48%
Option VIII	35%

Thus, for Option V, 58% of products would be expected to provide more information on additional nutrient categories. For the purpose of illustrating

^(!) Products would have to upgrade their label and/or packaging in Phase I if they were: not labelling all required nutrients (Options V to VIII); a claim not accompanied with relevant nutrition information (all options); not using specified content expression when listing nutrient information (all options).

the benefit of Phase I we have assumed that a similar percentage of benefits are available from the Phase I action.

Table 2.6Summary of Expected Annual Monetary Benefits of Labelling According to
Each Proposed Group of Nutrients (HK\$) – Phase I only

Group (Options)	Benefits based on	Benefits based on GP	Benefits based on lost
	hospital utilisation	care and medicines	productivity
Main Estimate			
Options I	14,331,383	10,172,501	80,248,025
Options II	9,795,707	5,035,178	23,540,444
Options III	7,474,047	4,374,000	18,526,891
Options IV	679,335	1,168,800	7,027,728
Options V	30,420,388	21,592,573	170,337,790
Options VI	20,311,407	10,440,447	48,811,134
Options VII	15,309,477	8,959,490	37,949,589
Options VIII	1,172,928	2,018,030	12,133,951
Lower Estimate			
Options I	7,047,179	3,494,733	20,158,330
Options II	5,886,942	2,623,664	11,619,584
Options III	4,607,498	2,280,354	9,130,872
Options IV	315,237	531,983	2,861,333
Options V	14,958,635	7,418,065	42,788,909
Options VI	12,206,579	5,440,170	24,093,218
Options VII	9,437,776	4,670,967	18,703,237
Options VIII	544,282	918,512	4,940,328
Upper Estimate			
Options I	25,556,806	16,703,948	133,131,559
Options II	18,193,429	8,363,154	40,707,113
Options III	14,291,226	7,274,202	32,539,627
Options IV	1,134,434	1,971,971	12,321,823
Options V	54,247,937	35,456,493	282,590,573
Options VI	37,724,092	17,341,007	84,406,238
Options VII	29,273,457	14,900,124	66,652,599
Options VIII	1,958,693	3,404,769	21,274,642

Group (Options)	Total Benefits (hospital	Premature deaths	Total value including \$
	utilisation, GP care,	avoided	value of premature
	medicines & productivity)		deaths
Main Estimate			
Options I	104,751,909	39	490,311,610
Options II	38,371,329	29	324,736,892
Options III	30,374,938	22	249,188,596
Options IV	8,875,864	2	30,960,312
Options V	222,350,750	82	1,040,755,775
Options VI	79,562,989	59	673,342,260
Options VII	62,218,555	45	510,425,872
Options VIII	15,324,909	4	53,455,526
Lower Estimate			
Options I	30,700,242	19	218,094,624
Options II	20,130,189	16	178,273,652
Options III	16,018,724	12	138,592,110
Options IV	3,708,553	1	14,460,412
Options V	65,165,608	40	462,936,702
Options VI	41,739,967	33	369,650,590
Options VII	32,811,980	25	283,885,377
Options VIII	6,403,122	2	24,967,090
Upper Estimate			
Options I	175,392,313	65	820,851,574
Options II	67,263,695	49	554,649,378
Options III	54,105,056	38	433,226,875
Options IV	15,428,228	4	51,647,319
Options V	372,295,003	137	1,742,373,623
Options VI	139,471,337	101	1,150,066,022
Options VII	110,826,180	78	887,400,984
Options VIII	26,638,104	6	89,173,346

Table 2.7Summary of Expected Annual Monetary Benefits of Labelling According to
Each Proposed Group of Nutrients including Savings in Productivity and
Premature Deaths Avoided - Phase I only

3 STAKEHOLDER CONSULTATION

3.1 STAKEHOLDERS CONTACTED

While the role of this study is not to undertake a formal consultation on the proposed regulations, the Consultants have contacted and sought the views of some business stakeholders and international regulators. This was done to ensure that the likely impacts on the trade were better understood and that lessons learnt overseas were available to inform decision making. This has been done through face-to-face interviews and telephone interviews, as well as written communications.

The business stakeholders contacted are listed in Table 3.1.

Table 3.1Business Stakeholders Contacted

Name of Organisations	Name of Organisations
Trade Associations	Packaging and Labelling Firms
Hong Kong Food Council (HKFC) & Members	Sims Trading
Chinese Manufacturers' Association of Hong Kong (CMA)	Propack HK Ltd
Hong Kong Retail Management Association (HKRMA)	Sealed Air HK Ltd
Hong Kong Suppliers Association Co Ltd.	
Hong Kong Small and Medium Enterprise Association	Testing Facilities and Laboratories
Hong Kong and Kowloon Vermicelli and Noodle	SGS Hong Kong Ltd
Manufacturing Industry Merchants' General Association	CMA Testing and Certification
	The Hong Kong Standards and
Major Supermarkets	Testing Centre Ltd
A. S. Watson/ Park'n Shop	ACTS Testing Labs (HK) Ltd.
City Super	
CRC	
Dairy Farm/Wellcome	

In addition to these business stakeholders, ERM also contacted and interviewed a number of SMEs. These interviews form the basis of the affordability analysis and are discussed further in *Section 4.4*. The table below summarises the types of SMEs contacted.

Table 3.2SMEs Interviewed

Local manufacturers:
A food factory manufacturing general food items;
A food factory manufacturing specialty foods; and,
A food factory operating in the "Front shop-back factory" mode.
Importers:
An importer sourcing prepackaged foods from food suppliers in multiple countries; and,
An importer sourcing prepackaged foods from food suppliers in very limited number of
countries.
Retailers:
A local ordinary food provision store; and
A speciality food store.

International regulators that ERM contacted are:

- Center for Food Safety and Applied Nutrition, US Food and Drug Administration;
- Labelling and Information Standards Section of Food Standards Australia New Zealand;
- Specialist Group for Nutrition Labelling of Ministry of Health, Labour and Welfare, Japan; and
- Food Control Division and Public Relation and Advertisement Control Division, Food and Drug Administration, Ministry of Public Health, Thailand.

The summary of feedback from the above stakeholders are summarised in the *Sections 3.2 and 3.3.*

3.2 FEEDBACK FROM BUSINESS STAKEHOLDERS

The purpose of the ERM contacting the business stakeholders was to get data and understand current and anticipated labelling practices with regard to nutrition labelling. This information was then used to support the impact analysis presented in *Section 4* During these discussions, some of the stakeholders expressed their opinions on the proposed Nutrition Labelling Scheme in Hong Kong. A selection of the comments received from business stakeholders are summarised in *Table 3.3*.

Table 3.3Summary of Feedback from Business Stakeholders

Organizations	Opinion on the proposed Nutrition Labelling Scheme
Hong Kong Food -	The HKSAR Government should introduce a simple nutrition
Council (HKFC)	labelling system with the minimum number of core nutrients (eg
	following CODEX). They can increase the number of nutrients
	later and in fact, due to the health consciousness of Hong Kong
	people, food producers will provide nutrition labelling
	voluntarily even without regulatory pressure.
-	From the interviewee's experience, if the importer let the
	manufacturers/exporters know in advance (eg 3 years) that they
	have to re-label food products to adapt to the HK nutrition
	labelling requirements, the manufacturers/exporters are usually
	willing to comply.
-	It is unlikely that the retailers will do relabelling themselves, they
	will simply not sell the products which do not meet the labelling
	standards.
-	There should be exemptions for SMEs as large firms can bear the
	testing/relabelling cost but the small ones cannot.
-	Because the food retail industry is very competitive, it was
	considered difficult for the industry to absorb any price increases.
	Therefore, the interviewer suggested that it is likely that the
	increase in costs due to nutrition labelling would be transferred
	to consumers.

Organizations		Opinion on the proposed Nutrition Labelling Scheme
Retail Management	-	Until there is an international consensus on nutritional labelling,
Association		RMA believed that there should not be mandatory nutritional
		labelling in Hong Kong on all prepackaged food items.
	-	There is no worldwide nutritional labelling scheme in place and
		many of Hong Kong 's key trading partners have different
		regulatory regimes. Yet Hong Kong imports 90% of its food from
		many different parts of the world and Hong Kong is a small
		volume market for overseas manufacturers.
	-	If Hong Kong has stricter or different nutritional labelling laws
		from its trading partners, this will lead to restricted choice of
		products in Hong Kong and an increase in the price of products
		resulting from the compliance costs or relabelling cost, etc
A.S. Watson / Park'n	-	The main issue is not cost, it's choice.
Shop	-	If the product is specifically packaged for the Hong Kong market,
		it is not an issue.
Dairy Farm/	-	The number of nutrients required on labels should be the lowest
Wellcome		common nutrients required in all other countries.
	-	The greatest impact would be on importers (not local
		manufacturers or retailers).
	-	There should be no problem for manufacturers whose products
		are specially packaged for the Hong Kong market.
Cites 6		
City Super	-	All City Super private label products are done by a labelling
		products does not comply with the proposed putrition labelling
		scheme in Hong Kong, this might push them off the Japanese
		product market
		product market.

Source: ERM interview with stakeholders July-August 2004.

3.3 FEEDBACK FROM OVERSEAS REGULATORS

ERM sought advice from international regulators in Australia/New Zealand, Japan, Thailand on their general implementation, stakeholders, exemptions and enforcement issues. The summary of findings is presented in *Table 3.4,* while further details of these interviews can be found in *Annex B*.

	US	Australia/NZ	Japan	Thailand
Approach	Mandatory Labelling Regulating Claims in 1973, Mandatory Nutrition Labelling in 1994	Mandatory Labelling Regulating Claims (Australia) in 1987, Mandatory	Mandatory Labelling Regulating Claims in 1995, Mandatory	Mandatory (for some food items)/ Voluntary for other
		Labelling in 2002.	Labelling for products with claims or existing labels on	items in 1998
			calories, protein, fat, carbohydrate and sodium in 2003	
Grace period	20-21 months	2 years	Limited information available	Effective 180 days after stipulated in the Royal Gazette.
Coverage and	Exemptions:	Exemptions:	Exemptions for nutrition labelling were developed for fresh	Nutritional labelling is mandatory for:
exemption	-Manufactured/imported by small businesses;	- sold at fund-raising events;	foods such as vegetables, meats and fish, on the understanding	-Foods that include a nutrition claim;
	-Foods served in restaurants, unless a claim is made;	- alcoholic beverages;	that their nutrients were so variable depending on seasons and	-Food that use nutritional values in sales promotion;
	- Foods served and sold for immediate consumption where there are facilities for immediate	-a herb, a spice, a herbal infusion;	areas of production. In addition, monitoring is proved to be a	-Food specifically target a group of consumers eg elderly
	Early provide the providence of the providence o	-vinegar and related products;	are produced widely in Japan	Other foods as may be specified by the FDA
	but are nackaged and nortioned on a consumers' request:	-tea. decaffeinated tea. decaffeinated instant or soluble tea. instant or soluble	are produced wheely in Japan.	Other food types can opt for the labelling scheme
	- Foods contain insignificant amounts of all nutrients required to be listed on the label;	tea, coffee, decaffeinated coffee, decaffeinated instant or soluble coffee,		voluntarily.
	- Infant formula, infant and junior food up to 4 years of age (subject to other requirements);	instant or soluble coffee;		Exemptions from the nutrition labelling regulations
	- Dietary Supplements of vitamins and minerals not in conventional food form	- additives;		include:
	Medical foods;	- processing aid;		-Infant food, supplementary food for infants and children,
	- Bulk foods for further manufacturing or repacking;	- fruit, vegetables, meat, poultry, and fish that comprise a single ingredient or		and other types of food for which labelling requirements
	- Raw fruits, vegetables, and fish at retail level, unless a claim is made;	category of ingredients;		have been otherwise regulated;
	- Custom processed fish and game meat;	-in a small package;		-Food not sold directly to consumers; and
	- FOOds in package with available label space of <12 square inches, provided that the label	-gelatine;		-rood packaged in small containers that is intended for re-
	- Foods sold from hulk containers, provided that nutrition information is provided at point	-prepared filled rolls sandwiches bagels and similar products		packaging and sale in a larger container.
	of sale: and	-iam setting compound:		
	- Certain egg cartons	-a kit which is intended to be used to produce an alcoholic beverage; and		
		-kava.		
Number and	14 (Energy, Calories from Fat, Protein, Carbohydrate, Fat, Saturated Fat, Sodium, Sugars,	7 (Energy, Protein, Carbohydrate, Fat, Saturated Fat, Sodium, Sugars), plus	5 (Energy, Protein, Carbohydrate, Fat, Sodium). Additional list	14 (Energy, Protein, Carbohydrate, Fat, Saturated Fat,
types of core	Dietary Fibre, Calcium, Cholesterol, Vitamin A, Vitamin C and Iron) plus claimed Nutrients	claimed nutrients	of minerals and vitamins if claimed	Sodium, Sugars, Dietary Fibre, Calcium, Cholesterol,
nutrients				Vitamin A, Vitamin B1, Vitamin B2 and Iron), plus claimed
Europeation	Den compiler	Dan complex and non 100 con mI	Den comping non 100g non 100ml, non nocleage on non other	nutrients
Expression	Per serving	Per serving and per 100g or mL	Per serving, per 100g, per 100mL, per package or per other appropriate unit.	Per serving, per 100g or per 100mL
Tolerance limits	- Class I nutrients -vitamins, minerals, protein, dietary fibre, or potassium added in fortified	No specific tolerance limits defined. Average quantity is defined in relation	-Calorie Protein, Fat, Saturated fatty acid, Cholesterol,	Tolerance limits had not been specified in the laws. FDA
	or fabricated foods: must be present at 100% or more of the value declared on the label	to the manufacturer's analysis of the food; calculation from the actual or	Carbohydrate, Sugars, Dietary fibre, and Sodium: ±20%	internal rules tolerance limits vary from \pm 20% to zero
	- Class II nutrients- vitamins, minerals, protein, total carbohydrate, dietary fibre, other	average quantity of nutrients in the ingredients used; or calculation from	-Vitamin A, Vitamin D, Vitamin E, Zinc, Calcium, Iron,	tolerance with some limitation based on RDI values.
	carbonydrate, polyunsaturated and monounsaturated fat, or potassium occur naturally in a	generally accepted data; which best represents the quantity of the substance	Copper, and Magnesium: -20% to $+50\%$	
	- Third Crown putrients - calories sugars total fat saturated fat cholesterol and sodium:	that the food contains, allowing for seasonal variability and other known factors that could cause actual values to vary	-Vitamin B1, Vitamin B2, Vitamin B6, Vitamin B12, Vitamin C,	
	must be 120% or less than the amount declared on the label	racions that could cause actual values to vary.		
Function claims	Principles, supported by examples	Principles, supported by examples	Limited information available	Principles, supported by examples
regulating				
approach				
Enforcement	1st level: warning letter, allowing the companies 15 days to respond to FDA about how they	Enforcement of nutrition labelling is likely to assume a low priority, however	Penalty on non-compliance could lead to a maximum penalty	Penalties on false nutrition information range between
and penalties	intend to fix their labels.	they believe that in future, labelling will assume a higher priority.	of 500,000 yen (HK\$37,000).	fines of 5,000 THB to 100,000 THB (roughly HK\$ 1,000 to
	2 nd level: products with invalid labels will be ceased in the manufacturing facility.			HK\$ 20,000) and imprisonment from 6 months to 10 years.
	manufacturing facility will be coased			(roughly HK\$ 10,000)
Monitoring and	Inspections were conducted at manufacturing facilities for local products and the port of	Monitoring and evaluation strategy 2004-08	Inspection of retail outlets are undertaken on a needs basis. A	FDA has annual monitoring and evaluation plans to
evaluation	entry for imported goods. 80% of the local manufacturing facilities are inspected every year.	http://www.foodstandards.gov.au/mediareleasespublications/publications	national-wide inspection in Japan are being done annually in	sample relevant parties including importers,
strategy	District investigators also check compliance regarding nutrients listed on the nutrition panel	/evaluationstrategy202463.cfm	cooperation with local self-governing bodies. Professionals are	manufacturers and market.
	of products from retail outlets, without testing nutrient contents at laboratories.		employed by the Japanese authority to analyze food samples	
			and check accuracy of the food labels.	
Assistance	Small businesses exemptions, trainings, meetings, dissemination of information through	Automatic Nutrition Panel Calculator (NPC) online	Limited information available.	Organized seminars to clarify the requirements of the law
provided for the	newsletters.	FSAINZ also introduced stock-in-trade. Under these provisions, food with a shall life of more than 12 months (long shall life food products) that were		and provided assistance in connecting the industry with
1000 11200		manufactured and packaged prior to 20 December 2002 in compliance with		Universities to provide testing services to the industry
		applicable food standards at the time, can continue to be lawfully sold until		Universities to provide testing services to the industry.
		20 December 2004.		
Problems	Tight time frame to get the scheme implemented; definition of nutrition content claims and	Definition and requests for exemptions	Limited information available.	Lack of infrastructure on testing and errors in the labels
encountered	health claims; and field investigators' training.			(not fully complying with laws) at initial stage. No
				specific problems were encountered with regards to
				enforcement.
Future plans	Definition of claims for carbohydrates (proposal in early 2005); FDA obesity initiative	Review exemptions, health claims regulation	Limited information available.	No plan to make to labelling completely mandatory. A
	(proposal due in early/mid 2005); Mandatory Labelling of trans fat (implementation, 1st January 2006) : Definition of nutrition content claim for whole grain (orgaing (order)); 2005);			study is being conducted on labelling of other food types such as CM food
	Definition of qualified health claims (ongoing)			SUCH as CIVI 1000.
	or quanter neuron commo (ongoing).			

ENVIRONMENTAL RESOURCES MANAGEMENT

4.1 APPROACH

4.1.1 Data Sources

ERM has undertaken the impact analysis using a variety of data sets. These are outlined below.

Market Size and Nature

The following data sets were used to identify the size and nature of the prepackaged food market in Hong Kong.

- AC Nielsen Market Track data. AC Nielsen Market Track is one of the most comprehensive data sets on retail food sales in Hong Kong. The data are obtained through continuous tracking of consumer purchases at the point of sale through scanning technology and in-store audits. The Study utilised data for fifty categories of food and drink tracked by AC Nielsen. These data were collected in the year 2003.
- Industry data sets. Both Wellcome and Park'n Shop provided data sets on their pre-packaged food sales in Hong Kong. These data are used to supplement and cross reference the AC Nielsen data sets.
- Census and Statistics Department (C&SD) data. C&SD provides statistics on the household expenditure on food in Hong Kong. These data are used to supplement and cross reference the AC Nielsen data sets.

The above data sets were used to give a detailed understanding of the types of pre-packaged foods on sale (eg food categories) and the quantity of these imported and manufactured locally (both in terms of products and unit sales). The resulting data set was disaggregated as far as possible by food category, sales volume and source (local or imported).

Packaging and Labelling Practices

In order to obtain a detailed understanding of the packaging and labelling of food products in Hong Kong, ERM surveyed 2,381 products identified from the AC Nielsen and industry data sets. Of these surveyed products, 1,959 were found in the retail stores, although 25 of these were identified as exempted under the exemptions studied. The market survey protocol, questionnaire used, and the results obtained, from this survey are summarised in *Annex C*.

The results of this survey are analysed to identify the percentage of products requiring relabelling⁽¹⁾ and testing in Phases I and II. The logic used in this

^(!) Relabelling refers to sticking a label with necessary nutrition information on top of the existing packages, while repackaging refers to a change in package design.

analysis is presented in *Figure 4.1* and *Figure 4.2* and the results of this analysis are presented in *Annex C*.

While ERM cannot anticipate fully the reaction of the trade to the proposed nutrition labelling scheme, there appeared to be three different approaches that the trade may take in case they are not in compliance with the requirements:

- Repackaging, ie redesigning the package;
- Relabelling, ie putting a sticker on the existing packages with the required information; and
- Covering the substandard information with a blank label during Phase I.

In the analysis of the market survey results, it is assumed that:

- products which are specifically packaged for the Hong Kong market⁽¹⁾ will be repackaged;
- products which are not specifically packaged for the Hong Kong market are relabelled;
- no products will be covered with a blank label⁽²⁾ during Phase I.
- products which require testing will undergo formal testing through accredited laboratories instead of indirect nutrient analysis.
- This approach is considered conservative as it is unlikely to underestimate the actions required to meet the proposed Hong Kong schemes. For example, relabelling and formal laboratory testing are likely to be more labour and cost intensive than covering the products with a blank label and performing indirect nutrient analysis.

- (!) Products are considered packaged specifically for the Hong Kong market when they have either: a) The words Hong Kong (or HK) appear anywhere on the package, b) a bar code with the first three digit 489 on the package, or c) a Hong Kong telephone (country code 852) on the package.
- (2) While providing claims and nutrition information is a positive attribute to food products and sticking a blank label adversely affected the package design, it is assumed that it is quite unlikely for producers to cover the substandard information with a blank label. According to the US Food and Drug Administration, there were no similar cases like this in the US.



Note: * In these cases, for a Nutrition Label to meet the requirements, it must not only label the correct number of nutrients in the required format, but must also include the necessary nutrition information to support any claims.



Note: * In these cases, in addition to testing for required unlabelled nutrients, testing should also cover tests for other nutrients, vitamins and minerals included in any claims and which current labels do not provide numeric values.

4.1.2 General Items and Assumptions

Timing

We have assumed that the earliest Phase I can be initiated is 2008. This assumption is based upon the two-year grace period stated in the Administration's consultation document.

Discount Rate

The HKSAR Government's standard discount rate of 4 percent has been used to calculate net present values (NPVs) ⁽¹⁾.

Pre-packaged Food Market

As discussed in *Section 4.1.1*, a variety of data sources have been used to identify the size and nature of the pre-packaged food market in Hong Kong. Based upon a review of the available data and discussions with the major retailers in Hong Kong, we have estimated that in any one year this market includes:

(1) 4% is the standard rate that the Hong Kong Government applies to the financial appraisal of investment decisions (ERM communication with Government Economist).

- 22,000 different pre-packaged food product lines. Data on the actual number of pre-packaged products lines that are sold in Hong Kong and that would require nutrition labels are not readily available. Discussions with major food retailers and AC Nielsen suggested that the actual number is likely to range between 14,000 and 30,000 products ⁽¹⁾, and as such the analysis has used a mid point (22,000) in the main analysis. Examining the implications of the upper and lower estimates was examined in the sensitivity analysis.
- Sales of around 1.5 billion units. Units are defined as individual units that would be required to carry nutrition labels. This number was provided by Wellcome who had undertaken an analysis of the whole market using both their knowledge of food pricing and Government data on food sales in Hong Kong.
- Product turnover of 14%⁽²⁾. It is assumed that every year fourteen percent of the existing food products are replaced by new products, and that these new products have similar current labelling practices to those that they are replacing.
- Total household expenditure on pre-packaged food products of HK\$22.5 billion per annum. This number was derived from the C&SD's household expenditure survey in 1999, and the number of households in their 2004 population survey.

4.1.3 Cost Items and Assumptions

ERM's consultation with industry and examination of overseas experience suggested that a number of different costs are likely to be incurred to ensure compliance with any future nutrition labelling requirement. These are summarised in *Table 4.1.* These costs, and the approach used in applying them in the analysis, are discussed in more detail in the following sections.

⁽¹⁾ Wellcome indicated that they had a total of about 14,000 products; however this estimate did not take account of exemptions for smaller packet sizes or for certain food categories (eg baby food, mineral water, vinegars etc). Park'n Shop indicated that, including food sold at GREAT, they stocked about 33,000 Stock Keeping Units (SKU), excluding baby food and frozen and hanging meat. AC Nielsen's data suggested that 1.9 SKUs roughly accounted for 1 product line. Using this ratio on the Park'n Shop data suggests a total of around 17,000 products. AC Nielsen data suggest that the major retailers account for between 72% and 96% of product variety. Using the Park'n Shop and GREAT estimate to obtain an upper estimate of the total volume of products in the whole market (eg 17,000 divided by 72%) suggests around 24,000 products. The RMA estimated that the total pre-packaged food items are approximately 30,000.

^(?) This number was provided by AC Nielsen, based on their analysis of their market survey data.

Table 4.1Key Costs Implications of Nutrition Labelling

Stakeholders	Costs
HKSAR Government/ Taxpayers	Establishing Legislation
	Public awareness programs
	Enforcement costs
Food industry	Lab-testing cost
	Label redesign cost
	Re-labelling costs
Consumers	Higher food costs

Government Enforcement Costs

The Administration provided an estimate of enforcement costs by making a number of assumptions on the level of resources required to enforce a nutrition labelling scheme. These assumptions are outlined for three different scenarios in the following table.

Table 4.2Enforcement Assumptions

Resources Required Per Annum	Low Scenario	Medium Scenario	High Scenario
No. of health inspectors	1	2	3
No. of samples for testing	100	600	1,200
No. of warning letters issued	30	50	80
No. of possible prosecutions	8	15	24
No. of possible complaints	40	40	40

In addition to the above resources, the Administration also estimated that the technical support from a Non-civil Service Contract Research Officer (Food) would be required with respect to the implementation of regulatory work for nutrition labelling. It was estimated that this individual would allocate approximately 85% of his/her time to this role.

Using standard information on staff costs and associated expenses (eg departmental expenses, uniform, accommodation and administrative overheads, testing costs etc), the Administration derived the cost estimates presented in *Table 4.3*.

Table 4.3 Summary of Annual Enforcement Costs (HK\$)

Option	Low Scenario	Medium Scenario	High Scenario
Options I&V	1,391,577	3,017,652	4,595,968
Options II&VI	1,361,577	2,837,652	4,235,968
Options III&VII	1,331,577	2,657,652	3,875,968
Options IV&VIII	1,301,577	2,477,652	3,515,968

In addition to the above, the Administration is proposing to spend an additional HK\$ 1.4 million per annum on nutrition labelling education and promotion.

In addition, concerted effort of promoting a balanced diet in Hong Kong is already being made by various government departments and nongovernmental organizations, including the Hospital Authority (HA). The overall strategy is to address the specific needs of various subgroups of the population using the "life course" approach. Under this approach, basic nutrition education (ie promoting healthy eating, food guide pyramid, etc) is primarily conducted by the Central Health Education Unit of the Department of Health (DH), whereas the roles of educating parents and teachers, children, adolescents and elderly are shared by the Family Health, Student Health and Elderly Health Services of DH, as well as the Education and Manpower Bureau (EMB). In addition, HA provides medical nutrition therapy/counselling for patients who require special dietary advice due to medical reasons. While these additional promotion efforts do require extensive government resources, and would be used to support the implementation of the nutrition labelling scheme, these costs are not reflected in the RIA study as they are part of ongoing policy initiatives.

Food Industry Costs

ERM interviewed and obtained cost estimates from a variety of industry sources. These include importers, wholesalers, retailers, specialist labelling companies and laboratories. This information was used to quantify the financial impact on the trade of having to relabel, repackage and test their products to ensure compliance with any future nutrition labelling requirements. The various cost estimates are summarised in *Table 4.4* and discussed in more detail below.

Table 4.4Industry Cost Estimates

Estimate	Price Range (HK\$)	Median (HK\$)
Relabelling Costs (Label printing and labour costs)	0.3 - 0.65 per label	0.46 per label
Individual Testing Costs – Core Nutrients		
Energy	-	-
Protein	600-650	610
Carbohydrates	590-1,200	660
Total fat	500-1,500	610
Saturated fat	850-1,800	1,650
Sodium	450-500	450
Cholesterol	1,200- 1,500	1,200
Sugars	550-800	640
Dietary fibre	950-1,500	1,300
Calcium	300-500	450
Individual Testing Costs – Vitamins and Minerals		
Vitamin A	1,000-1,200	1,200
Vitamin B (Vitmin B1mixed, average)	943- 1,614	1,221
Vitamin C	750-950	900
Vitamin D	1,200- 3,000	2,100
Vitamin E	1,200	1,200
Minerals (1 testing)	431-561	450
Minerals (2 testings)	731-992	863
Minerals (3 testings)	1,031-1,424	1,294
Fatty acids and other organic nutrients	800-1,500	1,200
(eg DHA, ARA, and Omega 3)		
Group Testing Discounts		
Energy + 9 nutrients (Options I & V)	19-49%	39%
Energy + 7 nutrients (Options II & VI)	10-50%	24%
Energy + 5 nutrients (Options III & VII)	0-35%	23%
Energy + 3 nutrients (Options IV & IX)	0-6%	0%

Sources: ERM survey on relabelling costs from Food Council and Twin Tiger International Ltd. ERM survey on testing fees from SGS Hong Kong Ltd, CMA Testing and Certification Laboratories, The Hong Kong Standards and Testing Centre Ltd and ACTS Testing Labs (HK) Ltd. in November 2004.

Food Testing Fees by Local Laboratories

The Hong Kong Laboratory Accreditation Scheme (HOKLAS) maintains the standards of testing and management of Hong Kong laboratories. There are a few HOKLAS-accredited laboratories in Hong Kong which provide food-testing services suitable for nutrition labelling and nutrient-related claims. The Association of Official Analytical Chemists (AOAC) test methods are commonly used for this purpose. As shown in *Table 4.4*, the testing fees depend on the number and type of parameters to be tested and discounts are available when testing multiple parameters. These discounts have been applied in the cost analysis.

Label Redesign Costs

Some manufacturers may redesign the food labels to fit the requirements of the proposed nutrition labelling standard in Hong Kong. New labelling artwork and larger labels might be designed to accommodate extra information and so incur additional cost. This one-off redesign cost varies from brand to brand; however, it is a common practice among food manufacturers to redesign food packages on a regular basis (eg every couple of years) and costs incurred in doing so were estimated at between HK\$2,000-8,000. It is noted however, that the implementation timeframe is likely to allow manufacturers who package their products specifically for the Hong Kong market to incorporate any design changes into their routine redesign of food packaging.

Re-labelling Costs

Imported food products that are not exempted and have not been packaged with nutrition labelling meeting the proposed Hong Kong standards, need to be relabelled before being put on the Hong Kong market. The importers, wholesales or retailers are expected to incur the relabelling costs, although it is possible that part of the cost can be transferred to the consumers. A range of estimates were provided on relabelling costs as they depend on a number of factors, including:

- Economies of scale. Large order sizes can have significantly reduced labelling costs;
- Size of the label. The larger the required label, the higher the costs.
- The handling and storage requirements for the food product. For example, fresh, frozen and fragile products require particular handling and storage and can be more expensive to label;
- The size and shape of the package. For example, some common package sizes, such as Tetrapack-type containers, can be fed through automatic labelling machines while for other packaging types it may be particularly labour intensive to remove the product from secondary packaging and undertake the required relabelling; and
- The location where the relabelling is undertaken. For example, longer shelf life products can be cheaper to relabel in Mainland China than it is to do it in Hong Kong.

Other Industry Costs

Depending on the implementation timeframe, a review of relevant literature suggests that the following other direct costs might also be incurred:

- Loss of economies of scale for label printing; and
- Potential write-off of stock not labelled correctly.

In addition, indirect costs include substantial time and personnel resources invested in:

- Learning about and implementing the new labelling requirements;
- Sourcing and tracing ingredient compositions and information from suppliers;
- Undesired change of focus off new product development as available time and personnel resources are re-directed at labelling compliance; and
- Planning and infrastructure, and the development of new systems, processes and devices in order not to just implement but also maintain compliance, eg building systems and data bases to track, monitor and manage supplier changes for each product line.

Other issues noted relate to:

- Supplier relationship management being one of many manufacturers seen to be 'harassing' suppliers for ingredient and compound ingredient compositional information that they either do not have, or are reluctant (or unwilling) to provide; and managing relationships with suppliers as they are required to provide updates on changes in formulations and production techniques that impact on labelling (where they have never impacted in the past);
- Seasonality implications for supplier management as described above as changes in seasonal sourcing occur at different times of the year or month;
- Finding and accessing specialists and advisers, and a limited resource pool to attract specialised technical personnel needed to maintain compliance;
- Limited number of design houses and label suppliers;
- Increased consumer inquiries;
- Marketing issues and implications for product development; and
- Equity issues for consumers as there is a potential broadening of the price margin between healthy/top quality and less healthy/lower quality products, further disadvantaging poorer consumers who cannot afford to buy at the 'top end' of the market, and for whom product choice, range and quality may diminish.

Consumer Costs

Costs incurred by industry could, to some extent, be passed onto consumers. It is however noted that in reality retail prices are a response to market pressures (eg deflation has had quantifiable impacts on food prices in Hong Kong). However, to illustrate the possible maximum impact on the price of pre-packaged food we have compared industry costs against household expenditure on pre-packaged food to identify the percentage of industry spending these costs represent. Costs to consumers are likely to include reduced choice (as some low volume products may choose to exit the Hong Kong market rather than incur the costs and/or procedures of relabelling or repackaging). These costs have been quantified as the economic costs due to lost products and are discussed in more detail below.

4.1.4 Economic Costs due to Product Losses

As presented in *Section 3.2,* a notable impact of concern expressed by business stakeholders was that on choice. It was noted that the imposition of a nutrition labelling scheme may lead to restrictions on the choice of imported products, and a corresponding impact on importers.

The principal drivers of any decision to stop importing a product to Hong Kong are likely to be whether or not the costs of testing and labelling exceed the profit associated with that product and/or the ability of the market to absorb any price increases. Many of these products are likely therefore to be low volume, low profit products that are sold to consumers by niche retailers, both large and small. Due to the niche nature of these products, their loss is unlikely to be significant to the average consumer. However, the withdrawal of these products is expected to restrict the choices of some minority groups (eg foreign domestic helpers) more than the average local consumer as these groups are more likely to purchase low volume and / or low profit products.

For impacts on businesses, it is considered that while large niche retailers and importers/suppliers may be able to absorb these impacts, *significant* financial impacts are likely to be felt by any small retailers or importers who have to drop a notable proportion of their product range. The economic cost due to the loss of such products under each option/phase has been estimated by considering the value added ⁽¹⁾ that such small importers and retailers provide to the economy. The calculations associated with this estimation are provided in *Annex E*.

The significance of the impact is likely to be limited to the initial implementation of the various phases as, over time, the associated products can be expected to be either replaced with suitably labelled products or to be the subject of other labelling schemes elsewhere (either in their country of origin or in other export markets). As such, economic costs due to such product lost are assumed to be one-off. However, to recognise the opportunity cost of some products not being able to enter the market in the future, a recurring economic loss is recognised in the analysis by applying the product turnover rate (as discussed in *Section 4.1.2*) to the identified economic loss.

^(!) Value added represents the additional value to the economy that a business creates. For food retailers and importers it is equal to their sales and other receipts, interest payments and changes in stocks minus income from other sources, the value of the purchases of goods for sale and non-salary related operating expenses.

4.1.5 Benefit Items and Assumptions

Introduction

The analysis uses the estimates of available benefits derived by the Department of Community Medicine, as presented in *Table 2.3*. These estimates represent the maximum available benefit from the introduction of the various options. The following sections discuss how these estimates were applied in the analysis.

Accrual of Benefits

The health impacts identified by the Department of Community Medicine will not all be immediate. Some effects, such as blood pressure reductions due to reduced salt intake, will be almost immediate upon a change in eating habits and health benefits will begin to accrue. However, other effects such as a measurable impact of blood pressure reduction on outcomes such as CHD will take longer to show. In addition, the accrual of benefits will also be delayed by the time taken for consumers to change their purchasing habits as a result of reading labels. The Department of Community Medicine estimated that all the effects described would be fully evident in 10 to 20 years.

Thus for the purpose of the main analysis, the accrual of Phase I and Phase II benefits (as discussed in *Section 2.5.5*) under the various options is assumed to be linear, with full benefits from each Phase taking 15 years to accrue from the time of implementation. The sensitivity analysis examines the impact of altering the rate of accrual so that all available benefits accrue within 10 and 20 years.

Illustration

To illustrate the accrual period associated with the two phases we have plotted the following example of the benefits arising from Option I.

Figure 4.3 Illustration of Benefit Accrual - Option I (Excluding Mortality Benefits)



4.1.6 Delay in Implementation of Phase II

As discussed in *Section 2*, the exact schedule for implementing Phase II is likely to depend on a number of factors, including both the success of implementing Phase I and developments overseas. In order to examine the impact of delaying Phase II, in addition to assuming a three year gap between Phase I and Phase II, ERM has examined the implications of delaying the implementation for an additional two and seven years (eg 5 and 10 years between Phase I and Phase II). Furthermore, ERM has also undertaken the analysis just for Phase I in order to illustrate the likely impacts of not implementing Phase II within the analytical timeframe (ie 20 years after the implementation of Phase I).

4.2 Cost Benefits Analysis

4.2.1 Introduction

In preparing this RIA a distinction has been drawn between *economic* impacts and *revenue* impacts upon the trade. *Economic* analysis seeks to assess impacts from the perspective of society as a whole, and therefore places a value on all significant quantifiable impacts. However, for the *revenue* impact analysis these broader considerations are not included. Instead, only items that are represented by a cash flow into or out of the businesses affected are included in the revenue impact assessment. Thus costs incurred by individual businesses (such as those for testing and relabelling) are, for the purpose of this assignment, included in the revenue analysis. It is noted however that in some instances these costs might be shared across different trade sectors (eg importers, wholesalers and retailers) and ultimately the consumer. The impacts on individual businesses and on the consumer are further examined in the affordability analysis.

The distinction between economic impacts and revenue effects is standard practice when undertaking RIAs. In this analysis, this dual approach means that all the benefit items are not included in the revenue analysis as no direct cash flow benefits are expected to accrue to the trade as a whole. While individual companies may benefit from the introduction of nutrition labelling (for example those specialising in healthy products, product labelling/packaging and nutrition testing) these revenue benefits will represent costs to other companies. However, economic benefits will accrue to society as a whole in terms of reduced health costs and increased productivity.

4.2.2 Revenue Impacts

The revenue impacts considered in this analysis are those associated with:

• *Testing.* As discussed in *Section 4.1.3*, those products that do not currently have the necessary nutrient information will need to undergo laboratory analysis. This cost is included in the revenue analysis.

• *Re-labelling costs.* The revenue analysis includes costs of having to attach additional labels onto products before sale in Hong Kong. As discussed in *Section 4.1.3,* re-packaging costs are not included in the revenue analysis as it is assumed that label redesign and re-packaging takes place on a periodic basis regardless of the implementation of any nutrition labelling requirement.

It is acknowledged that these costs are not necessarily exhaustive. They do however represent the key costs likely to be incurred due to the implementation of a nutrition labelling scheme. The following specific costs associated with the proposed regulations have not however been included due to data limitations:

- Costs associated with the relabelling associated with local Nutrient Reference Values (NRVs). The Administration is proposing to develop a unique set of NRVs for Hong Kong. These, in some instances, may not be the same as the ones established in other countries, eg USA and Thailand. Thus some products may need to amend their labels to avoid using the inappropriate reference NRVs. As NRVs have not, as yet, been established for Hong Kong the number of products that would be impacted by this requirement could not be identified and included within the analysis. Costs associated with relabelling due to NRVs are however unlikely to be additional to the estimate derived as most products ⁽¹⁾are having to relabel or repackage anyhow – the additional time taken to calculate and include NRVs on packaging or labels, if required, is considered unlikely to be significant.
- Relabelling/repackaging and other costs associated with the introduction of nutrition claims requirements that do not meet Hong Kong criteria on acceptable claims. In addition to requiring nutrition labelling, the proposed regulations will limit claims to those relating to energy, protein, carbohydrate, fat and components thereof, cholesterol, sugars, dietary fibre and sodium, plus vitamins and minerals for which NRVs have been laid down for nutrition labelling purpose, and those meeting the Codex's principles and conditions for making such claims. Eg once a particular definition of "low-fat" has been defined for the Hong Kong context, existing products with a claim of "low-fat" might incur extra costs to comply to the requirements. The market survey could not specifically identify those products which would not meet Codex principles and conditions as this would have required product testing. Therefore, the costs associated with those products that would **only** need to be relabelled or repackaged due to misleading claims have not been included.

4.2.3 Economic Impacts

The economic impacts considered in this analysis are those associated with:

^(!) ERM Market Survey identified that between 77% and 99%, depending on the Option, of products would have to relabel. See Annex C for details.

- *Government Enforcement*. The government enforcement costs outlined in *Section 4.1.3* are included in the revenue analysis.
- *Health Benefits.* The health benefits included in the analysis are those outlined in *Section 2.5.2.* As discussed in this section, these health benefits are a conservative estimate of the likely benefits available due to each of the labelling options.
- *Economic Costs due to Lost Products.* As discussed in *Section 4.1.4*, the loss of certain products could result in economic costs to small and medium sized importers and retailers. These costs have been included in the economic analysis.

4.2.4 Results of the Cost Benefit Analysis

The following sections and tables present the main results of the cost benefit analysis. Further details of the results can be found in *Annex D*.

Phase I only

The following tables present the revenue and economic costs and benefits of implementing Phase I of the various options.

Option	NPV of Total Revenue Costs (HK\$ million)	Max % of Household Expenditure ⁽¹⁾	NPV of Total Economic Costs (HK\$ million)
Ι	442	0.25%	563
II	424	0.23%	541
III	314	0.17%	418
IV	281	0.13%	375
V	1,122	0.57%	1,317
VI	1,080	0.51%	1,266
VII	866	0.39%	1,024
VIII	711	0.29%	844

Table 4.5Phase I Revenue and Economic Costs

Note: (1) This column represents the maximum costs in any one year as a percentage of household expenditure on pre-packaged food.

Table 4.6 Phase I Economic Benefits and Net Benefits

Option	NPV of Phase I	NPV of Phase I	Phase I	Year in which	Max Annual Net
	Benefits (HK\$	Net Benefits	Benefit to	Benefits	Benefit
	million)	(HK\$ million)	Cost Ratio	Exceed Costs(1)	(HK\$ million) ⁽²⁾
Ι	3,426	2,862	6.1	2011	447
II	2,270	1,729	4.2	2012	283
III	1,742	1,324	4.2	2012	217
IV	216	-158	0.6	-	2
V	7,271	5,954	5.5	2011	938
VI	4,706	3,440	3.7	2013	574
VII	3,568	2,543	3.5	2013	430
VIII	374	-470	0.4	-	-

Note: (1) This column shows the year in which the *cumulative* benefits of the scheme exceed the cumulative costs.

(2) This column shows the maximum annual net benefit once the scheme has achieved full benefits.
Phase II Implementation Three Years After Phase I

The following tables present the revenue and economic costs and benefits of implementing Phase II three years after Phase I.

Table 4.7Total Revenue and Economic Costs

Option	NPV of Total Revenue Costs (HK\$ million)	Max % of Household Expenditure ⁽¹⁾	NPV of Total Economic Costs (HK\$ million)
Ι	1,615	0.95%	1,858
II	1,563	0.88%	1,798
III	1,338	0.71%	1,549
IV	1,180	0.58%	1,368
V	1,757	0.88%	2,013
VI	1,697	0.83%	1,944
VII	1,451	0.69%	1,671
VIII	1,268	0.58%	1,463

Note: (1) This column represents the maximum costs in any one year as a percentage of household expenditure on pre-packaged food.

Table 4.8Total Economic Benefits and Net Benefits

Option	NPV of Total	NPV of Total	Total Benefit	Year in which	Max Annual Net
	Benefits (HK\$	Net Benefits	to Cost Ratio	Benefits Exceed	Benefit
	million)	(HK\$ million)		Costs ⁽¹⁾	(HK\$ million) ⁽²⁾
Ι	10,031	8,173	5.4	2013	1,620
II	6,798	5,000	3.8	2014	1,051
III	5,863	4,314	3.8	2014	916
IV	830	-538	0.6	-	24
V	11,077	9,064	5.5	2011	1,620
VI	7,461	5,516	3.8	2013	1,051
VII	6,360	4,688	3.8	2014	916
VIII	873	-590	0.6	-	24

Note: (1) This column shows the year in which the *cumulative* benefits of the scheme exceed the cumulative costs.

(2) This column shows the maximum annual net benefit once the scheme has achieved full benefits.

Phase II Implementation Five Years After Phase I

The following tables present the revenue and economic costs and benefits of implementing Phase II five years after Phase I.

Table 4.9Total Revenue and Economic Costs

Option	NPV of Total Revenue Costs (HK\$ million)	Max % of Household Expenditure ⁽¹⁾	NPV of Total Economic Costs (HK\$ million)
Ι	1,437	0.95%	1,665
II	1,389	0.88%	1,610
III	1,182	0.71%	1,378
IV	1,042	0.58%	1,217
V	1,662	0.88%	1,910
VI	1,604	0.83%	1,844
VII	1,362	0.69%	1,574
VIII	1,183	0.58%	1,369

Note: (1) This column represents the maximum costs in any one year as a percentage of household expenditure on pre-packaged food.

Table 4.10Total Economic Benefits and Net Benefits

Option	NPV of Total	NPV of Total	Total Benefit	Year in which	Max Annual Net	
	Benefits (HK\$	Net Benefits	to Cost Ratio	Benefits	Benefit	
	million)	(HK\$ million)		Exceed Costs(1)	(HK\$ million) ⁽²⁾	
Ι	8,539	6,875	5.1	2014	1,620	
II	5,775	4,166	3.6	2015	1,051	
III	4,932	3,554	3.6	2015	916	
IV	692	-526	0.6	-	24	
V	10,218	8,308	5.3	2011	1,620	
VI	6,839	4,995	3.7	2013	1,051	
VII	5,729	4,155	3.6	2013	916	
VIII	760	-609	0.6	-	24	

Note: (1) This column shows the year in which the *cumulative* benefits of the scheme exceed the cumulative costs.

(2) This column shows the maximum annual net benefit once the scheme has achieved full benefits.

Phase II Implementation Ten Years After Phase I

The following tables present the revenue and economic costs and benefits of implementing Phase II ten years after Phase I.

Table 4.11Total Revenue and Economic Costs

Option	NPV of Total Revenue Costs (HK\$ million)	Max % of Household Expenditure ⁽¹⁾	NPV of Total Economic Costs (HK\$ million)
Ι	1,049	0.95%	1,242
II	1,011	0.88%	1,198
III	840	0.71%	1,007
IV	740	0.58%	889
V	1,454	0.88%	1,685
VI	1,401	0.83%	1,623
VII	1,168	0.69%	1,363
VIII	997	0.58%	1,166

Note: (1) This column represents the maximum costs in any one year as a percentage of household expenditure on pre-packaged food.

Table 4.12Total Economic Benefits and Net Benefits

Option	NPV of Total	NPV of Total	Total Benefit	Year in which	Max Annual Net	
	Benefits (HK\$	Net Benefits	to Cost Ratio	Benefits	Benefit	
	million)	(HK\$ million)		Exceed Costs(1)	(HK\$ million) ⁽²⁾	
Ι	5,608	4,366	4.5	2011	1,187	
II	3,766	2,568	3.1	2012	754	
III	3,104	2,097	3.1	2012	646	
IV	419	-470	0.5	-	-	
V	8,529	6,844	5.1	2011	1,370	
VI	5,617	3,993	3.5	2013	870	
VII	4,490	3,127	3.3	2013	733	
VIII	539	-627	0.5	-	-	

Note: (1) This column shows the year in which the *cumulative* benefits of the scheme exceed the cumulative costs.

(2) This column shows the maximum annual net benefit once the scheme has achieved full benefits.

4.3 SENSITIVITY ANALYSIS

4.3.1 Assumptions and Uncertainties Investigated

In order to provide an indication of the uncertainties associated with this analysis, ERM has conducted a Monte Carlo analysis using Crystal Ball® to illustrate the possible ranges in outcomes associated with the results.

In Monte Carlo simulation, a random selection process is repeated, for each variable being examined many times to create multiple scenarios. Each time a value is randomly selected, it forms one possible scenario and solution to the problem. Together, these scenarios give a range of possible solutions, some of which are more probable and some less probable. This methodology is commonly used in quantitative analysis in a variety of disciplines.

The table below presents the key assumptions that have been investigated as part of this analysis.

Table 4.13Sensitivity Analysis – Factors Investigated

Assumption/Data	Basis	Alternative Variables
General		
4% discount rate	Hong Kong government standard rate	2% and 6%
Number of product lines of prepackaged food and drinks	Average of industry estimates	High and low industry estimates
Product turnover rate	ACNielsen estimate of 14%	10% and 18%
Benefits		
15 year accrual period for benefits	Average of Department of Community Medicine estimates of benefits arising between 10 and 20 years	10 year and 20 years (see <i>Section 4.1.5</i>)
Benefits from each option	Needs Analysis paper/Department of Community Medicine estimates	High and low estimates from Needs Analysis paper/Department of Community Medicine estimates (see Section 2.5.2)
Costs		
Number of products requiring testing and relabelling	Results of the market survey	5% and 95% percentiles associated with each parameter derived from the market survey.
Unit costs of Relabelling	Average of industry estimates	High and low industry estimates (see <i>Table 4.4</i>).
Unit costs of testing	Average of values provided by laboratories	High and low estimates provided by laboratories (see <i>Table 4.4</i>).
Economic Costs due to product loss	As discussed in Section 4.1.4	Max and minimum number of retailers and importers impacted by product losses (see Section 4.1.4)
Government Costs	Medium scenario provided by the Administration	High and low scenarios (see <i>Table 4.3</i>)

4.3.2 Results of Sensitivity Analysis

The results of this sensitivity analysis are illustrated in *Figure 4.4* to *Figure 4.15*. These show the total range of possible outcomes including consideration of the probabilities associated with the values of the underlying assumptions examined.

Figure 4.4 Phase I Only – NPV of Revenue Impacts (HK\$million)



Figure 4.5 Phase I Only - NPV of Net Benefits (HK\$million)



Figure 4.6 Phase I Only - Benefit to Cost Ratio



Figure 4.7 Phase II Implementation After Three Years - NPV of Revenue Impacts (HK\$million)



Figure 4.8 Phase II Implementation After Three Years - NPV of Net Benefits (HK\$million)



Figure 4.9 Phase II Implementation After Three Years - Benefit to Cost Ratio



Figure 4.10 Phase II Implementation After Five Years - NPV of Revenue Impacts (HK\$million)



Figure 4.11 Phase II Implementation After Five Years - NPV of Net Benefits (HK\$million)



Figure 4.12 Phase II Implementation After Five Years - Benefit to Cost Ratio



Figure 4.13 Phase II Implementation After Ten Years - NPV of Revenue Impacts (HK\$million)



Figure 4.14 Phase II Implementation After Ten Years - NPV of Net Benefits (HK\$million)



Figure 4.15 Phase II Implementation After Ten Years - Benefit to Cost Ratio



4.3.3 Additional Sensitivity Analysis

Upon reviewing the results two issues were identified and further investigated to identify whether the overall results of the analysis were robust:

- A significant component of the benefits of each of the options are attributable to avoided premature deaths and the HK\$ 10 million used for the quantifying the value of a human life. While this approach to placing an economic value on a life saved is common practice both locally and overseas it is noted that the actual value to be used in the analysis is not without controversy. However, examination of alternative values suggests that even if this value was as low as HK\$1.7 million per life, then options I, II, III, V, VI and VII would remain cost-beneficial. As discussed in *Section 2,* a review of local and international literature suggests that such a value is unreasonably low and thus the findings can be relied upon.
- Options IV and VIII did not appear to have net economic benefits under any of the scenarios evaluated. This is partly due to the fact that, as identified through the market survey, nearly 50% of current packaging with nutrient information already includes labels for the four nutrients required under these two options. Thus, the compliance costs associated with implementing these options are not justified by the benefits as the additional information provided to consumers, and hence benefits available, is limited. It was noted however that the analysis does not take into account the benefits that may be attainable from some of the existing labels being altered so that they meet the specified requirements ⁽¹⁾. Examination of this issue suggests that benefits from such standardisation would have to double the current benefits to make these two options costbeneficial. ERM's market survey identified that, for these two options, any benefits from standardisation could only arise from roughly 10% of products (ie this is the percentage of products that currently labels the correct number of nutrients). As the analysis considers benefits arising from over half of products in these two options ⁽²⁾ it is considered extremely unlikely that benefits from an additional 10% of products could double the benefits from these options. Thus, even with the inclusion of benefits from such standardisation it is extremely unlikely that these two options would be cost-beneficial.

 ⁽¹⁾ Consumer surveys overseas have indicated that standardisation of nutrition labelling information, including claims, would allow consumers to accurately interpret labelling information and adjust their purchasing habits accordingly. Such benefits have not been quantified in this Study although an FEHD opinion survey in 2001 indicated that 94.5% of the general public supported standardisation of format of nutrition labels for easy reference by consumers and to avoid confusion. Furthermore, ERM's market survey indicated that a substantial proportion of existing nutrition labels in Hong Kong follow the specified nutrient content expression proposed by the Administration. For example, ERM's market survey indicated that of the 51% of products that carried a nutrition label, some 63% were either in the per 100 mg/100 ml or in the per portion format.

^{(2) 57%} of products require an upgrade of labels and/or packaging due to either a lack of labels or insufficient coverage of core nutrients on current labels.

4.4 AFFORDABILITY AND DISTRIBUTIVE ANALYSIS

The affordability analysis focuses on individual operators in the food trade who may be significantly impacted by the proposed options. Specifically this analysis looks at small and medium sized manufacturers, importers and retailers. The Government of the HKSAR defines small and medium-sized enterprises (SMEs) as: "Any manufacturing businesses which employ fewer than 100 persons in Hong Kong; or any non-manufacturing businesses which employ fewer than 50 persons in Hong Kong". This definition has been adopted in undertaking this analysis.

4.4.1 Case Studies

As discussed in *Section 3.1*, ERM interviewed a number of SMEs to identify the cost impacts on small businesses. The results of the case studies are summarised in *Table 4.17* and presented in *Annex F*.

More than 20 of the SMEs that ERM contacted are small noodle manufacturers, as according to C&SD statistics these represent a significant proportion of Hong Kong local SME food manufacturing capacity (see *Table G1* in *Annex G*). However, initial discussions with these companies indicated that their products are likely to be exempted as they almost all sell them either directly to restaurants and/or unpackaged.

As presented in *Table G2* in Annex G, C&SD data suggest that there are a few large food manufacturers but nearly 90% of them are SMEs (employing less than 100 people) in Hong Kong. These SMEs employ just under 30% of all employees in this sector.

Cases studies of small and medium sized local manufacturers identified Company D, a producer of about 20 different types of dim-sum products. They employ less than 15 people and their clients are primarily distributors, small stalls and small restaurants. An interview with Company D indicated that 10% of their dim-sum products are prepackaged, ie fall within the scope of this nutrition labelling scheme. C&SD data for manufacturers of food suggest that, on average, food manufacturers having an average of around 10-19 employees and have a turnover of HK\$ 7.5 million; however, Company D indicated that their turnover was much lower, at between HK\$1.8 million and HK\$2.4 million per annum.

In addition, the cases studies identified Company B, a producer of about 20 bean-related drinks. The owners employ less than 10 staff, ie including the owners the total number of employees is less than 12. Their clients are primarily supermarkets, wet markets and other retail stores and their turnover was similar to Company D at around HK\$ 2.5 million per annum.

In order to illustrate the potential impact on manufacturers we have developed three scenarios based around Company B and Company D. For these scenarios, we have identified minimum and maximum testing costs ranges based upon the number of nutrients requiring labelling under Options IV & VIII (eg Energy + 3) and Options I&V (eg Energy + 9). Repackaging cost is minimal as it is assumed to be incorporated in the repackaging routine due to the grace period before the introduction of the nutrition labelling scheme.

The scenarios examined are presented in Table 4.14 and Table 4.15.

Table 4.14 Possible Impacts on Small and Medium Sized Manufacturers – Case of Company D⁽¹⁾

Sales & other receipts (HK\$)	Profit ⁽¹⁾ (HK\$)	Profit ⁽¹⁾ (%)	Products lines ⁽²⁾	One-off testing cost (HK\$) ⁽³⁾		One-off testing cost as % of profit	
				Min	Max	Min	Max
2,000,000	200,000	10%	20	41,000	100,000	21%	50%
2,000,000	400,000	20%	20	41,000	100,000	10%	25%
2,000,000	600,000	30%	20	41,000	100,000	7%	17%

Notes:

(1) This case is based on a local dim-sum manufacturer, Company D, with a stated profit margin of between 10% and 30% and sales turnover of approximately HK\$ 2 million.

- (2) Company D's stated number of product lines was about 20.
- (3) One-off testing costs are assumed to range from \$2,050 to \$5,000 per food/drink sample, based on the median of packages of Engery+3 nutrients and Energy+9 nutrients from SGS Hong Kong Ltd, CMA Testing and Certification Laboratories, The Hong Kong Standards and Testing Centre Ltd and ACTS Testing Labs (HK) Ltd. in November 2004.

Table 4.15 Possible Impacts on Small and Medium Sized Manufacturers – Case of Company B⁽¹⁾

Sales & other receipts (HK\$)	Profit ⁽¹⁾ (HK\$)	Profit ⁽¹⁾ (%)	Products lines ⁽²⁾	One-off testing cost (HK\$) ⁽³⁾		One-off testing cost as % of profit	
				Min	Max	Min	Max
2,500,000	150,000	6%	20	41,000	100,000	27%	67%
2,500,000	200,000	8%	20	41,000	100,000	21%	50%
2,500,000	250,000	10%	20	41,000	100,000	16%	40%

Notes:

This case is based on a local food manufacturer, Company B, with a stated profit margin of less than 10% and sales turnover of around HK\$ 2.5 million per annum.

(2) Company B's stated number of product lines was about 20.

(3) One-off testing costs are assumed to range from \$2,050 to \$5,000 per food/drink sample, based on the median of packages of Engery+3 nutrients and Energy+9 nutrients from SGS Hong Kong Ltd, CMA Testing and Certification Laboratories, The Hong Kong Standards and Testing Centre Ltd and ACTS Testing Labs (HK) Ltd. in November 2004.

Based upon the above analysis, it is apparent that for SMEs, such as Companies D and B, the introduction of a labelling scheme would cost between 7% and 67% of the profit associated with their pre-packaged food items. The higher end of these costs would be associated with the more stringent options (eg Options I & V). Given this, some small manufacturers might either:

- Choose to stop producing and/or supplying these products locally and focus on other products or overseas markets; and/or,
- Accept lower profitability on these products; and/or

- Adapt to the increased costs by either increasing prices or reducing costs elsewhere.
- If costs could be passed onto retailers and/or consumers then no impacts would be felt by the SME. However, discussions with both SME manufacturers indicated concern about their competitiveness with Mainland Chinese producers if they have to incur additional production costs. The analysis supports these concerns and suggests that the impact of the more stringent options (eg Options I and V) is likely to be significant and could result in loss of profit, market share and/or business if consumers will not accept higher prices. While the imposition of the scheme is unlikely to be the dominant cause, those local companies that are currently facing stiff competition from Mainland, or other products, may cease producing pre-packaged food products and/or face business closure/job losses. Data limitations (particularly on the number of small manufacturing businesses that produce pre-packaged food products solely for local consumption) means that it is not possible to estimate the number of manufacturers who would be impacted in this way.

4.4.2 Small and Medium Sized Importers

Case studies of small and medium sized importers identified Company L, an importer of about 12 different types of fruit juice and soy bean milk products. They employ less than 50 people, had a stated turnover of about HK\$36 million per annum, profitability of about 30% and their clients are primarily supermarkets and small stalls. C&SD data for food importers and exporters suggest that on average food importers and exporters with 10-49 employees have a net profit margin of 7.5% (See *Table G4* in *Annex G*).

In order to illustrate the potential impact on small importers, we have developed six scenarios based around Company L and the C&SD data. The scenarios assume that the importers need to test and relabel 10, 20 and 30 products lines (Company L imports about 12 different products) and have profitability between 7.5% and 30% (Company L stated profitability of about 30%, but C&SD data indicated profitability of only around 7.5%). It is noted that importers might not need to test and relabel products if manufacturers or exporters agree to perform testing and relabelling on their behalf; however, this is unlikely to be the case for products of small trade volumes if Hong Kong's labelling scheme is very different from other export markets. Each of the scenarios developed assumes average annual sales of HK\$36 million (based upon Company L's stated turnover).

For these scenarios, we have identified minimum and maximum testing costs ranges based upon the number of nutrients requiring labelling under Options IV & VIII (eg Energy + 3) and Options I&V (eg Energy + 9). Relabelling costs range from \$0.30 to 0.50 as presented in the main analysis.

The scenarios examined are presented in Table 4.16.

Sales and other receipts (HK\$)	Profit HK\$	Profit (%)	Number of Products to be Labelled	One-off testing cost (HK\$) (1)		Relabelling cost (HK\$) (2)		One-off testing cost as % of net profit		Relabelling cost as % of net profit	
				Min	Max	Min	Max	Min	Max	Min	Max
36,000,000	1,800,000	5%	12	24,600	60,000	120,000	200,000	1%	3%	7%	11%
36,000,000	5,400,000	15%	12	24,600	60,000	120,000	200,000	0%	1%	2%	4%
36,000,000	10,800,000	30%	12	24,600	60,000	120,000	200,000	0%	1%	1%	2%
36,000,000	1,800,000	5%	10	20,500	50,000	120,000	200,000	1%	3%	7%	11%
36,000,000	5,400,000	15%	20	41,000	100,000	120,000	200,000	1%	2%	2%	4%
36,000,000	10,800,000	30%	30	61,500	150,000	120,000	200,000	1%	1%	1%	2%

Notes:

(1) One-off testing costs are assumed to range from \$2,050 to \$5,000 per food/drink sample, based on the median of packages of Engery+3 nutrients and Energy+9 nutrients from SGS Hong Kong Ltd, CMA Testing and Certification Laboratories, The Hong Kong Standards and Testing Centre Ltd and ACTS Testing Labs (HK) Ltd. in November 2004.

(2) Relabelling cost is a function of 400,000 drinks items and \$0.30-0.50 relabelling cost per item.

Based upon the above analysis, it is apparent that for SMEs such as Company L the introduction of a labelling scheme would cost between 1% and 14% of the profit associated with their pre-packaged food items. The higher end of these costs would be associated with the more stringent options (eg Options I & V). Given this, some small importers might either:

- Choose to stop importing these products and focus on other products;
- Source products from countries with compatible labelling requirements;
- Accept lower profitability on these products; and/or
- Adapt to the increased costs by either increasing prices or reducing costs elsewhere.

4.4.3 Small and Medium Sized Retailers

Cases studies of small and medium sized retailers identified Company S, which is located near a wet market selling about 500 different types of food and drinks products. The owners manage everything in the store and do not employ anybody. Their customers are residents in the neighbourhood. C&SD data for food retailers suggest that on average food retailers of this type (eg with less than 10 employees) have a net profit margin of around 7.8% (Company L stated that their net profit margin was less than 10%).

In addition, the case studies identified Company I, a very small retail store sourcing different types of Indonesian food products. The company is family owned and operated and reportedly has a annual turnover of less than five hundred thousand Hong Kong dollars and profitability of less than 10%. As Indonesia does not have a nutrition labelling scheme in operation, this niche supplier of Indonesian products would likely have difficulty sourcing products with appropriate nutrition information and labels, except where these products were developed for export to countries with such labelling requirements.

In discussions with these small retailers, both noted that they would not incur the costs associated with testing and labelling – they would require their suppliers to do this for them. In the event that suppliers would not perform this service for them, they stated they would switch to alternative products. As such, the impact on small retailers is only likely to be significant where suitably labelled substitutes for their products are not available, for example for niche retailers selling low volumes, such as Company I.

Table 4.17 Summary on SME Case Studies

	Manufacturer, general food	Manufacturer, specialty food	Front-Shop-Back Factory	Importer from multiple	Importer from limited countries	Provision store	Specialty food store
	(Company D)	(Company B)	(Company F)	countries (Company M)	(Company L)	(Company S)	(Company I)
Number of Employees	< 15	5-11	6	15	< 50	2 (Owner & his wife)	1-2 family members managing the store, no other employees
Type of Products	Dim sum	Bean-related drinks	Bread	Variety of snacks, such as fish cut, instant noodles, sausages, wafers	Soya milk and fresh fruit juice	500 different food/drinks	150 types of Indonesian snacks and sauces
Sources of prepackaged products	Self production	Self production	Self production	Multiple Asian countries	Mainland China	Various	Indonesia
Estimated annual sales volume	HK\$1.8 to 2.4 million	HK\$ 2.5 million ~350,000 units 50% by sales volume	HK\$ 2.2 million ~250,00 units 82 5%	Over HK\$ 10 million 1-3 million units	HK\$ 36 million 2.4 million bottles of soya bean milk and 2.4 million bottles of fresh fruit juice 100%	HK\$ 0.5 million 100,000 items >80%	No sales volume information provided, monetary value less than HK\$365,000
involved in prepackaged food	2070	Ju / by sales volume	02.370	10070	10070	20070	10070
Comments on the proposed scheme	 Did not show support or opposition for the scheme With the added cost due to the proposed nutrition labelling scheme, it would be difficult to compete with companies from Mainland China High cost for laboratory testing, which counts for about 10% of the product cost Concerned about the validity period of laboratory testing results and nutrition labels Worried about unfairness because other companies will copy their nutrition information without performing laboratory testing 	 Support voluntary labelling with minimum number of nutrients regulated, ie status quo Did not think that nutrition labels are essential. Urged the HKSAR Government to consider whether small businesses can still survive under the scheme Testing/relabelling costs cannot be transferred to customers due to the competition from companies from Mainland China. The scheme may threaten them to close down their businesses Will comply with what the government requires Might reduce the number of product lines to be manufactured If the HKSAR Government provides laboratory testing services, he does not mind what nutrients and which format the nutrition labelling scheme requires. 	 Support voluntary labelling with less number of nutrients regulated, ie status quo Willing to comply with the nutrition labelling requirements, not by performing laboratory testing but by calculating nutrition values on his own after collecting relevant information from suppliers Hope that SMEs could get subsidy from the government. 	 Generally in favour of the nutrition labelling scheme. 2 - 5 years would be acceptable to allow suppliers to prepare for the nutrition labels There should not be many problems to ask suppliers, except those from Mainland China, to re-package their products Adequate guidelines are crucial to importers, and there should be two-way communication between industry and the Government. Suggested different grace periods for different products. Large chain stores like Wellcome and Park'n Shop would use nutrition labeling as an excuse to put penalty on importers for inappropriate food labels If the suppliers cannot provide necessary nutrition labels on the packages, she would import only those products. 	 Oppose regulations on nutrition labelling. Laboratory testing and printing of nutrition labels on the package will be done by manufacturers Doubtful about the accuracy of the nutrition information Doubtful about Hong Kong people's understanding of nutrition values and their effect on health. 	 Support voluntary labelling, ie status quo. Waste of time and resources Few people pay attention to the nutrition information on labels Cost of testing will be substantial to small manufacturers Doubtful about the accuracy of the nutrition information Doubtful about how the government could verify nutrition values on packages If the suppliers cannot provide necessary nutrition labels on the packages, he will only take products which comply with the future nutrition labelling requirements 	 Did not show support or opposition on the proposed nutrition labelling scheme No foreseeable impact on her business From her experience most suppliers would follow labelling requirements, thus she would leave the work and cost of testing, repacking and relabelling to the suppliers If the suppliers cannot provide necessary nutrition labels on the packages, she will only take products which comply with the future nutrition labelling requirements

5.1 FINDINGS

5

5.1.1 Needs Analysis

Nutrition-related diseases are important public health problems in many parts of the world, including Hong Kong. Nutrition labelling is a valuable mechanism to help change eating behaviour. Existing legislation in Hong Kong does not include specific provision for standardised nutrition information on food labels. In addition, the data to support the nutrition claims displayed on food labels are often not available and nutrition claims on packages are sometimes misleading.

Codex ⁽¹⁾ guidelines suggest the listing of energy value, amounts of protein, available carbohydrate (ie carbohydrate excluding dietary fibre) and fat. The guidelines also recommend the inclusion of the amount of any other nutrient for which a nutrition claim is made and the amount of any other nutrient considered to be relevant for maintaining a good nutritional status, as required by national legislation.

Overseas, nutrition labelling either on general food types or specified foods is increasingly becoming mandatory. At least 27 countries have labelling schemes on nutrition claims and 18 countries have nutrition labelling schemes on certain foods with special dietary uses. Of particular note and relevance to Hong Kong, is the fact that Mainland China has drafted legislation requiring nutrition labelling and is currently considering implementation details (including timing).

Table 5.1 illustrates the nutrition labelling requirements of nine countries/regions that represent important trading partners for food items in Hong Kong. All nine of them require the labelling of four core nutrients, whenever applicable, as specified in the Codex guidelines, while products meeting the requirements of seven of these jurisdictions (Australia, New Zealand, Canada, the USA, the European Community and Thailand) require the core nutrients specified in the proposed Options III and VII. However, for Option I, II, V & VI, only Canada, the USA and Thailand have the same coverage of nutrients.

^(!) The Codex Alimentarius Commission was created in 1963 as an international authority to develop food standards, guidelines and related texts.

Countries	Energy, Protein, Carbohydrate & Fat	Saturated Fat	Sodium	Sugar	Cholesterol	Fibre	Calcium	Other Nutrients	Total	Specified Nutrient Content Expression
Mandatory Label	ling									
Australia/NZ	•	•	•	•					7	Per serving and per 100g (or 100 ml)
Canada ⁽¹⁾	•	•	•	•	•	•	•	•	14	Per serving
Malaysia ⁽²⁾	•								4	Per 100g (or per 100 ml) or per package if the package contains only a single portion and per serving as quantified on the label
USA ⁽³⁾	•	•	•	•	•	•	•	•	14	Per serving
Mandatory Label	ling in some circun	nstances ⁽⁴⁾								
EC ⁽⁵⁾	•	•	•	•		•			8	Per 100 g (or per 100 ml). In addition, this information may be given per serving as quantified on the label or per portion, provided that the number of portions contained in the package is stated.
Japan ⁽⁶⁾	•		•						5	Per 100g (or 100mL), or per serving, per package, or per other appropriate unit.
Singapore (7)	•	•	•		•	•			8	Per serving and Per 100g (or per 100mL)
Thailand ⁽⁸⁾	•	•	•	•	•	•	•	•	15	Per serving. Per 100g (or per 100mL) shall be used if the serving size cannot be determined.

Table 5.1 International Labelling Requirements on Core Nutrients

Further details of some of the schemes can be found in Annex B of the main report.

Notes: (1) Canada published regulations making nutrition labelling mandatory on most food labels in 2003, which will commence implementation by the end of 2005.

(2) Mandatory labelling for the following foods: cereal food and bread; milk product; flour confection (eg pastry, cake, biscuit etc); canned meat, fish and vegetable; canned fruit and various fruit juices; salad dressing and mayonnaise; and soft drinks.

- (3) Transfat is required on the Nutrition Facts panel in the US by January 1, 2006. This will take the total number of nutrients required to 15. A number of countries only require nutrition labelling when a nutrient-related claim is made on the packaging or where any nutrient-related information is included on the packaging.
- (4) A number of countries only require nutrition labelling when a nutrient-related claim is made on the packaging or where any nutrient-related information is included on the packaging.
- (5) The EC Directive on nutrition labelling requires mandatory labelling when a nutrient-related claim is made. When any claim is made then nutrition labels should be provided for claim nutrient(s) as well as energy value and the amounts of protein, carbohydrate and fat. However if a nutrition claim is made for sugars, saturated fat, fibre or sodium then all eight nutrients should be labelled.
- (6) Mandatory labelling in Japan for products with claims or existing labels. The listing of calories, protein, fat, carbohydrates, sodium and claimed nutrient(s) is required.
- (7) Mandatory labelling in Singapore for products with claims requires the listing of energy, protein, carbohydrates, fat and the claimed nutrient(s). In addition, nutrition labelling voluntary guidelines includes the listing of the above 8 core nutrients. Voluntary guidelines currently under review, considering proceeding to a mandatory scheme.
- (8) Mandatory labelling in Thailand for food with claims and food that use nutritional values in sales promotion; food specifically targeted at a group of consumers eg elderly people; and other foods as may be specified by the FDA. Label must include claimed nutrient(s) plus the required nutrients on the label.

Based on experience overseas and the consultation exercise initiated in November 2003, the Steering Group for the Study proposed eight possible implementation options for analysis by ERM (Option I to VIII). Each option provides for a two-phased approach, requires a number of different nutrients to be labelled in a specified nutrient content expression (specified requirements⁽¹⁾) and includes exemptions. In addition, ERM examined the implication of delaying the second phase of implementation. The options are summarised in *Table 5.2.* It is noted that Option V is the scheme that was put forward in public consultation.

Table 5.2Definition of Options

Options	Number of nutrients	Phase I Approach	Phase II Approach
I II IV V VI VII VIII	Energy + 9 core nutrients Energy + 7 core nutrients Energy + 5 core nutrients Energy + 3 core nutrients Energy + 9 core nutrients Energy + 7 core nutrients Energy + 5 core nutrients Energy + 3 core nutrients	If packaging includes a nutrient-related claim then labelling is required to meet the specified requirements.If packaging includes a nutrient-related claim and/or an existing label then labelling is required to meet the specified requirements.	All products must be labelled and labelling must meet the specified requirements.

Further details of the options can be found in Section 2.3

5.1.2 Impact on the Trade

The introduction of a nutrition labelling scheme is likely to impose costs on importers, manufacturers and retailers in Hong Kong through, among other items, the need to undertake testing and relabelling of products. As presented in *Sections 3 & 4*, the Study examined these impacts, through direct discussions and interviews with trade representatives, a market survey and a detailed analysis of the compliance costs.

The Study identified that nutrition labelling of pre-packaged food in Hong Kong is relatively common, with more than half of products having some form of nutrition label and more than a quarter carrying a nutrient-related claim. However, the majority of these products would not meet the requirements of the options, with nearly all products having to relabel, repackage and/or test to meet the more stringent options (Options I & V). The more nutrients requiring labelling, the higher the overall cost impact on the trade due to the increase in number of products requiring labelling and/or testing.

The key cost impacts on the trade from the implementation of the various options are summarised in *Table 5.3*.

⁽¹⁾ Energy/nutrients have to be expressed in either of the following manner: (i) in absolute amount in kilocalories/metric unit per 100 g (or per 100 ml) of food; and/or (ii) if the package contains only a single portion, in absolute amount in kilocalories/metric unit per package. In addition, energy/nutrients may be expressed : (i) in absolute amount in kilocalories/metric unit per serving as quantified on the label; or (ii) in relative amount in terms of percentages of the local NRVs per 100 g (or per 100 ml) or per serving as quantified on the label.

Table 5.3Cost Impacts from the Options (HK\$ million)

Options	Testing	Relabelling	Testing	Relabelling
	Costs (1)	Costs ⁽²⁾	Costs (1)	Costs ⁽²⁾
	Ph	ase I	Ph	ase II
Ι	28	31	91	106
II	22	31	70	105
III	15	23	44	98
IV	9	22	22	89
V	49	83	71	54
VI	36	82	56	54
VII	22	67	38	54
VIII	10	57	21	54

Notes: The above costs are the modes of initial compliance costs assumed to be incurred during Phase I and Phase II. For each option the analysis considered a range of possible outcomes where the upper and lower limits of the ranges were representative of the uncertainty surrounding the assumptions underpinning the cost analysis (eg market survey results, testing costs etc).

- (1) Testing costs for products are one-off costs, although analysis includes a recurring testing costs associated with product turnover (eg new products).
- (2) Relabelling costs are recurring costs.

Specific Observations

- Nutrition labelling of pre-packaged food in Hong Kong is relatively common, with in excess of 50% of products having some form of nutrition label and more than a quarter carrying a nutrition claim.
- The majority of these products would not meet the requirements of the proposed Options, with nearly all products having to relabel, repackage and/or test to meet the more stringent options (Options I & V). Even with the least stringent options (Options IV & VIII), over three quarters of products would have to take some action to ensure compliance, eg testing, relabelling or repackaging.
- Option IV is likely to have the lowest cost impact to the trade. The least amount of products would require relabelling and/or testing and the fact that only claims are labelled in Phase I means that this option is more desirable than Option VIII. It is however noted that the economic analysis indicates that these two options do not appear to be cost-effective (see *Section 5.1.3*).
- Option V is likely to impose the highest costs on the trade. The market survey suggested that nearly all (>99%) of pre-packaged food products currently on sale in Hong Kong would require some action to ensure compliance. Unlike Option I, which only regulates claims during Phase I, Option V requires the bulk (over 50%) of this action, such as testing and relabelling, to be taken during Phase I.
- The analysis also suggested that the costs associated with implementing the options are likely to be significant for some small manufacturers, retailers and importers. In particular, retailers and importers of niche products are likely to be impacted significantly if they are selling goods that cannot

easily be substituted for suitably labelled products. The analysis suggested that a number of such niche products with low sales revenue and profit could cease to be exported to Hong Kong. These might amount to between 5% and 10% of product variety on sale in Hong Kong (under the most stringent option). While the loss of these products is unlikely to be significant to the average consumer (as they are low volume niche products), they will nevertheless impose costs on the Hong Kong economy due to the financial losses incurred by some small importers and retailers. For example, economic costs to society could arise due to the lower profitability of retailing and importing businesses and, in some extreme cases, job losses and business closure in these sectors.

Furthermore, due to the likely nature of the products lost (eg niche and low volume, low profit), it is also worth noting that the withdrawal of these products by niche retailers and their suppliers could restrict current choices of minority groups, such as foreign domestic helpers. While the impacts on SMEs will for the most part be temporary, it may be significant for those SMEs with limited resources. Indeed, the analysis suggested that the cost to the economy, arising from these products losses, could be as much as HK\$ 140 million as well as imposing recurrent opportunity costs (due to not being able to introduce other products in the future) of some HK\$ 20 million per annum. For illustrative purposes, this cost could represent the closure of up to 191 small businesses (less than 1% of SMEs involved in the import and retail of food products).

• Discussions with laboratories and testing facilities in Hong Kong suggest that they have the know-how to perform the necessary testing for the trade. While some concerns were expressed by overseas regulators regarding the capacity of local laboratories to handle a large increase in volume, no such concerns were noted in Hong Kong. In this regard, it is noted that many of the laboratory and testing facilities present in Hong Kong are part of or associated with international companies and as such have access to a network of testing facilities.

Differences Associated with Phases

- *Phase I Only*: During Phase I period, between 20% to 58% of the prepackaged food and drinks products in Hong Kong would require upgrade of nutrition labelling, eg through repacking or relabelling. The difference in initial trade compliance costs due to the two alternative approaches during Phase I is significant. This is because the number of products requiring some action due to the existence of just nutrient claims (eg under Options I to IV) is around half that of those requiring action due to both nutrient-claims and/or existing nutrition-labels (eg under Option V to VIII). This suggests that if initial trade compliance costs were a concern then they could be significantly reduced if only products currently carrying nutrient-claims needed to meet the specified requirements during Phase I.
- *Phase I and II:* There is no significant difference between the various options in terms of cost impacts on the trade. Under all the options, the

majority of products will require some action (eg testing, repackaging and/or relabelling). The less stringent options (eg Options IV and VIII) appear to have marginally lower cost impacts, although the sensitivity analysis suggests that the difference may not be significant.

• *Delayed Implementation of Phase II:* A delay in implementing Phase II reduces the Net Present Value of overall compliance costs of all options. For example, the Options I NPV for trade compliance costs reduced from around HK\$ 1.6 billion to around 1 billion. While this is primarily a factor of discounting future costs (eg Phase II costs), it is noted that such a delay would also likely allow a longer time for the trade, and suppliers to Hong Kong, to adapt to the proposed labelling scheme, as well as to labelling schemes implemented elsewhere.

Conclusions

Should minimising compliance costs to the trade be a priority, Options I to IV are preferable to Options V to VIII, particularly if Phase II is delayed or not implemented. While there is little significant difference in compliance costs between Options I and II, Options III and IV would appear to both be significantly cheaper for the trade to implement and are likely to result in less significant impacts in terms of both product and job losses.

5.1.3 Economic Impacts

Table 5.4 provides a summary of the overall analysis of the options.

Options	NPV of Trade	NPV of Economic	NPV of Bonofits	NPV of Not	Benefit	Year	Max Annual Not Bonofit
	Costs	Costs	(HK\$	Benefits	Ratio	Benefits	(HK\$
	(HK\$ million) ⁽¹⁾	(HK\$ million)	million)	(HK\$ million) ⁽²⁾	(3)	Exceed Costs ⁽⁴⁾	million) ⁽³⁾
Ι	1,615	1,858	10,031	8,173	5.4	2013	1,620
II	1,563	1,798	6,798	5,000	3.8	2014	1,051
III	1,338	1,549	5,863	4,314	3.8	2014	916
IV	1,180	1,368	830	-538	0.6	-	24
V	1,757	2,013	11,077	9,064	5.5	2011	1,620
VI	1,697	1,944	7,461	5,516	3.8	2013	1,051
VII	1,451	1,671	6,360	4,688	3.8	2014	916
VIII	1,268	1,463	873	-590	0.6	-	24

Table 5.4 Cost-Benefit Analysis of the Proposed Nutrition Labelling Scheme

Notes: The above results represent the most likely outcome of the various options. The main report provides details of the likely range of outcomes for each of the parameters. All Net Present Values are for a twenty-year period starting in 2008, discounted at a rate of 4% to 2005.

- This column shows trade compliance costs for the period 2008-2027 discounted at a rate of 4% to 2005.
- (2) This column shows the stream of net economic benefits (benefits less costs) for the period 2008-2027 discounted at a rate of 4% to 2005.
- (3) Benefit to cost ratio is the NPV of Benefits divided by the NPV of Economic Costs.
- (4) This column shows the year in which the *cumulative* benefits of the scheme exceed the *cumulative* costs.
- (5) This column shows the maximum annual net benefit once the scheme has achieved full benefits.

The analysis suggests that Options I to III and Options V to VII would all have a net economic benefit to Hong Kong. The analysis indicates that the benefits available, from reduced health care costs and lost productivity and avoidance of premature deaths, substantially outweigh the costs of implementing such a scheme. Indeed the analysis suggests that the ratio of these benefits to costs is at least 2 to 1 and could be as much as 10 to 1. This provides a convincing argument for proceeding with these options for a nutrition labelling scheme.

Within these six options:

- Options I and V appear to have the highest net benefits to society, with net benefits (expressed as a Net Present Value) of between HK\$ 4 and 20 billion, and benefit to cost ratios of between 3 and 10 to 1.
- Options II, III, VI and VII would appear to all have broadly similar net benefits to society of between HK\$ 2 and 12 billion and benefit to cost ratios of between 2 and 7.5 to 1.
- Options IV and VIII do not appear to have net economic benefits under any of the scenarios evaluated. This is partly due to the fact that, as identified through the market survey, nearly 50% of current packaging already includes labels for the four nutrients required under these two options. Thus, the compliance costs associated with implementing these options are not justified by the benefits as the additional information provided to consumers, and hence benefits available, is limited. It is noted however that the analysis does not take into account the benefits that may be attainable from some of the existing labels being altered so that they meet the specified requirements ⁽¹⁾. However, examination of this issue suggests that even with the inclusion of benefits from such standardisation it is extremely unlikely that these two options would be cost-beneficial (further details are provided in *Section 4.3.3*).

Difference Associated with Phases

- *Phase I Only*: Only Options IV and VIII do not appear to have net economic benefits to Hong Kong. It is noted that while Option V has the highest net benefits when expressed as a Net Present Value, Option I has the highest benefit to cost ratio (eg for every dollar spent in compliance you get a higher return in economic benefits under Option I than under Option V).
- *Phase I and II:* When both phases are implemented, the analysis suggests that only Options IV and VIII do not appear to have net economic benefits to Hong Kong. As for Phase I only, it is noted that while Option V has the

⁽¹⁾ Consumer surveys overseas have indicated that standardisation of nutrition labelling information, including claims, would allow consumers to accurately interpret labelling information and adjust their purchasing habits accordingly. Such benefits have not been quantified in this Study although an FEHD opinion survey in 2001 indicated that 94.5% of the general public supported standardisation of format of nutrition labels for easy reference by consumers and to avoid confusion. Furthermore, ERM's market survey indicated that the majority of existing nutrition labels in Hong Kong, to some extent, follow the specified nutrient content expression proposed by the Administration. For example, ERM's market survey indicated that of the 51% of products that carried a nutrition label, some 63% were either in the per 100 mg/100 ml or in the per portion format.

highest net benefits when expressed as a Net Present Value, Option I has a marginally higher benefit to cost ratio, although the sensitivity analysis suggests that this relative difference may not be certain.

• Delayed Implementation of Phase II: There is no significant difference in the relative performance of the various options when Phase II implementation is delayed, although the absolute net benefits from the schemes are reduced when expressed as a Net Present Value. While this is primarily a function of discounting future benefits, it is noted that such a delay would also likely allow a longer time for the trade, and suppliers to Hong Kong, to adapt to the proposed labelling scheme, as well as to labelling schemes elsewhere, thus lowering overall compliance costs and increasing future net benefits to Hong Kong.

Conclusions

In terms of maximising the net benefit to Hong Kong, Option V would appear to be preferable, although Option I is more cost-effective (eg more benefit per unit of cost incurred). Among the other options, there does not appear to be any significant difference between Options II and III or Options VI and VII in terms of net economic benefit under any scenario. Options IV and VIII do not appear to have net benefits.

5.1.4 Overall Conclusions

The financial and economic analysis suggests that:

- It is not worth pursuing Options IV and VIII as the benefits do not justify the costs.
- Of the remaining options, Option III has the lowest cost impact on the trade in all scenarios⁽¹⁾.
- Options I and V are likely to have the highest net benefit to society and highest benefit-to-cost ratio.
- The economic benefits from Options II, III, VI and VII also significantly exceed the costs of implementing the receptive nutrition labelling schemes.

5.2 **RECOMMENDATIONS**

ERM recommends that the Administration should initially proceed with a scheme that requires nutrition labelling for any pre-packaged food product that makes a nutrient-related claim on its packaging. Such nutrition labelling should meet the specified requirements and include information on the quantity of the nutrient being claimed as well as the energy, protein, available carbohydrate, fat, saturated fat and sodium content of the product. Such a scheme should be introduced with a two-year grace period.

(1) Different scenarios refer to Phase I only, both Phases and delayed implementation of Phase II.

The assessment undertaken indicates that, combined with an education programme and corresponding changes in consumer behaviour, this approach would have significant benefits to Hong Kong in terms of improved health and a reduction in associated health costs and productivity losses. Furthermore, this initial scheme is similar to that in place in a number of key trading partners. Indeed, the analysis suggests that such an approach would have a net economic benefit to Hong Kong, generating over two hundred million dollars of economic savings per year, while the costs imposed on the food sector are unlikely to exceed HK\$ 40 million, which is only 0.2% of household expenditure on pre-packaged food products.

A statement of intent to introduce a more comprehensive nutrition-labelling scheme in the future should accompany the implementation of this initial scheme. It is recommended that this second phase of implementation should require all-prepackaged food to provide information on their nutrient content and that the number of nutrients requiring labelling should be increased. In addition to the labelling of energy, protein, available carbohydrate, fat, saturated fat and sodium, the second phase of implementation would require labelling of cholesterol, sugars, dietary fibre and calcium. Of the options examined, the assessment suggested that this option (eg labelling energy plus nine nutrient categories) would have the highest benefits to Hong Kong in terms of improved health and a reduction in associated health costs and productivity losses as well as being the most cost-effective (eg highest benefit to cost ratio).

The timing of implementation of this second phase should be subject to review. One key factor to be taken into consideration is the developments overseas. Hong Kong imports the vast majority of its products from overseas and the introduction of a comprehensive nutrition labelling scheme (such as that suggested for the second phase of implementation) in Hong Kong would require substantial action by food industries to ensure compliance. These compliance costs with regard to testing would be significantly reduced if the implementation of the scheme were timed to correspond with developments overseas ⁽¹⁾. ERM is therefore recommending that the timing of implementation of the second phase be reviewed three years after the legislative enactment. This will allow one full year of implementation of Phase I to be taken into account in the review. If other significant trading partners have adopted similar comprehensive schemes then ERM recommends that the Administration announces the implementation of the second phase, allowing at least a two-year grace period for the trade to ensure compliance.

The reasons for recommending this option (ie adopting Option III during the Phase I period), rather than other options can be summarised as:

• Significantly lower trade compliance costs during Phase I. Based upon current labelling practices, the imposition of Phase I could have significant

^(!) Compliance cost would be significantly reduced as less products would require testing exclusively for the Hong Kong scheme and relabelling efforts could be combined with those for overseas schemes.

cost implications. The analysis suggested that Option III's compliance costs during Phase I are significantly lower than those associated with Phase I of Options I, II, V, VI and VII; and,

- Net economic benefits to Hong Kong. The analysis suggests that proceeding with Options I to III and Options V to VII will have substantial net benefits to Hong Kong through savings in health care, avoided productivity losses and reduction of premature deaths. While adopting Options I and V during the Phase I period would likely have significantly higher net benefits to Hong Kong, Option III still has considerable net benefits, and a benefit to cost ratio that is comparable to Options II and notably higher than Options VI and VII ⁽¹⁾.
- Thus the scheme recommended balances the needs for minimising the cost implications to the trade and ensuring a cost-effective approach for Hong Kong as a whole.
- Furthermore, it is noted then when compared to the original proposal by the Administration put out for consultation in November 2003 (Option V) this initial approach has significant merits. For example, the impact on the trade during the initial phase is more than halved (both in terms of financial costs and the number of products impacted), while substantial economic benefits to Hong Kong are still likely to accrue. While the recommended approach is not as stringent as that originally proposed by the Administration, its implementation would have significantly lower impacts on the local food industry and provide an important first step in improving the provision of nutrition information to the public.
- Once developments overseas have progressed, and this first phase has been successfully implemented, a more comprehensive scheme could be adopted (eg Option I during the Phase II period). Furthermore, the approach recommended would provide at least five years, if not more, before the implementation of a mandatory nutrition labelling scheme for all pre-packaged food products, thus providing the trade, and in particular SMEs, ample time to adapt to the more stringent scheme.

In addition, the following recommendations are provided for consideration:

- Keep the industry cost down, eg by allowing a sufficient grace period for the manufacturers who package their products specifically for the Hong Kong market to incorporate any design changes into their routine redesign of food packaging.
- Ensure adequate public education, information services, promotion and appropriate technical assistance to the industry and consumers. Without a substantial and effective education and promotion programme, benefits from the recommended scheme will be limited. Furthermore providing

⁽¹⁾ For Phase I only, the benefit to cost ratios of Options II, III, VI and VII were identified as 4.2,4.2,3.7 and 3.5 respectively.

information and assistance to industry will ensure that compliance costs are minimised, thus ensuring the cost-effectiveness of any scheme.

- Develop a detailed monitoring and evaluation strategy, which provides quantitative and qualitative information about the impact of the scheme, how well the regulatory arrangements are working, and the level of monitoring and enforcement activity. This should incorporate a review mechanism for deciding when to upgrade the scheme to Phase II and/or increase the number of core nutrient requiring labelling.
- Consider measures to minimise the cost impact on SMEs to ensure both the continued diverse choice available in Hong Kong and to mitigate against any corresponding economic costs. In addition to the supporting measures suggested above, other measures could include exemptions for SMEs if such exemption did not threaten the objective of the proposed measures. In this regard guidelines for granting exemptions should be developed to allow individual exemption applications to be quickly and fairly considered.

Annex A

Needs Analysis Paper

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A1.1 INTRODUCTION

A1

Dietary nutrients affect a wide variety of health conditions. *Annex A* summarises the reported main effects of nutrients on physiological variables and the effects of these variables on health states. In the following analysis, we have included only those effects for which the current evidence is sufficient to draw quantifiable conclusions. These effects are summarised in *Table A1.1*, discussed briefly under each nutrient category in *Section A2* of this report, with further details provided in *Appendix A* and in the original papers which are referenced.

Analysis of Obesity-Related Conditions

As identified in the US and UK, obesity is fast becoming the largest nutrientrelated problem in the world. It is associated with a spectrum of costly conditions that greatly impact lifespan and quality of life. These effects are largely mediated through changes in a few, identifiable risk factors such as high blood pressure, blood lipid levels and impaired glucose metabolism. Due to the many interrelationships between these risk factors and their overlapping and synergistic effects on final health care outcomes, the practical approach is to treat obesity as one diet-related condition. The main dietary factor affecting obesity is the energy value of the food. This can be conveyed on labels via the energy content and the total fat content, with higher fat per volume being synonymous with higher energy content.

Some nutrients also have more specific impacts on health. Therefore we have separated out the obesity-related conditions in *Table A1.1* and the other health impacts of nutrients.

Obesity and obe			
	sity-related conditions		
Energy	Change of 600 kcal/day in energy intake	Reduction of 5.3kg (4.8- 5.9) in average body weight of obese people (12 months) and 2.4 (1.2- 3.6) kg (24 months)	
Dietary fat	Reduction		Cardiovascular events risk reduced RR 0.84 (0.72-0.99)
Other nutrient-	related conditions		
Carbohydrate			Diabetes OR 1.37 (1.02-1.83)
Sugar	60g/d compared to zero		Colorectal cancer risk doubled
Dietary fibre	10g/d increment		Coronary events 14% decrease RR 0.86

Table A1.1 Summary of the Estimated Health Effects of Nutrients in the Diet

Nutrient	Change examined	Physiological effect	Health effect
Tuttient	enunge examined	Thysiological cheet	(0.78-0.96)
			Coronary deaths 27%
			decrease RR 0.73
			(0.61-0.87)
	>8.1 g/d cereal fibre vs		Diabetes risk decreased
	<3.2 g/d		OR 0.70 (0.51-0.96)
	Upper and lower		Decreased incidence of
	quintiles of intake (range		large bowel cancer RR
	15-35g/d)		0.58 (0.41-0.85)
	Increasing quintiles		Prostate cancer
			decreased $OR 1.0, 0.7,$
Sodium	Overall dietary salt		0.0, 0.4 (0.3-0.0) Stomach cancor risk OP
Sourum	intake		2 1-5 0
	Table salt intake		Stomach cancer OR 1 6-
	Tuble suit intuite		6.2
	Mean reduction in 24	Systolic BP reduced by	
	hour Na excretion of	5.0 (4.2-5.8) and diastolic	
	78mmol/d (4.6g salt/d)	BP by 2.7 (2.3-3.2) mmHg	
		in hypertensives	
	Mean reduction in 24	Systolic BP reduced by	
	hour Na excretion of	2.0 (1.5-2.6) and diastolic	
	74mmol/d (4.4g salt/d)	BP by 1.0 (0.6-1.4) mmHg	
		In normotensives	
	47.2) mmol/d Na	(0.4.1.8) and diastalia RP	
	excreted due to dietary	(0.4-1.6) and that $(0.4-1.6)$ and $(0.4-1.6)$ mmHg	
	advice in healthy	0.0 (0.3 1.3) mining	
	subjects		
Animal fat /	Increasing quintiles of		Breast cancer RR 1.28,
Saturated fat	intake of animal fat		1.37, 1.54, 1.33 (1.02-1.73)
	Each increment of 5% of		Breast cancer RR 1.09
	energy from saturated fat		(1.00-1.19)
	vs carbohydrate		
	5% increase in saturated		17% increase in CHD risk
	fat vs equivalent energy		(0.97-1.41)
	from CHD		190/ reduction in CUD
	operator from saturated		42% reduction in CHD
	with unsaturated fat		
	Highest vs lowest intake		Diabetes RR 0.75
	quintile for		(0.65-0.88)
	polyunsaturated fat		
	Polyunstaurated:		Diabetes RR 0.88
	saturated fat ratio		(0.78-0.99)
Protein	low protein diet for		Renal failure/death risk
	nondiabetic renal disease	.	RR 0.67 (0.50-0.89)
	Low protein diet in type	Increase in urinary	
	1 diabetes	albumin, decline in	
		giomerular mitation	
		RR 0 56 (0 40-0 77)	
Calcium	Highest vs lowest intake		Colorectal cancer RR 0.86
	quintile for dietary		(0.78-0.95)
	calcium		
	300mg/day additional		Osteoporosis risk
	calcium		reduced RR 0.96
			(0.93-0.99)

ECONOMIC ANALYSIS AND BUSINESS FACILITATION UNIT

A1.2 OVERVIEW OF THE ANALYSIS

Given that the proposed groups of nutrients for labelling build on one another (*Table A1.2*), the analysis follows this approach with the potential benefits for the smallest group (A) being quantified and then each subsequent set of benefits being considered for inclusion. The analysis of benefits for each group contains the following steps:

- Calculate the labelling effects multiplier (LEM) for that nutrient
- Estimate the changes in health effects per unit change in nutrient intake and combine with LEM to obtain likely change due to labelling (CL)
- Value CL in HK\$.

Since there are already some labelled packaged foods available, we have estimated, for each nutrient, the percentage of packaged food which is already labelled based on the Food and Environmental Hygiene Department (FEHD)'s estimate ⁽¹⁾ and the proportion who say that they currently read labels (49.8%).⁽²⁾ If we assume that 50% of those people who say they read labels actually used the labels to change their behaviour then we have a likely baseline level of changed behaviour for each nutrient.

Group (Options)	Nutrients included	Physiological impacts	Health impacts
A (IV and VIII)	energy, protein, available carbohydrate, total fat	energy intake- obesity; protein – renal function; carbohydrate – diabetes	obesity and obesity related problems (diabetes, IHD, stroke, several cancers, gallstones, gout, breathing disorders); renal function; diabetes
B (III and VII)	as A plus saturated fat, sodium	as A plus some LDL cholesterol, plasma sodium, blood pressure effects	as (1) plus CHD and stroke impact of LDL and BP, renal disease and stomach cancer
C (II and VI)	as B plus cholesterol, sugars	as B plus some impact on energy intake	as (2) plus impact on colorectal cancer
D (I and V)	as C plus dietary fibre, calcium	as C plus some impact on colon, plasma calcium	as (3) plus impact on CHD, diabetes, colorectal and prostate cancer, osteoporosis

Table A1.2 Nutrient Groups, Categories of Physiological and Health Impacts

A1.2.1 Calculation of the Labelling Effect Multiplier (LEM)

A multiplier representing the effect of labelling on the change in behaviour was calculated for each nutrient or nutrient category. The change in behaviour is the decreased or increased intake of the nutrient. The following formula was used for each nutrient:

LEM =	Proportion of food consumed which	x	Percentage of persons who read and use food	x	Percentage population affected b
	is pre-packaged		labels		nutrient

Percentage of the population who would be affected by the particular nutrient

The first estimate is the same for each nutrient while the second and third vary with the nutrient; the third estimate sometimes refers to the proportion of people with a specific condition and sometimes to the whole population.

A1.2.2 Proportion of Food Consumed Which is Pre-packaged

The proportion of food consumed that is likely to be pre-packaged is estimated to be 23%. This number has been derived by considering the proportion of food that is likely to be pre-packaged and not consumed in restaurants as indicated by the Household Expenditure survey (1999/2000)⁽³⁾ and Hong Kong Adult Dietary Survey (conducted during August 1995 to September 1996)⁽⁴⁾.

A1.2.3 Percentage of Persons who Read Food Labels and Change their Intake of Nutrients

According to the Opinion Survey ⁽²⁾ conducted in 2004 and commissioned by the FEHD, 90.8% of respondents aged 15 and above indicated that they would read nutrition labels on prepackaged food and, of these, 89.2% would use such information in making food choices giving 81% intending to use information on labels. Intention is likely to be overestimated relative to actual behaviour so we assume that, on average only 75% do as they intend giving an average of 61% changing behaviour. One special case is protein where people with impaired renal function are likely to get specific advice to cut down their consumption or suffer deterioration. In this case, we have not applied any reduction to the original estimate of 81%.

Since we have a baseline value of the proportion of the population who may already have changed their behaviour, we deduct this from the estimates above to identify the proportion who may change behaviour after labelling and its associated publicity. A US study ⁽⁵⁾ estimated the proportion of people who read specific types of information from labels. The most common item of information read was fat content (95%) followed by calories, (88%), cholesterol (81%) and salt and fibre (both 70%). We have applied these to obtain nutrientspecific estimates of those who may use the information on labels. Since the US study did not give estimates for carbohydrate, sugar and calcium, we have used the lowest estimate given for a specific category (69%) as an estimate for these groups and for protein we have used 100% for the reason give above. These calculations are shown below.

Nutrient	Baseline estimate (%) of those who use labels* (% use at present x % prepackaged food labelled at present) - A	Expected % who will use labels* (% expect to use x % expected to use for each nutrient minus A)
Energy	24.9 x 49.2 = 12.3	(61 x 88%) - 12.3 = 41.2
Protein	$24.9 \ge 48.5 = 12.1$	(81 x 100%) - 12.1 = 68.9
Carbohydrate	$24.9 \ge 48.1 = 12.0$	(61 x 69%) - 12.0 = 29.9
Animal fat	24.9 x 27.6 = 6.9	$(61 \times 95\%) - 6.9 = 50.8$
Sodium	$24.9 \ge 36.0 = 9.0$	(61 x 70%) - 9.0 = 33.6
Cholesterol	24.9 x 19.1 = 4.8	(61 x 81%) - 4.8 = 44.4
Sugar	$24.9 \ge 27.9 = 6.9$	(61 x 69%) - 6.9 = 35.0
Dietary fibre	$24.9 \ge 25.2 = 6.3$	(61 x 70%) - 6.3 = 36.2
Calcium	$24.9 \times 19.5 = 4.9$	$(61 \times 69\%) - 4 9 = 37 1$

Table A1.3Percentage of Additional People who are Expected to Read Food Labels and
Change their Intake of Nutrients

Note: *People who 'use labels' means that they read labels and use the information to change behaviour. The percentage of prepackaged food products labelled at present is based on results from ERM market survey of about 2,000 food and drinks products in 2004 described in *Section 4.1.1* and *Annex C* of the main report.

A1.2.4 Percentage of the Population Affected

This is based on local data and each estimate is explained in the section relevant to that nutrient.

A1.2.5 Health Effect

The change in health effect due to labelling is based on the available evidence. The method used is described for each nutrient and further details of the studies from which the estimates are derived are given in *Appendix A* and the original referenced papers. The 95% confidence intervals of the estimates were used to give a range of estimates; where we had no 95% confidence interval, we constructed a range for the estimate, y, of 0.5y to 1.5y.

A1.2.6 Value of the Benefits Identified

We have used firstly the monetary value of avoided public hospital admissions. We estimated the monetary cost of the annual hospital admissions for each relevant health problem using 2000 as the base year. We used only public hospital admissions because most of the conditions we report are chronic conditions which are more likely to be treated in the public hospital system than the private system. The overall proportion of admissions that are to private hospitals is around 6%.

To make the costs more comprehensive and realistic, we have included an estimate that takes into account the value of avoided general practitioner (GP) visits and medicines. We have no local data for these but have used the data from a UK study ⁽⁶⁾. While the absolute values from the UK would not be directly transferable, the relative values (*Table A1.4*) between hospital and GP care and medicines are assumed to be transferable.

We have calculated the costs of lost productivity in three categories. The first is that due to hospital admissions in those under 65 years (the currently accepted definition of retirement) by multiplying the relevant number of days in hospital by the median daily wage where data are available. The second is that due to deaths under 65 years by multiplying average years of life lost by those dying under 65 years of that condition (from another local study ⁽⁷⁾) by the median annual wage⁽⁸⁾ and applying the estimated reductions in the health outcome. The third is the productivity loss associated with sick leave. This is estimated for three conditions: diabetes, stroke and coronary heart disease. These are the main nutrition-related chronic conditions which affect younger people. We obtained estimates of sick days due to CHD from a UK study ⁽⁹⁾ and estimated the equivalent Hong Kong figures after adjusting for the size of the working population and different rates of heart disease overall. For stroke, we used data from a French study (10) and again translated for Hong Kong. In both of these cases we used a 'friction period-adjusted' estimate ⁽⁹⁾ ie the total number of sick leave days was adjusted for the fact that most people off work for more than 90 days would be replaced thus minimising the productivity loss. This gives a conservative estimate. For diabetes, we used a US study (11) which determined the proportion of those with diabetes who stop working altogether and also the number of days of work lost relative to those without diabetes. Again, we translated this into data for Hong Kong.

We estimated the potential impact on premature deaths by applying the estimated reductions in morbidity to those deaths for that condition which occur in those aged under 75 years (the currently accepted definition of a premature death). The data on loss of life was obtained from a large local study in 1998 on risks of mortality due to smoking ⁽⁷⁾ which covered around 80% of the total deaths in that year. We took the number of deaths by cause in this dataset and estimated the number in the whole population by multiplying by a sex and age-specific multiplier. We then scaled the results to the number of deaths in the year 2000. A breakdown of premature deaths due to different nutrient-related diseases is provided in *Appendix C*.

We have not been able to calculate loss of life, either productive or premature, for all nutrient-related diseases because some conditions are not normally listed as a cause of death (eg osteoporosis and diabetes).

Condition	Hospital costs	GP cost ratio	Medicine cost ratio
Hypertension	1.0	3.3	13.2
Diabetes mellitus	1.0	0.2	2.1
CHD	1.0	0.04	0.6
Stroke	1.0	0.03	0.03
Colorectal cancer	1.0	0.04	0.01
Prostate cancer	1.0	0.0	1.9
Obesity-related conditions	1.0	0.3	1.4

Table A1.4 Ratio of GP and Medicine Costs to Hospital Inpatient Costs from UK

A1.2.7 Health Impacts

The health impacts will not all be immediate. Some effects, such as blood pressure reductions due to reduced salt intake, will be almost immediate and health benefits will begin to accrue but the measurable impact of the blood pressure reduction on some outcomes such as CHD will take longer to show.

We list below some qualitative guidance on relative timescales.

Probably short term – immediate to 3 years

- reduction in blood pressure, serum cholesterol and other biochemical effects
- reduction in haemorrhagic strokes (30-40% of total strokes)
- possible reduction in drug use for hypertension, dyslipidaemia and diabetes
- reduction in deterioration of renal disease due to protein restriction
- deterioration in all of the chronic conditions related to nutrient intake would slow

Probably longer term

- other outcomes such as heart attacks, Ischaemic strokes
- effects on cancer incidence

Again, there is no hard evidence but we would estimate that all the effects described in the report would be fully evident in 10 to 20 years. In some cases, this may attenuate a rise eg in obesity, rather than result in a fall in absolute levels.

Not included in this costing are the impacts on psycho-social costs such as loss of self-esteem, depression (although a Hong Kong study has shown that depression has an inverse relation with BMI in older people contrary to findings overseas ⁽¹²⁾) and loss of quality of life due to the health problems ⁽¹³⁻¹⁶⁾ particularly diabetes for which there is good evidence. Costs of use of intensive care facilities eg after a stroke are not included; however, many of the longer term costs of care are covered by the hospital costs because longterm hospital costs are included. Costs of caring other than those in hospital are not included but overseas which estimated the costs to families were usually low, at most 5% of the total cost of the illness.

The following section details the calculations of each specific category of nutrient-related cost.

BENEFITS RELATED TO EACH NUTRIENT CATEGORY

A2.1 **B**ENEFITS RELATED TO REDUCED ENERGY INTAKE

A2

A2.1.1 Quantification of the Potential Effect of Labelling on Intake of Energy

Energy and total fat content of foods will be of interest to those people who wish to lose weight or to avoid weight gain. At present in Hong Kong, 36% of the population are obese (*Table A2.1*) while 27% are overweight. In this analysis we have estimated benefits for both those who are overweight and those who are obese because risks are increased also in the overweight and rise in line with body mass index ⁽¹³⁾. This gives an LEM of 5.87% (0.23 x 0.412 x 0.63).

Table A2.1Change in Proportion who are Obesewith a Decrease in Weight of 5kg and
3kg in the Hong Kong population

Category of obesity	Current levels n(%)	After average loss of	After average loss of
		5kg n(%)	2.4kg n(%)
Obese (BMI>25)	1050 (36.3)	568 (19.6)	809 (27.9)
Not obese (BMI<=25)	1845 (63.7)	2327 (80.4)	2081 (72.1)
Total	2890 (100)	2890 (100)	2890 (100)

Source: Data from the Cardiovascular Risk Prevalence Study (17)

A2.1.2 Identification of Impact of a Change in Intake of Energy

There is substantial evidence that energy intake is related to obesity and obesity-related conditions. The obesity-related conditions for which the evidence is strong enough to warrant inclusion are: diabetes mellitus, high blood pressure, stroke, coronary heart disease, renal disease, several cancers, osteoarthritis, gout, sleep apnoea, dyslipidaemia, asthma and gallstones ⁽¹³⁾. Of these, diabetes mellitus, gallstones, sleep apnoea and dyslipidaemia leading to coronary heart disease and stroke are greatly increased (relative risk (RR) very much greater than 3); coronary heart disease, hypertension, osteoarthritis and gout are moderately increased (RR 2 to 3); cancers and other effects tend to be mildly increased (RR 1 to 2) ⁽¹⁸⁾. We have taken the RR estimates as 3.5, 2.5 and 1.5 for the greatly, moderately and slightly increased risks. We have a more precise estimate for asthma of 2.3. We assume that the risks of being overweight are the same as those of being obese.

Applying the benefits of reduction of 600kcal/day (a gradual loss of 5. 3kg, 95% CI 4.8 to 5.9) (*Table A1.1*) to only the obese people in the population, we reduce the population who are obese from 36% to 20% (*Table A2.1*) while a lower drop of 2.4kg (95% CI 1.2-3.6) reduces the proportion obese to 28% with a range based on the 95% CI of 23% to 32%. This drop in dietary intake of energy was considered a very achievable goal in the study quoted. The drop of 2.4kg was maintained over 2 years.
Taking the loss of 2.4kg as a conservative value and applying it to all obese and overweight people in Hong Kong we would obtain a drop of 8% in the number at risk and an equivalent drop of 8% (4% to 13%) in related costs. Applying the LEM gives a drop of 0.47% with a range of 0.23% to 0.76%.

A2.1.3 Valuation of Changes in Health Status

Using the above estimates of the relative risks to calculate the population attributable risks (*Table A2.2*), we have estimated the total annual hospital inpatient costs associated with obesity-related conditions in those aged 19 to 70 years. This comes to \$645 million per annum. Applying the calculated percentage reduction in these costs gives \$3.0 million (\$1.5 to 4.9 million) in avoided hospital costs in one year. Adjusting for other direct costs gives \$8.2 million (\$4.1 to 13.3 million).

Lost productivity amounts to \$27.2 million (\$13.6 to 44.2 million) and the potential number of premature deaths prevented is 10 (5 to 17).

Table A2.2Calculation of Population Attributable Fraction of Health Conditions Caused
by Obesity and Overweight

Diagnosis	Relativerisks (RR) ¹	PF ²	PAF% ³
Diabetes	3.5	0.63	61.17
Hypertension	2.5	0.63	48.59
Stroke	2.5	0.63	48.59
Ischaemic heart disease (IHD)	2.5	0.63	48.59
Renal Disease	2.5	0.63	48.59
Cancer			
Endometrial cancer	1.5	0.63	23.95
Colon	1.5	0.63	23.95
Rectal	1.5	0.63	23.95
Ovarian	1.5	0.63	23.95
Prostate	1.5	0.63	23.95
Osteoarthritis	2.5	0.63	48.59
Gout	2.5	0.63	48.59
Gallstones	3.5	0.63	61.17
Sleep apnoea	3.5	0.63	61.17
Asthma	2.3	0.63	45.02
Dyslipidaemia	3.5	0.63	61.17

Notes: 1. RR is the odds ratio for the association between being obese and overweight and having the health problem eg diabetes

2. PF is the fraction of the local population who have the condition 'obesity' [body mass index (BMI) over 25 kg/m²] and 'overweight' [(BMI) over 23 kg/m²] as determined from local surveys

3. PAF% is the population attributable fraction as a % ie the proportion of all cases of diabetes which are associated with obesity and overweight. It is calculated as follows: The population attributable fraction (PAF) is defined as the proportion of all cases of diabetes which are associated with obesity and overweight. The formula for PAF is

$$PAF = \frac{PF (RR - 1)}{1 + PF (RR - 1)}$$

Diagnosis (ICD9 code)	PAF	Acute hospital	Long-stay hospital	Total cost*
	%	Total LOS (days)	Total LOS (days)	(HK\$)
Diabetes (250)	61.17	17,424	4,656	41,171,407
Hypertension (401-405)	48.59	5,508	999	9,710,897
Stroke (430-438)	48.59	57,211	48,360	151,333,715
CHD (410-414)	48.59	36,226	2,283	58,165,250
Renal disease (580-589)	48.59	21,863	2,655	36,799,937
Cancer				
Endometrial (179-180, 182)	23.95	0	0	0
Colon (153)	23.95	9,890	2,626	9,138,746
Rectal (154)	23.95	9,550	2,568	8,845,604
Ovarian (183)	23.95	32	-	24,004
Prostate (185)	23.95	2,458	1,221	2,643,311
Osteoarthritis (715)	48.59	3,515	1,166	6,898,316
Gout (274)	48.59	3,664	556	6,314,419
Gallstones (574)	61.17	7,132	964	15,275,846
Sleep apnoea (780.5)	61.17	4,317	0	8,271,045
Asthma (493)	45.02	7,973	1,514	13,105,697
Dyslipidaemia (272)	61.17	175	50	418,506
Total				368,116,701

Table A2.3Costs (HK\$) of Public Hospital Care for Obesity and Overweight-related
Conditions in Hong Kong in 2000 for Male Adults (19-70 years)

Notes: Total cost = PAF* (LOS acute hospital* \$3,132 + LOS long-stay hospital* \$2,735)

Table A2.4Costs (HK\$) of Public Hospital Care for Obesity and Overweight-related
Conditions in Hong Kong in 2000 for Female Adults (19-70 years)

Diagnosis (ICD9 code)	PAF	Acute hospital	Long-stay hospital	Total cost*
	%	Total LOS (days)	Total LOS (days)	(HK\$)
Diabetes (250)	61.17	14,447	5,387	36,689,523
Hypertension (401-405)	48.59	5,337	1,149	9,648,938
Stroke (430-438)	48.59	36,761	28,459	93,764,330
CHD (410-414)	48.59	14,676	1,135	23,842,415
Renal disease (580-589)	48.59	18,577	2,103	31,065,808
Cancer				
Endometrial (179-180, 182)	23.95	11,381	1,565	9,561,562
Colon (153)	23.95	7,646	2,365	7,284,482
Rectal (154)	23.95	6,346	1,381	5,664,840
Ovarian (183)	23.95	6,220	868	5,234,125
Prostate (185)	23.95	0	0	0
Osteoarthritis (715)	48.59	9,682	4,224	20,348,492
Gout (274)	48.59	879	75	1,436,748
Gallstones (574)	61.17	7,683	842	16,126,955
Sleep apnoea (780.5)	61.17	1,299	0	2,488,107
Asthma (493)	45.02	8,260	1,068	12,961,720
Dyslipidaemia (272)	61.17	147	0	282,166
Total				276,400,212

Notes: Total cost = PAF* (LOS acute hospital* \$3,132 + LOS long-stay hospital* \$2,735)

A2.2 COSTS RELATED TO PROTEIN INTAKE

A2.2.1 Quantification of the Potential Effect of Labelling on Intake of Protein

Apart from those with a general interest in the nutrient content of a particular food, those with renal disease have a strong interest in the protein content. The percentage of the population on dialysis at any one time is around 0.06% ⁽¹⁹⁾. Assuming that an additional group of around 5 times this number has sufficient deterioration in renal function to benefit from protein restriction although they may not yet have renal failure, we have about 0.36% of the population who might benefit from a lower protein diet. The LEM in this case is 0.06% ($0.23 \times 0.69 \times 0.0036$).

A2.2.2 Identification of the Impact of a Change in Intake of Protein

The incidence of deteriorating renal function and death in those with renal disease is reduced with a low protein diet by about 30 to 40% (*Table A1.1*). We have assumed a reduction in risk of 33% (11-50%) for those with renal disease but without diabetes who follow the low protein guidelines. Combining with the LEM gives 0.02% (0.01 to 0.03%) reduction in costs of deterioration.

A2.2.3 Valuation of Changes in Health Status

We have applied this change to the annual costs of treating inpatients with renal disease (\$260 million). This gives a potential annual saving of \$48,191 (\$16,064 to \$73,016).

The avoided costs of lost productivity amount to \$41,357 (\$13,786 to \$62,661) and the number of avoided premature deaths is less than one.

A2.3 BENEFITS RELATED TO REDUCED CARBOHYDRATE INTAKE

A2.3.1 Quantification of the Potential Effect of Labelling on Intake of Carbohydrate

Although those likely to be most interested in the labelling of carbohydrate are the overweight or obese, everyone is likely to benefit from a reduced risk of diabetes if they reduce the processed carbohydrate in their diet. The obese and overweight are addressed in *Section A2.1*, those of normal weight are considered here. The LEM for this group is therefore 2.51% (0.23 x 0.30 x 0.37).

A2.3.2 Identification of the Impact of a Change in Intake of Carbohydrate

The excess risk for developing diabetes increases by 37% (95%CI 2% to 83%) for every 100g increase in intake of carbohydrate. If we assume a 10g/day change, we will reduce the number of new cases by 3.7% (0.2 to 8.3%). Applying the LEM, this gives 0.09% (0.01 to 0.21%) reduction in costs of diabetes over and above those resulting from obesity or overweight.

Diagnosis (ICD9 code)	Acute hospital Total LOS (days)	Long-stay hospital Total LOS (days)	Total cost* (HK\$)
	Male		
Diabetes (250)	8,997	1,719	32,879,460
Stroke (430-438)	22,876	20,482	127,667,437
CHD (410-414)	13,869	915	45,940,172
Renal disease (580-589)	14,992	739	48,975,250
Cancer			
Colorectal (153-154)	7,013	1,639	26,448,383
Breast (174)	-	-	-
Osteoporosis (733.0)	30	0	94,054
Hip fracture (808, 820)	4113	370	13,893,130
	Female		
Diabetes (250)	7,597	1,143	26,919,140
Stroke (430-438)	13,791	10,413	71,673,691
CHD (410-414)	3,726	155	12,094,211
Renal disease (580-589)	11,445	394	36,924,698
Cancer			
Colorectal (153-154)	6,298	1,064	22,635,796
Breast (174)	14,235	7,110	64,030,566
Osteoporosis (733.0)	70	13	254,795
Hip fracture (808, 820)	2,482	154	8,196,192

Table A2.5Costs (HK\$) of Public Hospital Care for Various Conditions in Hong Kong in
2000 for Males and Females Aged Under 60

Notes: Total cost = LOS acute hospital* \$3,132 + LOS long-stay hospital* \$2,735

A2.3.3 Valuation of Changes in Health Status

The cost of treating inpatients with diabetes is around \$270 million. Applying the percentage change in new cases of diabetes saves \$250,222 (\$13,526 to \$561,309) per year in hospital admissions and \$0.8 million (\$0.04 to 1.9 million) in direct costs.

The avoided costs of lost productivity amount to \$7.1 million (\$0.4 to \$16.0 million) and the number of avoided premature deaths is less than 1.

A2.4 OTHER COSTS RELATED TO ANIMAL/SATURATED FAT INTAKE

A2.4.1 Quantification of the Potential Effect of Labelling on Intake of Saturated Fat

A reduction in saturated fat intake is likely to impact rates of breast cancer, which will affect all adult women and coronary heart disease (CHD) which will affect both sexes. In 2002, the percentage of population which are adult women aged 15 and over is 43.6% ⁽²⁰⁾ and the whole population, males and females, are included in the estimate for CHD. The LEM for breast cancer is estimated as 5.01% (0.23 x 0.51 x 0.44). The LEM for CHD is 11.50% (0.23 x 0.51 x 1.0).

Diagnosis (ICD9 codo)	Acute hospital	Long-stay hospital	Total cost*
Diagnosis (ICD3 tode)	Total LOS (days)	Total LOS (days)	(HK\$)
	Male ³		
Diabetes (250)	19,305	8,138	82,719,902
Stroke (430-438)	84,652	89,177	509,028,425
CHD (410-414)	46,060	6,443	161,882,385
Renal disease (580-589)	19,494	5,785	76,876,479
Cancer			
Colorectal (153-154)	30,448	9,848	122,296,966
Breast (174)	8	-	25,056
Osteoporosis (733.0)	452	160	1,853,338
Hip fracture (808, 820)	25,304	1,189	82,504,160
	Female	3	
Diabetes (250)	26,140	16,658	127,429,213
Stroke (430-438)	93,301	102,554	572,703,575
CHD (410-414)	38,318	10,198	147,905,019
Renal disease (580-589)	22,037	10,355	97,341,281
Cancer			
Colorectal (153-154)	34,314	10,678	136,676,034
Breast (174)	9,517	6,692	48,108,930
Osteoporosis (733.0)	1,878	1,251	9,305,008
Hip fracture (808, 820)	64,936	3,923	214,108,298

Table A2.6Costs (HK\$) of Public Hospital Care for Various Conditions in Hong Kong in
2000 for Males and Females Aged 60 and Over

Notes: Total cost = LOS acute hospital* \$3,132 + LOS long-stay hospital* \$2,735

Table A2.7Costs (HK\$) of Public Hospital Care for Prostate Cancer in Hong Kong in
2000 for Males Aged Over 60 Years

Diagnosis (ICD9 code)	Acute hospital Total LOS (days)	Long-stay hospital Total LOS (days)	Total cost* (HK\$)	
Prostate cancer (185)	8,121	4,846	38,686,935	
Notes: Total cost = LOS acute hospital* \$3,132 + LOS long-stay hospital* \$2,735				

A2.4.2 Identification of the Impact of a Change in Intake of Saturated Fat

Each increment of 5% energy intake from saturated fat rather than carbohydrate or unsaturated fat is associated with a 9% (0-19%) increase in breast cancer and a 42% (21-63% estimated) increase in CHD. Applying the LEM indicates a reduction of 0.45% (0 to 0.95%) in costs for breast cancer and 4.83% (2.42 to 7.25%) for CHD.

A2.4.3 Valuation of Changes in Health Status

The annual cost of admissions for breast cancer (females of all ages) is \$112 million. The annual cost of CHD for the whole population is \$368 million (*Table A2.6*). Applying the estimated reductions to the annual cost of admissions for these two conditions results in a potential annual saving of \$18.3 million (\$8.9 to 27.7 million) and total direct cost savings are \$29.6 million (\$14.6 to 44.8 million).

The avoided costs of lost productivity amount to \$36.0 million (\$17.1 to 55.0 million) and the number of premature deaths avoided is 67 (33 to 101).

A2.5 COSTS RELATED TO SALT OR SODIUM INTAKE

A2.5.1 Quantification of the Potential Effect of Labelling on Intake of Salt or Sodium

The impact of a reduction in salt content of food will be a lowering of the blood pressure. This impact will have more benefit for those with hypertension but even those without hypertension will benefit to some extent. Therefore benefits are applied to the whole population in two categories: with and without hypertension. Around 18% of the population has hypertension $^{(17)}$. For this group, the LEM is 1.37% (0.23 x 0.34 x 0.18). For normotensive people, the LEM is 6.23% (0.23 x 0.34 x 0.82). The other main effect of salt intake is on stomach cancer. Reduction in intake will benefit those with the highest intake at present but this is difficult to estimate.

A2.5.2 Identification of the Impact of a Change in Intake of Salt or Sodium

Reducing sodium intake by about 70mmol/day in those with hypertension reduced diastolic blood pressure (BP) by 2.7 (2.3-3.2) mmHg. The same reduction in those with normal BP reduced diastolic BP by 1.0 (0.6-1.4) mmHg. Thus labelling should result in a reduction in the average blood pressure in the population by 0.10 mmHg ($1.37\% \times 2.7 + 6.23\% \times 1.0$). According to the literature, a reduction of 5mm blood pressure can decrease the risks of strokes and CHD by 34% and 21% respectively. Assuming a linear relationship, the above estimated labelling effect of a 0.10 mm reduction in blood pressure implies 0.67% (0.6 to 1.8% estimated) decreased risks of strokes and 0.42% (0.4 to 1.2% estimated) decreased risks of CHD.

A2.5.3 Valuation of Changes in Health Status

The annual value of hospital admissions for strokes (\$1,281 million) and coronary heart disease (\$368 million) are multiplied by the expected reduction in events to give a potential annual saving of \$10.2 million (\$9.2 to \$27.5 million) in hospital days. Total direct cost savings are \$11.7 million (\$10.6 to 31.7 million).

Avoided costs of lost productivity amount to \$8.4 million (\$7.7 to \$23.0 million) and avoided premature deaths amount to 15 (14 to 42).

A2.6 BENEFITS RELATED TO REDUCED INTAKE OF CHOLESTEROL

The benefits of reduced intake of cholesterol are mostly included in the calculation for saturated fat in *Section A2.4*. However, cholesterol may be a more easily recognised term and therefore its separate labelling may be warranted.

A2.7 BENEFITS RELATED TO REDUCED SUGAR INTAKE

A2.7.1 Quantification of the Potential Effect of Labelling on Intake of Sugar

The benefits of a change in sugar intake will be included in the calculation above for available carbohydrate and also in that for total energy. However, sugar is an easily recognised nutrient category and may warrant separate labelling. Furthermore, sugar intake has an impact on the incidence of colorectal cancer. This would apply to the whole population. The LEM in this case is 7.91% (0.23 x 0.35 x 1.0).

A2.7.2 Identification of the Impact of a Change in Intake of Sugar

The excess risk of colorectal cancer is 100% for a 60g/day intake compared with zero intake. Since the local consumption of sugar is uncertain, for the purposes of this analysis we have considered a smaller reduction of only 20% (10 to 30% estimated) to account for the possible likely reduction due to labelling. Multiplying by the LEM gives 1.58% (0.79 to 2.37) reduction in colorectal cancer costs due to avoided hospital admissions.

A2.7.3 Valuation of Changes in Health Status

The total annual cost for admissions due to colorectal cancer is \$308 million. A change of 1.58% results in savings of \$4.9 million (\$2.4 to \$7.3 million). Total direct cost savings are \$5.1 million (\$2.6 to 7.7 million).

The avoided costs of lost productivity amount to \$9.3 million (\$4.7 to 14.0 million) and the number of avoided premature deaths is 14 (7 to 21).

A2.8 COSTS RELATED TO DIETARY FIBRE INTAKE

A2.8.1 Quantification of the Potential Effect of Labelling on Intake of Fibre

Dietary fibre intake affects both fatal and non-fatal heart attacks affecting both men and women. The LEM is 8.20% (0.23 x 0.36 x 1.0). It also affects the risk of diabetes, the risk of bowel cancer for the whole population and the risk of prostate cancer in older males. The percentage of the population which are males aged 60 and over is 7.2% ⁽⁸⁾. The LEM for diabetes is 8.20% (0.23 x 0.36 x 1.0), for bowel cancer is also 8.20% and for prostate cancer is 0.59% (0.23 x 0.36 x 0.072).

A2.8.2 Identification of the Impact of a Change in Intake of Dietary Fibre

A 10g/day increment in fibre intake reduces the risk for CHD by 14% (4 to 22%). For diabetes, risk is reduced by 30% (4 to 49%) with a 5g/day difference in fibre intake. For bowel cancer, we would expect a 42% (15 to 59%) reduction in risk between highest and lowest quintiles; therefore, between quintiles, we estimate a difference of 10% (range 5% to 15% estimated). For prostate cancer, we estimate a 30% drop (15% and 45% estimated) ie the difference between the lowest and second lowest quintile of intake. Applying the LEM gives

reductions of 1.15% (0.33 to 1.80%) for CHD costs; 2.46% (0.33 to 4.02%) for diabetes costs; 0.82% (0.41 to 1.23%) for colorectal cancer costs; and 0.18% (0.09 to 0.27%) for prostate cancer costs. Because of the possible overlap of effects of dietary fibre and sugar intake (high sugar foods tend to be low in dietary fibre) we have dropped the effects of fibre on colorectal cancer from the total calculation.

A2.8.3 Valuation of Changes in Health Status

The total annual cost for admissions due to CHD is \$368 million (*Table A2.6*); diabetes is \$270 million; colorectal cancer is \$308 million and prostate cancer is \$39 million. Applying the estimated reductions to the annual costs of admissions for these four conditions results in a potential annual saving of \$10.9 (\$2.1 to 17.6 million) for hospital costs. Total direct cost savings are \$29.0 million (\$5.0 to 47.0 million).

The avoided costs of lost productivity, again excluding colorectal cancer, amount to \$197.8 million (\$27.6 to \$322.6 million) and avoided premature deaths to 23 (5 to 37).

A2.9 COSTS RELATED TO CALCIUM INTAKE

A2.9.1 Quantification of the Potential Effect of Labelling on Intake of Calcium

The effects of changes in calcium levels will benefit the whole population. The LEM in this case is 8.38% (0.23 x 0.37 x 1.0). There will also be an impact on the incidence of colorectal cancer in this population with the same LEM.

A2.9.2 Identification of Impact of a Change in Intake of Calcium

Higher calcium intake is associated with lower rates of colorectal cancer and osteoporosis. A modest increase in intake of dietary calcium of 300mg/day (one glass of milk) resulted in a reduction in osteoporosis risk of 4% (1 to 7%) which results in a change of 0.34% (0.08 to 0.59%) when multiplied by the LEM.

The change in colorectal cancer risk is up to 14% (5% to 22%) which gives a total change of 1.17% (0.42 to 1.84%) when multiplied by the LEM.

A2.9.3 Valuation of Changes in Health Status

Applying the change to the annual inpatient costs of osteoporosis produces potential costs savings of \$1.1 million (\$0.3 to \$1.9 million) for both conditions of osteoporosis and hip fracture. Similarly, applying the change to the annual inpatient costs of colorectal cancer produces potential costs savings of \$3.6 million (\$1.3 to \$5.7 million) a total of \$4.7 million (\$1.6 to \$7.6 million). Total direct cost savings are \$4.9 million (\$1.6 to 7.9 million).

The avoided lost productivity amounts to \$6.9 million (\$2.5 to 10.9 million) and avoided premature deaths to 10 (4 to 16).

A2.10 SUMMARY OF COSTS FOR EACH NUTRIENT CATEGORY

Using the ratio between inpatient costs, GP costs and medicine costs as shown in *Table A1.4*, the estimated monetary savings due to labelling were recalculated and are shown in *Table A2.8*, along with a summary of the above costs.

Energy		hospital utilisation only	based on GP care	based on Medicines	Total Benefits
	 ζγ				
Obesity and overweight related disease 3,027,749 908,325 4,238,848 8,174,922	esity and overweight related d	isease 3,027,749	908,325	4,238,848	8,174,922
low 1,513,874 454,162 2,119,424 4,087,461	low	1,513,874	454,162	2,119,424	4,087,461
high 4,920,092 1,476,028 6,888,129 13,284,248	high	4,920,092	1,476,028	6,888,129	13,284,248
Protein	in				
Renal disease 48,191 48,191	nal disease	48,191	-	-	48,191
low 16,064 16,064	low	16,064	-	-	16,064
high 73,016 73,016	high	73,016	-	-	73,016
Carbohydrate	ohydrate				
Diabetes 250,222 50,044 525,466 825,733	abetes	250,222	50,044	525,466	825,733
low 13,526 2,705 28,404 44,634	low	13,526	2,705	28,404	44,634
high 561,309 112,262 1,178,749 1,852,320	high	561,309	112,262	1,178,749	1,852,320
Saturated fat	ated fat				
Breast cancer 506,058 506,058	east cancer	506,058	-	-	506,058
low	low	-	-	-	-
high 1,068,346 1,068,346	high	1,068,346	-	-	1,068,346
CHD 17,766,416 710,657 10,659,849 29,136,921	ID .	17,766,416	710,657	10,659,849	29,136,921
low 8,883,208 355,328 5,329,925 14,568,461	low	8,883,208	355,328	5,329,925	14,568,461
high 26,649,623 1,065,985 15,989,774 43,705,382	high	26,649,623	1,065,985	15,989,774	43,705,382
Sodium	ım				
Stroke 8,638,271 259,148 259,148 9,156,567	oke	8,638,271	259,148	259,148	9,156,567
low 7,686,439 230,593 230,593 8,147,625	low	7,686,439	230,593	230,593	8,147,625
high 23,059,316 691,779 691,779 24,442,875	high	23,059,316	691,779	691,779	24,442,875
CHD 1,531,901 61,276 919,141 2,512,318	ID .	1,531,901	61,276	919,141	2,512,318
low 1,471,287 58,851 882,772 2,412,911	low	1,471,287	58,851	882,772	2,412,911
high 4,413,861 176,554 2,648,317 7,238,733	high	4,413,861	176,554	2,648,317	7,238,733
Cholesterol NA NA NA NA	esterol	NA	NA	NA	NA
Sugar	r				
Colorectal cancer 4,875,094 195,004 48,751 5,118,848	lorectal cancer	4,875,094	195,004	48,751	5,118,848
low 2,437,547 97,502 24,375 2,559,424	low	2,437,547	97,502	24,375	2,559,424
high 7,312,640 292,506 73,126 7,678,272	high	7,312,640	292,506	73,126	7,678,272
Dietary fibre	ry fibre				
CHD 4,221,974 168,879 2,533,184 6,924,037	ID	4,221,974	168,879	2,533,184	6,924,037
low 1,206,278 48,251 723,767 1,978,296	low	1,206,278	48,251	723,767	1,978,296
high 6,634,530 265,381 3,980,718 10,880,629	high	6,634,530	265,381	3,980,718	10,880,629
Diabetes 6,639,738 1,327,948 13,943,450 21,911,135	abetes	6,639,738	1,327,948	13,943,450	21,911,135
low 885,298 177,060 1,859,127 2,921,485	low	885,298	177,060	1,859,127	2,921,485
high 10,844,905 2,168,981 22,774,301 35,788,188	high	10,844,905	2,168,981	22,774,301	35,788,188
Colorectal cancer ¹ 2,525,698 101,028 25,257 2,651,983	orectal cancer ¹	2,525,698	101,028	25,257	2,651,983
low 1,262,849 50,514 12,628 1,325,991	low	1,262,849	50,514	12,628	1,325,991
high 3,788,547 151,542 37,885 3,977,974	high	3,788,547	151,542	37,885	3,977,974

Table A2.8 Summary of Costs (HK\$) of Health Care for Each Nutrient Group

¹ To avoid double counting of health impacts since intake of sugar and dietary fibre are likely to be correlated, we have excluded this particular impact from the summary costs

Nutrient	Benefits based on hospital utilisation only	Benefits based on GP care	Benefits based on Medicines	Total Benefits
Prostate cancer	68,512	-	130,173	198,685
low	34,256	-	65,087	99,343
high	102,768	-	195,260	298,028
Calcium				
Colorectal cancer	3,614,827	144,593	36,148	3,795,568
low	1,291,010	51,640	12,910	1,355,560
high	5,680,442	227,218	56,804	5,964,465
Osteoporosis & hip fracture	1,107,075	-	-	1,107,075
low	276,769	-	-	276,769
high	1,937,381	-	-	1,937,381

A3 POTENTIAL BENEFITS FOR EACH PROPOSED GROUP OF NUTRIENTS

The monetary benefits of labelling related to the reduced intake of each specific nutrient have been calculated. Here we estimate the potential benefits according to the four proposed options for labelling (*Table A1.2*). For each nutrient group or option, we have estimated the value of avoided health care, lost productivity and premature deaths and give an overall total.

A3.1 BENEFITS OF NUTRIENT GROUP A (OPTIONS IV AND VIII)

This consists of the smallest group of nutrients. It includes energy, protein, available carbohydrate and total fat. The value of avoided health care resulting from labelling of these nutrients is \$9.0 million per year (\$4.1 to 15.2 million); avoided lost productivity costs takes the total to \$43.5 million (\$18.2 to \$75.5 million) and 11 (5 to 18) premature deaths are avoided. The total monetary value is \$151.6 million (\$70.8 to \$252.9 million).

A3.2 BENEFITS OF NUTRIENT GROUP B (OPTIONS III AND VII)

Nutrient group B includes saturated fat and sodium in addition to those nutrients in Group A. The value of avoided health care is \$50.4 million per year (\$29.3 to 91.7 million) and including lost productivity increases this to \$129.1 million (\$68.1 to 230.0 million) with 93 (52 to 161) premature deaths avoided. The total monetary value is \$1.1 billion (\$0.6 to \$1.8 billion).

A3.3 BENEFITS OF NUTRIENT GROUP C (OPTIONS II AND VI)

Nutrient group C includes cholesterol and sugars in addition to those nutrients in Group B. The value of avoided health care is \$55.5 million per year (\$31.8 to 99.3 million) and including lost productivity increases this to \$143.5 million per year (\$75.3 to 251.6 million) with 107 (59 to 182) premature deaths avoided. The total monetary value is \$1.2 billion (\$0.7 to \$2.1 billion).

A3.4 BENEFITS OF NUTRIENT GROUP D (OPTIONS I AND V)

Nutrient group D, the largest group of nutrients, includes dietary fibre and calcium in addition to those nutrients in Group C. The value of avoided health care is \$89.4 million per year (\$38.5 to 154.2 million) and including lost productivity increases this to \$382.2 million (\$112.0 to \$640.0 million) with 141 (68 to 236) premature deaths avoided. The total monetary value is \$1.8 billion (\$0.8 to \$3.0 billion).

Table A3.1Summary of Expected Annual Monetary Benefits of Labelling According to
each Proposed Group of Nutrients

Group (Options)	Benefits based on hospital utilisation only (HKS)	Benefits based on hospital utilisation,
Main Estimate	utilisation only (1113)	Gi tare and meditines (TIK3)
A (IV and VIII)	3,326,162	9,048,846
B (III and VII)	31,768,807	50,360,710
C (II and VI)	36,643,901	55,479,558
D (I and V)	52,296,026	89,416,059
Lower Estimate		
A (IV and VIII)	1,543,464	4,148,159
B (III and VII)	19,584,397	29,277,156
C (II and VI)	22,021,944	31,836,580
D (I and V)	25,715,555	38,468,032
Upper Estimate		
A (IV and VIII)	5,554,417	15,209,584
B (III and VII)	60,745,564	91,664,920
C (II and VI)	68,058,204	99,343,192
D (I and V)	93,258,231	154,211,883

Table A3.2Summary of Expected Annual Monetary Benefits of Labelling According to
each Proposed Group of Nutrients including Savings in Productivity and
Premature Deaths Avoided

Group (Options)	Benefits based on hospital utilisation, GP care, medicines and lost productivity (HK\$)	Premature deaths avoided	Total value (HK\$) including value* of premature deaths
Main Estimate			
A (IV and VIII)	43,458,026	11	151,587,957
B (III and VII)	129,110,178	93	1,059,188,451
C (II and VI)	143,539,944	107	1,214,779,785
D (I and V)	382,245,646	141	1,789,174,817
Lower Estimate			
A (IV and VIII)	18,157,827	5	70,801,104
B (III and VII)	68,088,379	52	589,092,617
C (II and VI)	75,303,261	59	666,888,285
D (I and V)	112,026,921	68	795,839,628
Upper Estimate			
A (IV and VIII)	75,539,727	18	252,875,734
B (III and VII)	229,976,215	161	1,841,452,257
C (II and VI)	251,620,864	182	2,074,839,259
D (I and V)	640,016,477	236	2,995,333,856

* Note: The dollar value of premature deaths is taken as HK\$10 million per premature death, irrespective of age at death. This value is based on an estimate from the World Health Organisation's Three European Cities study⁽²⁰⁾ on health impacts of air pollution which concluded after a thorough literature review that the value of 1.4 million euros was a feasible estimate and around a middle value of all worldwide estimates to date. The validity of this estimate as a value of a life in Hong Kong was assessed by a questionnaire survey to determine whether the local population would accept a value for avoiding a risk of death that would multiply up to give the same value as used in the European study (1.4 million euros = HK\$10 million at 1999 exchange rates) ⁽²¹⁾. This study showed that \$10 million was well within most local people's valuation of a life.

A3.5 WHAT IS NOT INCLUDED

Not included in these calculations are impacts on

- avoided loss of quality of life due to
 - fewer people suffering from diabetes, heart disease, strokes and other conditions which have a major impact on quality of life
 - \circ $\ \ \, \ \ \,$ fewer people suffering from obesity and its consequences on mental health
- avoided deaths largely contributed to by diabetes and osteoporosis, two nutrient-related conditions but which do not usually feature as a cause of death in death registrations
- costs of care and rehabilitation which take place outside hospitals except for those covered by the estimate translated from the UK (GP visits and medicines for some conditions)
- pre-packaged foods eaten outside the home which are not easily quantified; the estimate of the proportion of pre-packaged foods consumed may not cover this adequately.
- changed behaviour over and above the conservative estimates made based on the data available. A highly successful public awareness campaign eg about the benefits of reducing salt in the diet may have a bigger impact than that estimated here since local consumption of salt is currently relatively high.
- the impact of dietary fibre on colorectal cancer in order to avoid double counting with the impact of sugar on colorectal cancer since high sugar foods tend to be low in fibre.

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Appendix A

Relationship between Dietary Parameters and Health Outcomes

APPENIX A1 RELATIONSHIP BETWEEN DIETARY PARAMETERS AND HEALTH OUTCOMES

Data were obtained from a Medline search with key words including the section headings and, risk, morbidity, and mortality. Additionally the review of food and nutrition and cancer produced by the World Cancer Research Fund and the American Institute for Cancer Research (Food, nutrition and the prevention of cancer: a global perspective. Menasha, WI: Banta Book Group, 1997) was also used, as were the references this source included.

Energy

Much of the effects of increased energy intake on cardiovascular disease and cancer are mediated through the development of obesity, which is a risk factor for a wide range of conditions. Physical activity can help overcome the detrimental effects of high energy intake and has been shown to be protective for colon and possibly lung and breast cancer.⁽¹⁾

Energy intake has been directly reported to be associated with the risk of a range of cancers including breast and pancreatic cancers.⁽¹⁻³⁾ A multinational case control study found a clear dose dependent relationship between energy intake and the risk of pancreatic cancer with smoking-adjusted risk odds ratios increasing from 1.2, 1.2, 2.0, and 2.1 (95% CI 1.5-2.9) for increasing quintiles of intake.^(1,2) The increase in energy intake was attributed to an increase in carbohydrate intake. Through the effects of energy on body build and growth rate it has been related to breast, endometrial, kidney, colorectal, pancreatic, and gallbladder.

Carbohydrate

Carbohydrate is the major source of dietary energy in most populations, worldwide forming 50-80% of dietary energy in developing countries and 40-50% in developed populations. Carbohydrates are made up of starches, non-starch polysaccharides, which are the major component of dietary fibre, and sugars.

Cardiovascular disease risk

Dietary glycaemic index, which is an indicator of carbohydrate's ability to raise blood glucose levels, has been positively associated with risk of type 2 diabetes after adjustment for a range of dietary and demographic parameters.^(4,5) Comparing the highest and lowest quintiles, the relative risk of diabetes was 1.37 (95% CI 1.02-1.83). The combination of a high glycaemic load and a low cereal fibre intake further increased the risk of diabetes (RR = 2.17 (95% CI 1.04-4.54) when compared with a low glycaemic load and high cereal fibre intake.⁽⁴⁾

Cancer

Due to the complexities of carbohydrate and the differential effects of the different components of carbohydrate on cancer, it is not possible to describe

the relationship with carbohydrates generally. Please see the sections describing sugars and fibre.

Sugar

Refined sugars are an important component of the carbohydrate nutrient fraction, and proportionally are found in greater quantities in developed countries where foods are found to be increasingly refined.

Cardiovascular disease

Data from a limited number of relatively short-term studies suggest that replacing (added) sugar by low-energy sweeteners or by complex carbohydrates in an ad libitum diet might result in lower energy intake and reduced body weight.⁽⁶⁾ Please see the section on obesity for the impact of its reduction on the risk of cardiovascular disease and cancer.

Cancer

Refined sugar appears to have the opposite effect to dietary fibre in determining risk of cancer.

There is evidence to suggest that sugar intake may increase the risk of colorectal cancer with a two-fold increase in risk between those consuming 60g/d compared to those having none.⁽¹⁾ Dietary sugar may also increase the risk of pancreatic cancer, but the evidence is inadequate to determine causation.⁽¹⁾

Dietary fibre

Non-polysaccharide starches are the major component of dietary fibre.

Cardiovascular disease

Epidemiologic results have consistently demonstrated inverse associations between dietary fibre, especially cereal fibre and whole grain foods, and the development of CVD morbidity and mortality.⁽⁷⁾ After adjustment for demographics, BMI, and lifestyle factors, each 10 g/d increment of energy-adjusted and measurement error-corrected total dietary fibre was associated with a 14% (relative risk 0.86 (95% CI 0.78 - 0.96)) decrease in risk of all coronary events and a 27% (RR 0.73 (95% CI 0.61 - 0.87)) decrease in risk of coronary death.⁽⁸⁾ In part, the effects of dietary fibre on CVD risk factors will mediate this effect.

Similarly, moderate carbohydrate, high fibre diets compared to moderate carbohydrate, low fibre diets are associated with significantly lower postprandial plasma glucose, total and LDL-cholesterol, HDL-cholesterol, and triglycerides in diabetic subjects.⁽⁹⁾ High carbohydrate, high fibre diets compared to moderate carbohydrate, low fibre diets are associated with lower

fasting, postprandial and average plasma glucose; haemoglobin A1c; total, LDL-cholesterol, HDL-cholesterol and triglycerides. $^{(9)}$

A meta-analysis of 67 controlled trials found that soluble fibre (2-10 g/d) was associated with small but significant decreases in total cholesterol (-0.045 (95% CI -0.054, -0.035) mmol/L per g soluble fibre) and LDL-cholesterol (-0.057 (95% CI -0.070, -0.044) mmol/L per g soluble fibre, but not triglycerides and HDL-cholesterol.⁽¹⁰⁾ The effect is small within the practical range of intake. For example, 3 g soluble fibre from oats (3 servings of oatmeal, 28 g each) can decrease total and LDL-cholesterol by approximately 0.13 mmol/L.⁽¹⁰⁾ However, high fibre intakes protect from carbohydrate-induced hypertriglyceridaemia.⁽¹¹⁾

Cereal fibre after adjustment for a range of dietary and demographic parameters was inversely associated with risk of diabetes (RR = 0.70 (95% CI 0.51-0.96) for >8.1 g/d vs. <3.2 g/d).⁽⁴⁾ The combination of a high glycaemic load and a low cereal fibre intake further increased the risk of diabetes (RR = 2.17 (95% CI 1.04-4.54) when compared with a low glycaemic load and high cereal fibre intake.⁽⁴⁾

Cancer

Dietary fibre has been reported to decrease the risk of a number of cancers including colorectal, pancreatic, breast and possibly stomach.⁽¹⁾

For colorectal cancer a review of 5 controlled intervention studies suggested there was no evidence that intake of dietary fibre reduces the incidence or recurrence of adenomatous polyps within a 2-4 year period.⁽¹²⁾ However, the large European Prospective Investigation into Cancer and Nutrition (EPIC) found an inverse relationship between dietary fibre intake and incidence of large bowel cancer (adjusted relative risk 0.75 (95% CI 0.59 – 0.95) when comparing the upper and lower quintiles of intake (range 15-35g/d)).⁽¹³⁾ After further calibration with a more detailed dietary data, the adjusted relative risk reduction was strengthened 0.58 (95% CI 0.41 – 0.85).⁽¹³⁾

Dietary fibre, and non-starch polysaccharides appears to reduce the risk of prostate cancer. In a review of 5 case control studies increasing fibre reduced risk (energy and smoking-adjusted OR 1.0, 0.7, 0.6, 0.4 (95% CI 0.3-0.6) for increasing quintiles).⁽²⁾ It was suggested that the relationship may be a marker of fruit and vegetables consumption which also has been shown to reduce risk.⁽¹⁾

For breast cancer, a number of cohort and case control studies have suggested a weak protective effect of fibre.⁽¹⁾ The data is limited for stomach cancer but is consistent with a protective effect.⁽¹⁾

Sodium

Cardiovascular disease background

The INTERSALT study, which examined 24 hour urinary sodium excretion in 52 centres from around the world, clearly showed a positive correlation with blood pressures.⁽¹⁴⁾ In Hong Kong, the urinary sodium-to-creatinine ratio correlated with both systolic and diastolic blood pressures among older vegetarians,⁽¹⁵⁾ and hypertensive subjects have been shown to have significantly elevated plasma sodium levels.⁽¹⁶⁾

Cancer background

Additionally, diets high in salt and salt preservation of food may cause stomach mucosal damage that results in an inflammatory reparative response. The increased DNA synthesis and cell proliferation are sensitive to carcinogens, which may also have increased entry at the damaged area. These actions have been reported to underlie the relationship between salt intake and stomach cancer.⁽¹⁾ There was a significant correlation (r=0.7) between urinary sodium excretion and stomach cancer over 24 countries in the data from the INTERSALT study.⁽¹⁷⁾ A number of studies have reported significant associations for risk resulting from overall dietary salt intake (odds ratio range 2.1-5.0 for the highest intakes), and table salt (odds ratio range 1.6-6.2 for the highest intakes).⁽¹⁾

Interventions for cardiovascular disease

Given the ease of measurement of sodium, such as through measurement of urinary excretion means that the data for dietary modification of sodium is relatively easily assessed.

The average intake in the United States is approximately 150 mmol/d, which is equivalent to 3.5g of sodium, or 8.7 g of sodium chloride,⁽¹⁸⁾. In Hong Kong the population mean sodium intake was reported to be 4.8 and 4.5g of sodium per day (206mmol/d, or 11.9g salt/d, and 193mmol/d, or 11.9g salt/d) in males and females, respectively.⁽¹⁹⁾ The Dietary Approaches to Stop Hypertension (DASH) diet has directly assessed the effects on lowering sodium intake on blood pressure, and found that restriction of sodium intake significantly lowered blood pressure.⁽¹⁸⁾ Reducing the sodium intake from the high (150 mmol/d) to the intermediate (100 mmol/d) level reduced the systolic blood pressure by 2.1 and 1.3 mm for the control and DASH diet, respectively, and by a further 4.6 and 1.7 mm Hg when sodium intake was reduced to the low (50 mmol/d) level. These falls were observed in all subgroups. When comparing the high sodium control diet the low sodium level DASH diet reduced mean systolic blood pressure by 7.1 mm Hg in normotensive subjects and 11.5 mm Hg lower in participants with hypertension.

A Cochrane review of studies with a modest reduction in salt intake with a duration of at least 4 weeks found that a mean reduction in 24 hour urinary sodium excretion of 78 mmol/d (4.6 g salt/d) was associated with a reduction

in systolic and diastolic blood pressures of 5.0 (95% CI 4.2-5.8) and 2.7 (95% CI 2.3-3.2) mm Hg in hypertensive subjects.⁽²⁰⁾ In normotensive subjects a similar reduction in sodium levels was observed (74 mmol/d (4.4 g salt/d)) and associated with a fall in systolic and diastolic blood pressures of 2.0 (95% CI 1.5-2.6) and 1.0 (95% CI 0.6-1.4) mm Hg. Smaller reductions were observed in another Cochrane review of salt restriction in free-living healthy subjects with a duration of restriction of at least 6 months. Dietary sodium advice reduced sodium excretion by 35 (23.9-47.2) mmol/d and reduced systolic and diastolic blood pressures by 1.1 (95% CI 0.4-1.8) and 0.6 (-0.3-1.5) mm Hg, respectively. Additionally, in the TONE study, patients who received dietary advice, including weight loss advice, had their treatment withdrawn, and there was a significant reduction in the need to restart treatment in those on the low sodium diet (relative risk 0.83 (95% CI 0.75-0.92), ARR 14%, NNT 7).⁽²¹⁾

Dietary fat

Background

Fat is the most energy dense dietary constituent. Dietary fats are of animal and plant origins, and the source may differentially influence disease pathogenesis. The proportion of fat, and in particular animal, in fat diet rises with urbanisation and industrialisation from <15-30% in developing countries to 30->40% in developed countries.

Studies have shown that energy from dietary fat is less satiating than from carbohydrate, as such a high dietary fat/carbohydrate ratio promotes passive overconsumption, a positive energy balance and weight gain in susceptible individuals.⁽²²⁾ Additionally, fat is more readily absorbed and faecal energy loss is much lower with a high dietary fat/carbohydrate ratio.⁽²²⁾ Furthermore, carbohydrate is more thermogenic than fat and energy expenditure is lower during positive energy balance produced by a diet with a high fat/carbohydrate ratio than during positive energy balance produced by a diet with a high fat/carbohydrate ratio.⁽²²⁾ Restriction of dietary fat intake is associated with increased weight loss as described in the section describing the effects of a reduction in obesity.^(22,23)

Cardiovascular disease

Reduction or modification of dietary fat can improve total cholesterol levels.⁽²⁴⁾ A meta-analysis of 27 studies lasting at least 6 months found no significant effect on total mortality with a rate ratio of 0.98 (95% CI 0.86-1.12), and a trend towards protection form cardiovascular mortality with a rate ratio of 0.91 (95% CI 0.77-1.07), and significant protection from cardiovascular events (rate ratio 0.84 (95% CI 0.72-0.99). In studies lasting at least 2 years there were significant reductions in the rate of cardiovascular events and a suggestion of protection from total mortality.

Cancer

Total dietary fat has been linked with a possible increase in a number of cancers including lung, colorectal, breast and prostate cancer, with some evidence to suggest ovary, endometrial and bladder cancer risk may also be increased with total fat intake.⁽¹⁾

A number of reviews of the literature regarding the relationship between dietary fat and prostate cancer have been published with varying outcomes. ^(1,2,25) It was suggested that although ecological data suggest there is a relationship the findings from case control studies are mixed.⁽¹⁾ However, a recent review of 33 cohort and case control studies suggested that dietary fat may contribute to the development of prostate cancer, but did not produce a summary statistic of the strength of the relationship and suggested interventional studies are required.⁽²⁵⁾

Despite the heterogeneity in the findings describing the relationship between dietary total fat and lung cancer, fat has been described as a possible factor related with increased risk of lung cancer, although smoking is by far the strongest risk factor for this cancer.⁽¹⁾

Females in the highest compared to the lowest quintile of intake had a slight increased risk of breast cancer (RR 1.25 (95% CI 0.98 - 1.59). The increase was associated with intake of animal fat but not vegetable fat with the relative risk for the increasing quintiles of animal fat intake being 1.28, 1.37, 1.54, and 1.33 (95% CI 1.02 - 1.73).⁽²⁶⁾ Similarly, where the total energy intake was held constant pooled relative risks for an increment of 5% of energy for saturated were 1.09 (95% CI 1.00 - 1.19), for monounsaturated 0.93 (95% CI 0.84 - 1.03) and for polyunsaturated fat 1.05 (95% CI 0.96 - 1.16) compared with equivalent energy intake from carbohydrates.⁽²⁷⁾

Early case control and a number of ecological studies have suggested dietary fat intake increases the risk of colorectal cancer. However, a number of recent case control studies have suggested that the relationship is the result of increased calorie intake rather than a direct effect of fat, although the general consensus currently remains that fat increases risk. {1997 #4703; Kushi, 2002 #4343)

Saturated fat

Saturated fats are found in greater proportions in fats of animal origin, although these also contain unsaturated fats.

Cardiovascular disease

Dietary saturated fat intake has been shown to raise LDL-cholesterol.⁽⁵⁾ In the Nurse's Health Study, the relative risks for saturated fat after adjustment for age, and age and a range of demographic parameters were found to be 1.38 (95% CI 1.13 – 1.68), and 1.16 (95% CI 0.93 – 1.44), p for trend 0.04, indicating that saturated fat increases the risk of CHD.⁽²⁸⁾ Each increase of 5% of energy intake from saturated fat compared with equivalent energy intake from

carbohydrates, was associated with a 17% increase in the risk of CHD (relative risk 1.17 (95% CI 0.97 - 1.41). Furthermore, it has been estimated that replacement of 5% of energy from saturated fat with energy from unsaturated fats would reduce risk by 42% (0.58 (95% CI 0.44 – 0.77)).⁽²⁸⁾

Saturated fat intake has been shown to increase the risk of diabetes, whereas increased consumption of polyunsaturated fat intake has been shown to be protective. For example in the Nurse's Health Study the relative risk for diabetes was found to be 0.75 (95% CI 0.65-0.88) comparing the highest with lowest intake quintiles of polyunsaturated fat.⁽⁵⁾. The magnitude of the detrimental effect of saturated fat on diabetes was not reported. ⁽⁵⁾ The energy-adjusted dietary polyunsaturated:saturated fat ratio has been reported to be inversely associated with the risk of diabetes (odds ratio 0.84 (95% CI 0.75 - 0.94) per standard deviation change). Adjustment for a number of demographic characteristics attenuated the association (OR 0.88 (95% CI 0.78 - 0.99).⁽²⁹⁾

Cancer

Saturated fat has been shown to increase risk of developing a number of cancers including lung, colorectal, breast, endometrial, and prostate.⁽¹⁾ Although the magnitude of increased risk varies between studies there is a consistent relationship between increased risk of lung cancer and saturated fat intake.⁽¹⁾

Cholesterol

There is a continuous relationship between total cholesterol levels and CHD with no lower limit determined, although the relationship between cholesterol and stroke is less established. Please see the cardiovascular risk factor section for the impact of cholesterol on morbidity and mortality.

Cancer

Despite the heterogeneity in the findings describing the relationship between dietary cholesterol and lung cancer.⁽¹⁾ Similarly, there appears to be an increased risk with pancreatic cancer, although there is insufficient data as yet to attribute a role for cholesterol intake in increasing risk of endometrial cancer.⁽¹⁾

Protein

Protein intake generally varies between 10 and 18% of total energy intake in populations. Whereas in developing countries most protein is of plant origin, in developed countries most is of animal origin.

In patients with renal disease increased protein intake is associated with renal function deterioration. Renal disease is a major cause of morbidity and mortality in patients with diabetes, who are forming an increasing proportion of patients requiring renal dialysis. In meta-analyses of nondiabetic renal

disease, a low-protein diet significantly reduced the risk for renal failure or death (relative risk 0.67 (95% Cl 0.50 - 0.89)).⁽³⁰⁾ In type 1 diabetes, a low-protein diet significantly slowed the increase in urinary albumin level or the decline in glomerular filtration rate or creatinine clearance (relative risk 0.56 (Cl, 0.40 - 0.77)).⁽³⁰⁾ A similar effect is likely in patients with type 2 diabetes that form the majority of diabetic patients.

Although protein malnutrition is a major risk in poor developing countries, little information is available describing possible detrimental effects when taken in larger amounts. There is very limited evidence to suggest that protein intake increases the risk of breast cancer.⁽¹⁾

Calcium

Calcium is an essential bone mineral. Current recommended daily allowances of 800-1000 mg/d are being superseded by new guidelines that advocate higher daily intakes of up to 1500 mg/d.

Cardiovascular disease

24 hour dietary recall or food frequency questionnaire calcium levels have been shown to weakly correlate inversely with blood pressure,⁽³¹⁾ and calcium supplementation also showed a small improvement in systolic but not diastolic blood pressure. A meta-analysis of calcium supplementation during pregnancy found a reduction in the risk of pre-eclampsia with calcium supplementation (relative risk 0.35 (95% CI 0.20 - 0.60)). The effect was strongest in females at high risk of hypertension (relative risk 0.22 (95% CI 0.12 - 0.42), and those with low baseline calcium intake (relative risk 0.29 (95% CI 0.16 - 0.54).⁽³²⁾

Osteoporosis

Calcium plays an important role in the prevention and treatment of osteoporosis is well established, but the magnitude of the effect is less clear.

A meta-analysis of 16 studies examining the relationship between dietary calcium and hip fracture found an odds ratio of 0.96 (95% CI 0.93 - 0.99) per 300 mg/d increase in dietary calcium, the equivalent of a glass of milk.⁽³³⁾ The pooled OR across all 16 studies for 1000 mg of calcium/d, which is the typical amount in a calcium supplement, was 0.88 (95% CI 0.80 - 0.97).⁽³³⁾ As with all studies of nutrients, the true relation between dietary calcium and hip fracture risk is likely to be stronger than reported as dietary calcium intake is likely to be measured imperfectly in epidemiologic studies.⁽³³⁾

Calcium supplementation was more effective than placebo in reducing rates of bone loss after ≥two years of treatment with difference in percentage change from baseline being 2.05% (95% CI 0.24 - 3.86) for total body bone density, 1.66% (95% CI 0.92 - 2.39) for the lumbar spine at 2 years, 1.60% (95% CI 0.78 to 2.41) for the hip, and 1.91% (95% CI 0.33 - 3.50) for the distal radius.⁽³⁴⁾ The relative risk of fractures of the vertebrae was 0.79 (95% CI 0.54 - 1.09), and the relative risk for non-vertebral fractures was 0.86 (95% CI 0.43 - 1.72).⁽³⁴⁾

Cancer

For colorectal cancer a meta-analysis gave a summary statistic of 0.89 (0.79-1.01) suggesting a trend towards a weak protective effect.⁽¹⁾ A more recent review also suggested that dietary calcium supplementation is associated with a reduction in the recurrence of colorectal adenoma (Odds ratio 0.74 (95% CI 0.58-0.95)), although this finding was based on only 2 studies.⁽³⁵⁾ A large US cohort reported total calcium intake from diet and supplements was associated with slightly lower colorectal cancer risk (RR 0.87 (95% CI 0.67 -1.12), between the extreme quintiles, p for trend=0.02).⁽³⁶⁾ The association was strongest for calcium from supplements (RR 0.69 (95% CI 0.49 - 0.96) for \geq 500 mg/d vs none).⁽³⁶⁾ In the US Health Professionals Study an inverse association between higher total calcium intake (>1250 mg/d vs \leq 500 mg/d) and distal colon cancer was identified (RR 0.65 (95% CI 0.43 - 0.98), but not with proximal colon cancer.⁽³⁷⁾ In a recent meta-analysis calcium intake was inversely related to the risk of colorectal cancer. The relative risk for the highest versus the lowest quintile of intake was 0.86 (95% CI 0.78 - 0.95) for dietary calcium and 0.78 (95% CI 0.69 - 0.88) for total calcium (combining dietary and supplemental sources).⁽³⁸⁾

APPENIX A2 IMPACT OF MODULATION OF RISK FACTORS ON DISEASE MORBIDITY AND MORTALITY

Blood pressure

Elevated blood pressure is a major risk factor for stroke and coronary heart disease (CHD).

The relationship between blood pressure and stroke and CHD is observed over a wide range of blood pressures from as low as 115 and 70 mm Hg for systolic (SBP) and diastolic (DBP) blood pressures.⁽³⁹⁻⁴¹⁾ Prolonged differences in usual DBP of 5, 7.5, and 10 mm Hg were respectively associated with at least 34%, 46%, and 56% less stroke and at least 21%, 29%, and 37% less CHD.⁽³⁹⁾ These associations are about 60% greater than in previous uncorrected analyses.⁽³⁹⁾ At ages 40-69 years, each difference of 20 mm Hg usual SBP or, 10 mm Hg usual DBP is associated with \geq twofold increase in stroke mortality rates, and with twofold differences in the death rates from CHD.⁽⁴¹⁾ The proportional differences in vascular mortality are about half as extreme at ages 80-89 years as at ages 40-49 years, but the absolute differences in risk are greater in old age.⁽⁴¹⁾

Diastolic blood pressures values of \geq 80 mm Hg account for about 57% of all stroke deaths and about 24% of all coronary heart disease deaths in Eastern Asian populations.⁽⁴²⁾ Data from the Asia Pacific Cohort Studies Collaboration suggested that in the age groups <60, 60-69, and \geq 70 years, a 10 mmHg lower usual systolic blood pressure was associated with 54% (95% CI 53-56%), 36% (34-38%) and 25% (22-28%) lower stroke risk, and 46% (43-49%), 24% (21-28%) and 16% (13-20%) lower coronary heart disease risk, respectively.⁽⁴⁰⁾ It has been estimated that a population-wide reduction of either 2% lower diastolic blood pressure for all, or a targeted reduction of 7% lower diastolic blood pressure for those where the blood pressure is \geq 95 mm Hg would avert around 1 in 6 stroke deaths and about 1 in 20 coronary heart disease deaths.⁽⁴²⁾ Similarly, a population-wide reduction of 3 mm Hg in diastolic blood pressure decrease the number of strokes by about a third.⁽⁴³⁾ This intervention would save about 1 million deaths per year throughout Asia by 2020, with about half of those deaths averted in the People's Republic of China.(42)

About 20-30% of stroke in Chinese are of intracerebral haemorrhage origin, which is higher than that in Caucasian populations. ^(40,44,45) The relationship between blood pressure and haemorrhagic stroke is steeper than with atheromatous stroke.⁽⁴⁰⁾

Cholesterol

There is a continuous relationship between total cholesterol levels and CHD with no lower limit determined. The relationship between cholesterol and stroke is less established. In the Hong Kong 46 and 41% of the male and female adult population had elevated cholesterol levels (\geq 5.2 mmol/L).⁽⁴⁶⁾

A meta-analysis reported a decrease in incidence of ischaemic heart disease or mortality for a 0.6 mmol/l (about 10%) decrease in serum cholesterol concentration from cohort studies in men was associated with a decrease in incidence of CHD of 54% at age 40 years, 39% at age 50, 27% at 60, 20% at 70, and 19% at 80,⁽⁴⁷⁾ with a combined estimate of 27%, which is similar to the findings from interventional studies after a 5 year follow-up. The data in females is more limited but suggest a similar relationship.⁽⁴⁷⁾ Daily treatment with simvastatin reduced the rates of myocardial infarction, of stroke, and of revascularisation by about one-quarter, and by one-third after adjusting for non-compliance.⁽⁴⁸⁾ Among high-risk individuals, 5 years of treatment would prevent about 70-100 people per 1000 from suffering at least one major vascular event, and longer treatment should produce further benefit.⁽⁴⁸⁾

In Asian populations, a 0.6% decrease cholesterol concentrations, that which can be readily made by dietary modification,⁽⁴⁷⁾ led to a trend towards a decrease in risk of atheromatous stroke (odds ratio for 0.6 mmol/L decrease, 0.77 (0.57-1.06)) and an increase in risk of haemorrhagic stroke (1.27 [0.84-1.91]) ⁽⁴³⁾ There was no discernable interaction between diastolic blood pressure and cholesterol levels on the risk of stroke.⁽⁴³⁾

Triglycerides

As with total/LDL-cholesterol, triglyceride-rich lipoproteins have been identified in atheromatous lesions.⁽⁴⁹⁾ Hypertriglyceridaemia is a common feature of the metabolic syndrome, and promotes the development of the atherogenic small dense LDL particles.⁽⁵⁰⁾ In Hong Kong, 24.0 and 14.7% of the male and female population, respectively, have hypertriglyceridaemia.⁵¹

A meta-analysis of population-based studies found that a 1 mmol/L increase in triglyceride levels was associated with a 31 and 76% increase in CVD risk in males and females, respectively. After adjustment for a range of other cardiovascular risk factors the risk was reduced to 15 and 37%, respectively

Diabetes

The prevalence of diabetes is increasing worldwide. In Hong Kong the prevalence of hyperglycaemia, which includes impaired fasting glucose and diabetes, in the adult population is about 25%, with about 9-10% having diabetes.⁽⁵¹⁾ There is a clear age-related increase with the prevalence of hyperglycaemia in the elderly reaching about 50%, of whom half have diabetes.

Diabetic patients without CHD have a similar risk of having a myocardial infarction as those non-diabetic patients who have already had a infarction.⁽⁵²⁾ CVD is the cause of death for nearly two-thirds of all diabetic patients.⁽⁵³⁾ In non-diabetic patients pre-menopausal females have a lower risk of CVD compared to males, however in patients with diabetes this protective effect is lost.⁽⁵³⁾

In a meta-analysis, evaluation of studies that adjusted for other cardiac risk factors, the relative risk of CHD mortality from diabetes was 2.58 (95% CI 2.05-

3.26) for females and 1.85 (1.47-2.33) for males.⁽⁵⁴⁾ In Asian populations when fasting plasma glucose increased from 7.0 to 8.0 mmol/L (a 0.76 SD increase), the relative risk was estimated to be 1.14 (1.05–1.25) for all-cause mortality and 1.24 (1.10–1.39) for CVD mortality.⁽⁵⁵⁾ A similar 0.76 standard deviation increase in 2 hour post OGTT corresponded to an increase from 9 to 11.9 mmol/L, and lead to a relative risk of 1.29 (1.18–1.41) and 1.35 (1.19–1.54) for all-cause mortality and CVD mortality, respectively.⁽⁵⁵⁾ In Singapore, after adjustment for age, gender, ethnic group, and educational level, impaired fasting glucose or impaired glucose tolerance and diabetes were associated with increased mortality, with hazard ratios of 1.39 (95% CI 0.84-2.31) and 2.49 (95% CI 1.58-3.94), respectively.

Obesity

Obesity is a major cause of a wide range of chronic diseases ranging from cardiovascular disease to cancer.⁽⁵⁶⁾ The rapidly increasing prevalence of this condition has been responsible for worldwide increases in CVD risk factors. In Caucasians, overweight/obesity based on body mass index (BMI, weight (kg)/height (m)²) is classified as $\geq 25/30$ kg/m², and central obesity as a waist circumference of ≥88 or 102 cm in females and males, respectively. In Asian populations the relationship between increasing levels of adiposity and CVD risk has been reported to start at lower levels than in Caucasians.^(56,57) In part this may result from an increase in the proportion of body fat for a given BMI, with Chinese having significantly more fat.⁽⁵⁸⁾ This has led to the proposal from the WHO for lower cutoff criteria for Asian populations, namely 23/25 kg/m² for BMI-based overweight/obesity and for central adiposity, waist circumferences \geq 80 and 90 cm for females and males, respectively.⁽⁵⁶⁾ In Hong Kong, the prevalence for central obesity are 3.5 and 10.5% using the Caucasian criteria and 22.0 and 29.4% using the WHO Asian criteria for males and females.^(46,51) Using the BMI criteria, over half the adult Hong Kong population are overweight, with 38 and 34% of males and females being considered obese.^(46,57) Higher BMI was associated at all ages with higher plasma total and LDL-cholesterol and triglyceride and glucose levels, and lower HDL-cholesterol levels.^(46,51,57,59) In Chinese each increase in baseline BMI of 2 kg/m² was estimated to increase relative risk of CHD, total stroke and ischaemic stroke by 15.4%, 6.1% and 18.8%, respectively.⁽⁶⁰⁾ End stage renal disease was also clearly related to obesity, with cumulative incidences per 1000 screenees being 2.48, 3.79, 3.86, and 5.81 for BMI ranges <21.0, 21.0 to 23.1, 23.2 to 25.4, and \geq 25.5 kg/m², respectively.⁽⁶¹⁾ Obesity has also been reported to increase asthma.{Santillan, 2003 #4775) In Hispanics, BMI >30 kg/m² was a risk factor for asthma diagnosis in both men 2.5 (95% CI 1.1-5.9) and women 2.3 (95% CI 1.5-3.8).{Santillan, 2003 #4775) In the Nurse's Health Study, those with a BMI \ge 30.0 kg/m² compared to those between 20.0-22.4 kg/m² had a relative risk of 2.8 (95% CI 2.2-3.6), *P* for trend <0.001.{Camargo Jr, 1999 #4776}

In a systematic review of the literature for the UK Government Avnell et al described the impact of weight reduction in patients with a BMI \geq 28 kg/m² in clinical intervention and epidemiological studies.⁽²³⁾ At 12 months, intervention studies that assessed diets that are low in fat or are 600Kcal/d deficient were associated with significant reductions in body weight (-5.31 (95% CI -5.86 to -4.77) kg) compared to control populations.⁽²³⁾ Weight loss

after 24 months was still significantly lower than the controls, but the absolute difference was lower, although there were only 3 studies to evaluate (-2.35 (95% CI -3.56 to -1.15) kg).⁽²³⁾ There was no significant difference in the one study that compared the low fat diet and 600Kcal/d deficit diet. Low calorie diets significantly lowered body weight (-6.25 (95% CI -9.05 - -3.45) kg), and this tended to be greater that the low fat or 600Kcal/day deficit diets, but this finding was based on only two studies. The weight loss was associated with improvements in a range of CVD risk factors. For the low fat and 600Kcal/d deficit diet the changes in CVD were as follows, cholesterol (-0.21 (95% CI - 0.34 - -0.08) mmol/L, LDL-cholesterol (-0.13 (95% CI -0.26 - -0.00) mmol/L, HDL-cholesterol (0.06 (95% CI 0.03 - 0.09) mmol/L, triglycerides (-0.19 (95% CI -0.31 - -0.06) mmol/L, fasting glucose (-0.24 (95% CI -0.42 - -0.07) mmol/L, diastolic blood pressure (-3.44 (95% CI -4.86 - -2.01) mmol/L, and systolic blood pressure (-3.78 (95% CI -5.53 - -2.03) mmol/L.⁽²³⁾

A meta-analysis of 6 trials that assessed a weight-reducing diet versus a normal diet suggested weight loss in the range of 4% to 8% of body weight was associated with a decrease in the range of 3 mm Hg for systolic and diastolic blood pressure and may decrease dosage requirements of persons taking antihypertensive medications.⁽⁶²⁾

Other studies have reported more significant effects such as each kg of weight loss lowers blood pressure by 2.5 mm Hg (systolic) and 1.7 mm Hg (diastolic). Additionally antihypertensive medications could be reduced or discontinued in many patients with moderate weight loss.⁽⁶³⁾ Cholesterol has a significant positive linear relationship with weight change (r = 0.89) where change in weight explains about 80% of the cholesterol difference variation. A 10 kg of weight loss may result in an expected drop of 0.23 mmol/L in cholesterol for a person with obesity, which is about a 5% drop in mean cholesterol levels.⁽⁶⁴⁾ Patients lost an average of 35.3 kg in 25.6 weeks, which significantly decreased: fasting serum cholesterol, 15.1%; low density lipoprotein cholesterol, 17.0%; triglycerides, 14.2%; systolic blood pressure, 8.7%; and diastolic blood pressure, 10.2%. Changes in serum lipids and blood pressure significantly correlated with baseline values and with changes in BMI after adjustment for baseline values. Patients maintained an average of 19.7 kg of their weight loss at the 2-year follow-up.⁽⁶⁵⁾

Moderate weight loss in patients with type 2 diabetes has been reported to increase life expectancy, with a 1kg weight loss increasing survival by 3 to 4 months, and a 10 kg weight loss restoring 35% of the reduction in life expectancy.⁽⁶⁶⁾ The review of the epidemiological studies reduced all cause mortality by 20% irrespective of the magnitude of intentional weight loss.⁽²³⁾ In those with obesity and diabetes, intentional weight loss was associated with a relative risk of 0.75 (95% CI 0.67-0.84). Furthermore, diabetes-related mortality was also significantly reduced 0.7 (95% CI 0.6 – 0.9), as was CVD mortality 0.72 (95% CI 0.63 – 0.82).⁽²³⁾ The findings for cancer-related mortality were heterogeneous with reduced mortality in females (0.63 (95% CI 0.43 – 0.93)), but an increased risk in males (1.19 (95% CI 1.06 – 1.33)). Although the magnitude of the effect was not quantified in the review there were reductions in the prevalence of diabetes, improvements glucose and lipid levels, improved psychological well being and reduced sleep apnoea.⁽²³⁾

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Appendix B

Avoided Productivity Loss from Sick Leave Due to Selected Nutrient Groups

APPENDIX B AVOIDED PRODUCTIVITY LOSS FROM SICK LEAVE DUE TO SELECTED NUTRIENT GROUPS

Avoided Productivity Loss (HK\$)

Productivity loss from persons w	with DM who do not work	
	Labour force participation for persons age 15-64 in	
а	2000	3,331,800
b	Unemployed persons age 15-59	163,500
c=a-b	Employed persons age 15-64	3,168,300
d	Percentage of people under 65 with DM (ref. 17)	7.50%
e=cxd	Number of employed persons with DM	237,623
	Number of employed persons with severe DM	
f=ex0.81	(81%) (ref. 11)	192,474
	% complications of DM reduce employment (ref.	100/
g	11)	12%
h=fxg	work	23,097
	Number of employed persons with less severe DM	
i=ex0.19	(19%) (ref. 11)	45,148
j	% DM reduce employment (ref. 11)	3.50%
	Number of persons with less severe DM who do not	
k=ixj	work	1,580
l=h+k	Total number of persons with DM don't work	24,677
	Assume a person who does not work will lose	
m	One-yearmedian wage	\$120,000
	Productivity loss from persons with DM who do not	:
n=lxm	work at all	\$2,961,251,595
Productivity loss from persons w	with DM complications who work	
	Number of employed persons with severe DM (ref.	100 474
a		192,474
b	Minus number of persons with severe DM don't work	23 097
5	Number of employed persons with severe DM who	20,001
c=a-b	work	169,377
d = cx52/2*3.2	Applying the work-loss days (3.2 days per 2-week period) (ref. 11)	14.092.193
e	Multiply by median daily wage	\$329
-	Productivity loss from sick leave of persons with	
f=dxe	DM complications	\$4,633,049,707
g=n+f	Total sick leave productivity loss due to DM	\$7,594,301,302

Productivity loss from sick leave due to Diabetes Mellitus (DM)

ECONOMIC ANALYSIS AND BUSINESS FACILITATION UNIT
Avoided Productivity Loss (H	łK\$)		
Productivity loss due to CHE			
	Mortality from MI in UK (age 30-69) (ref. 22)	Per 100,000	
	Male	120	
	Female	44	
	Mortality from CHD in HK (age 35-64):		% of UK
	Male	24.5	20.44%
	Female	5.9	13.33%
	% of MI/CHD in HK:		
	Male	80.5%	
	Female	19.5%	
	Therefore, HK figure as a weighted		
	percentage of UK figure for males and		
	females combined	19.1%	
	UK total sick days for CHD	25,370,000	
	HK estimated sick days for CHD = UK		
	estimate x (6.8/55) million population x 19.1%	597,777	
	Multiply by median daily wage for males and		
	females	329	
	Total sick leave productivity loss due to		
	CHD	\$196,529,311	
Productivity loss due to Strol	Ke Mala		
		001	
a	Number of fatal strokes for male 15-64 in 2000	331	
b	Assume same number of non-fatal strokes	331	
1 00	Applying the friction period of 90 days in UK		
c=bx90	(refs. 9&10)	29,790	
d	Multiply by median daily wage (ref. 8)	\$395	
e=cxd	Total sick leave productivity loss for males	\$11,752,767	
	Fomalo		
	Number of fatal strokes for famale 15 64 in		
£		159	
1	A source source number of non-fotal strakes	152	
g	Assume same number of non-fatal strokes	152	
h	Applying the friction period of 90 days in UK	19.000	
n=gx90 ·	(refs. 9&10)	13,680	
1	Multiply by median daily wage (ref. 8)	\$289	
j=nxi	I otal sick leave productivity loss for females	\$3,957,830	
	Total cick loave productivity loss due to		
k-o i	i otal sick leave productivity loss due to	\$15 710 507	
n−c⊤j	SUCKE	913,/10,33/	

Appendix C

Number of Deaths by Age Group, Gender and Cause Estimated for the Hong Kong Population in 2000

APPENDIX C

NUMBER OF DEATHS BY AGE GROUP, GENDER AND CAUSE ESTIMATED FOR THE HONG KONG POPULATION IN 2000

	Death during working life	Premature death
	35-64	35-74
Male		
Diabetes (250)	69	149
Hypertension (401-405)	65	154
Stroke (430-438)	402	886
CHD (410-414)	368	941
Renal disease (580-589)	104	304
Endometrial cancer (179-180, 180)	0	0
Ovarian cancer (183)	0	0
Prostate cancer (185)	14	59
Gallstones (574)	2	2
Breast cancer (174)	0	0
Hip fracture (808, 820)	2	6
Colorectal cancer (153-154)	233	524
Female		
Diabetes (250)	38	154
Hypertension (401-405)	13	72
Stroke (430-438)	183	572
CHD (410-414)	88	412
Renal disease (580-589)	72	244
Endometrial cancer (179-180, 180)	92	162
Ovarian cancer (183)	67	103
Prostate cancer (185)	0	0
Gallstones (574)	0	1
Breast cancer (174)	237	305
Hip fracture (808, 820)	1	1
Colorectal cancer (153-154)	180	368

Note: The number of deaths for the Hong Kong population in 2000 were estimated by taking the proportion in each cause, age and sex category in the LIMOR dataset (80% of all deaths in 1998) and scaling up by cause, age and sex to the total number of deaths in 2000. The total number of deaths for males in 2000 was 14,651, for females was 19,081.

Annex B

International Review

B1.1 NUTRITION LABELLING REQUIREMENTS

Over 25 years ago, the Food and Drug Administration (FDA) initiated regulatory activities directed towards the development of regulations for nutrition labelling of food products. In 1973, FDA published the first regulations that required the nutrition labelling of certain foods: those with added nutrients and those for which a nutrition claim was made on the label, or in labelling or advertising. However, it was not until the 1990's that regulations promulgated under the authority of the Nutrition Labelling and Education Act of 1990 (NLEA) expanded mandatory nutrition labelling to virtually all foods regulated by FDA. The implementation and enforcement of the mandatory scheme started in August 1994. Nutritional information is required to be shown on packaged products as detailed in the food labelling regulations 101.9⁽¹⁾ and in *Figure B1.1*.

Figure B1.1 U.S. Nutrition Label Contents



Under the food labelling regulations Clause 101.9⁽²⁾, allowable claims made on food labels are defined clearly and the details are presented in the following sub-sections.

^(!) Please refer to the 101.9 of Government Printing Office access to food labelling regulations, Title 21 of the Code of Federal Regulations (21 CFR), <u>http://www.access.gpo.gov/nara/cfr/waisidx_04/21cfr101_04.html</u>

⁽²⁾ Please refer to the 101.9 of Government Printing Office access to food labelling regulations, Title 21 of the Code of Federal Regulations (21 CFR), http://www.access.gpo.gov/nara/cfr/waisidx_04/21cfr101_04.html

B1.1.1 Nutrient Content Claims⁽¹⁾

Nutrient		Free		Low		Reduced/Les	S S	Comments
General		Synonyms f "Free": "Zer "No", "Without", "Trivial Sou of", "Neglig Source of", "Dietarily Insignifican Source of" Definitions "Free" for meals and main dishes are the state values per labelled serving	for o", rce ible t for s ed	Synonyms "Low": "Little", ("Few" for Calories), "Contains Small Ame of", "Low Source of"	for a bunt	Synonyms for "Reduced/Less "Lower" ("Few for Calories) "Modified" ma be used in statement of identity Definitions for meals and mai dishes are sam as for individu foods on a per 100 g basis	s": er" y n e al	For "Free", "Very Low", or "Low", must indicate if food meets a definition without benefit of special processing, alteration, formulation or reformulation; eg "broccoli, a fat-free food" or "celery, a low calorie food"
Nutrient	F	ree	Lov	v	Red	uced/Less	Co	mments
Calories 21 CFR 101.60(b)	L ca re au p se N fc m	ess than 5 al per ofference mount and er labelled erving fot defined or meals or nain dishes	40 c per amo per refe amo sma Mea mai 120 per	al or less reference ount (and 50 g if rence ount is dll) als and n dishes: cal or less 100 g	At le calor refer than appr refer Refe may Calo Uses rathe	east 25% fewer ries per rence amount an ropriate rence food rence food not be "Low rie" term "Fewer" er than "Less"	"Li moo fat, lea am cal- be cal- per "Li dis for Fat indo me Fon Cal- ma pro cal-	ght" or "Lite": if 50% or re of the calories are from fat must be reduced by at st 50% per reference ount. If less than 50% of ories are from fat, fat must reduced at least 50% or ories reduced at least 1/3 reference amount ght" or "Lite" meal or main h product meets definition "Low Calorie" or "Low " meal and is labelled to licate which definition is t or dietary supplements: lorie claims can only be de when the reference oduct is greater than 40 ories per serving

(1) Please refer to 101.13, 101.54-69 of the Code of Federal Regulations for details regarding nutrient Content Claims, http://www.access.gpo.gov/nara/cfr/waisidx_04/21cfr101_04.html.

Nutrient	Free	Low	Reduced/Less	Comments
Total Fat 21 CFR 101.62(b)Less than 0.5 g per reference amount and per labelled serving (or for meals and main dishes, less than 0.5 g per labelled serving) No ingredient that is fat or understood to contain fat, except noted below. (*)		3 g or less per reference amount (and per 50 g if reference amount is small) Meals and main dishes: 3 g or less per 100 g and not more than 30% of calories from fat	At least 25% less fat per reference amount than an appropriate reference food Reference food may not be "Low Fat"	"% Fat Free": OK if meets the requirements for "Low Fat" 100% Fat Free: food must be "Fat Free" "Light"see above For dietary supplements: calorie claims cannot be made for products that are 40 calories or less per serving
Nutrient	Free	Low	Reduced/Less	Comments
Saturated Fat 21 CFR 101.62(c)	Less than 0.5 g saturated fat and less than 0.5 g tran fatty acids per reference amount and per labelled serving (or for meals and main dishes, less than 0. g saturated fat and less than 0.5 g tran fatty acids per labelled serving) No ingredient that is understood to contain saturated fat except as noted below ^(*)	1 g or less per reference amount and 15% or less of calories from saturated fat5Meals and main dishes: s51 g or less per 100 g and less than 10% of calories from saturated fat	At least 25% less saturated fat per reference amount than an appropriate reference food Reference food may not be "Low Saturated Fat"	Next to all saturated fat claims, must declare the amount of cholesterol if 2 mg or more per reference amount; and the amount of total fat if more than 3 g per reference amount (or 0.5 g or more of total fat for "Saturated Fat Free") For dietary supplements: saturated fat claims cannot be made for products that are 40 calories or less per serving
Nutrient	Free	Low	Reduced/Less	Comments
Cholestero 21 CFR 101.62(d)	I Less than 2 mg per reference amount and per labelled serving (or for meals and main dishes, less than 2 mg per labelled serving) No ingredient that contains cholesterol except as noted below ^(°) If less than 2 mg per reference amount by special processing and total fat exceeds 13 g per reference amount and labelled serving, the amount of cholesterol must be "Substantially Lose" (25%) than	20 mg or less per reference amount (and per 50 g of food if reference amount is small) If qualifies by special processing and total fat exceeds 13 g per reference and labelled serving, the amount of cholesterol must be "Substantially Less" (25%) than in a reference food with	At least 25% less cholesterol per reference amount than an appropriate reference food Reference food may not be "Low Cholesterol"	Cholesterol claims only allowed when food contains 2 g or less saturated fat per reference amount; or for meals and main dish productsper labelled serving size for "Free" claims or per 100 g for "Low" and "Reduced/Less" claims Must declare the amount of total fat next to cholesterol claim when fat exceeds 13 g per reference amount and labelled serving (or per 50 g of food if reference amount is small), or when the fat exceeds 19.5 g per labelled serving for

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	in a reference food with significant man share (5% of market)	significa market (5% of market) Meals a main di 20 mg o per 100	ant share nd shes: r less g	main dishes or 26 g for meal products For dietary supplements: cholesterol claims cannot be made for products that are 40 calories or less per serving
Nutrient	Free	Low	Reduced/Less	Comments
Sodium 21 CFR 101.61	Less than 5 mg per reference amount and per labelled serving (or for meals and main dishes, less than 5 mg per labelled serving No ingredient that is sodium chloride or generally understood to contain sodium except as noted below ^(†)	140 mg or less per reference amount (and per 50 g if reference amount is small) Meals and main dishes: 140 mg or less per 100g	At least 25% less sodium per reference amount than an appropriate reference food Reference food may not be "Low Sodium"	"Light" (for sodium reduced products): if food is "Low Calorie" and "Low Fat" and sodium is reduced by at least 50% "Light in Sodium": if sodium is reduced by at least 50% per reference amount. Entire term "Light in Sodium" must be used in same type, size, color & prominence. Light in Sodium for meals = "Low in Sodium" "Very Low Sodium": 35 mg or less per reference amount (and per 50 g if reference amount is small). For meals and main dishes: 35 mg or less per 100 g "Salt Free" must meet criterion for "Sodium Free" "No Salt Added" and "Unsalted" must conditions of use and must declare "This is Not A Sodium Free Food" on information panel if food is not "Sodium Free" "Lightly Salted": 50% less sodium than normally added to reference food and if not "Low Sodium", so labelled on information panel

Nutrient	Free	Low	Reduced/Less	Comments
Sugars 21 CFR 101.60(c)	"Sugar Free": Less than 0.5 g sugars per reference amount and per labelled serving (or for meals and main dishes, less than 0.5 g per labelled serving) No ingredient that is a sugar or generally understood to contain sugars except as noted below ^(*) Disclose calorie profile (eg "Low Calorie")	Not Defined. No basis for recommended intake	At least 25% less sugars per reference amount than an appropriate reference food May not use this claim on dietary supplements of vitamins and minerals	"No Added Sugars" and "Without Added Sugars" are allowed if no sugar or sugar containing ingredient is added during processing. State if food is not "Low" or "Reduced Calorie" The terms "Unsweetened" and "No Added Sweeteners" remain as factual statements Claims about reducing dental cares are implied health claims Does not include sugar alcohols

Note: * Except if the ingredient listed in the ingredient statement has an asterisk that refers to a footnote on the label that explains that the quantity of the ingredient is minimal (eg a footnote that states "* includes a trivial amount of fat").

"Reference Amount" = reference amount customarily consumed.

"Small Reference Amount" = reference amount of 30 g or less or 2 tablespoons or less (for dehydrated foods that are typically consumed when rehydrated with water or a diluent containing an insignificant amount, as defined in 21 CFR 101.9(f)(1), of all nutrients per reference amount, the per 50 g criterion refers to the prepared form of the food).

When levels exceed: 13 g Fat, 4 g Saturated Fat, 60 mg Cholesterol, and 480 mg Sodium per reference amount, per labelled serving or, for foods with small reference amounts, per 50 g, a disclosure statement is required as part of claim (eg "See nutrition information for____content" with the blank filled in with nutrient(s) that exceed the prescribed levels).

B1.1.2 Relative (or comparative) Claims

For all relative claims, percent (or fraction) of change and identity of reference food must be declared in immediate proximity to the most prominent claim. Quantitative comparison of the amount of the nutrient in the product per labelled serving with that in reference food must be declared on information panel.

For "Light" claims: Generally, percentage reduction for both fat and calories must be stated. An exception is that percentage reduction need not be specified for "low-fat" products. Quantitative comparisons must be stated for both fat and calories.

For claims characterizing the level of antioxidant nutrients in a food:

- an RDI must be established for each of the nutrients that are the subject of the claim;
- each nutrient must have existing scientific evidence of antioxidant activity and
- the level of each nutrient must be sufficient to meet the definition for "high," "good source," or "high potency" in 21 CFR 101.54(b),(c), or (e).

Beta-carotene may be the subject of an antioxidant claim when the level of vitamin A present as beta-carotene in the food is sufficient to qualify for the claim.

Reference Food	
"Light" or "Lite"	(1) A food representative of the type of food bearing the claim (eg average value of top three brands or representative value from valid data base), (2) Similar food (eg potato chips for potato chips), and (3) Not low-calorie <u>and</u> low-fat (except light-sodium foods which <u>must</u> be low- calorie & low-fat).
"Reduced" and "Added"(or Fortified" and "Enriched")	(1) An established regular product or average representative product, and (2) Similar food.
"More" and "Less" (or "Fewer")	(1) An established regular product or average representative product, and (2) A dissimilar food in the same product category which may be generally substituted for the labelled food (eg potato chips for pretzels) or a similar food.

Other Nutrient Content Claims			
"Lean"	On seafood or game meat that contains less than 10g total fat, 4.5g or less saturated fat, and less than 95mg cholesterol per reference amount and per 100g (for meals & main dishes, meets criteria per 100g and per labelled serving).		
"Extra Lean"	On seafood or game meat that contains less than 5g total fat, less than 2g saturated fat and less than 95mg cholesterol per reference amount and per 100g (for meals and main dishes, meets criteria per 100g and per labelled serving).		
High Potency	May be used on foods to describe individual vitamins or minerals that are present at 100% or more of the RDI per reference amount or on a multi- ingredient food product that contains 100% or more of the RDI for at least 2/3 of the vitamins and minerals with DV's and that are present in the product at 2% or more of the RDI (eg "High potency multivitamin, multimineral dietary supplement tablets").		
"High", "Rich In", or "Excellent Source Of"	Contains 20% or more of the Daily Value (DV) to describe protein, vitamins, minerals, dietary fiber, or potassium per reference amount. May be used on meals or main dishes to indicate that product contains a food that meets definition. May not be used for total carbohydrate.		
"Good Source of", "Contains" or "Provides"	10%-19% of the DV per reference amount. These terms may be used on meals or main dishes to indicate that product contains a food that meets definition. May not be used for total carbohydrate.		
"More", "Added", "Extra", or "Plus"	10% or more of the DV per reference amount. May only be used for vitamins, minerals, protein, dietary fiber, and potassium.		

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"Modified"	May be used in statement of identity that bears a relative claim (eg "Modified Fat Cheese Cake, contains 35% Less Fat than our Regular Cheese Cake.")
Any Fiber Claim	If food is not low in total fat, must state total fat in conjunction with claim such as "More Fiber".

B1.1.3 Structure/Function Claims

The regulatory procedures for structure/function claims are detailed in a separately in the Dietary Supplement Health and Education Act of 1994 (DSHEA)⁽¹⁾.

Health Claims

Not discussed in this report as this does not fall into the scope of this RIA $Study^{\scriptscriptstyle (2)}$.

Implied Claims

Claims about a food or ingredient that suggests that the nutrient or ingredient are absent or present in a certain amount or claims about a food that suggests a food may be useful in maintaining healthy dietary practices and which are made with an explicit claim (eg "healthy, contains 3 grams of fat") are implied claims and are prohibited unless provided for in a regulation by FDA. In addition, the Agency has devised a petition system whereby specific additional claims may be considered.

Claims that a food contains or is made with an ingredient that is known to contain a particular nutrient may be made if product is "Low" in or a "Good Source" of the nutrient associated with the claim (eg "good source of oat bran").

Equivalence claims: "contains as much [<u>nutrient</u>] as a [<u>food</u>]" may be made if both reference food and labelled food are a "Good Source" of a nutrient on a per serving basis. (eg "Contains as much vitamin C as an 8 ounce glass of orange juice").

The following label statements are generally not considered implied claims unless they are made in a nutrition context: 1) avoidance claims for religious, food intolerance, or other non-nutrition related reasons (eg "100% milk free"); 2) statements about non-nutritive substances (eg "no artificial colors"); 3) added value statements (eg "made with real butter"); 4) statements of identity (eg "corn oil" or "corn oil margarine"); and 5) special dietary statements made in compliance with a specific Part 105 provision.

⁽¹⁾ Source and details: <u>http://www.cfsan.fda.gov/~dms/labstruc.html</u>

⁽²⁾ Source and details: <u>http://www.cfsan.fda.gov/~dms/lab-ssa.html</u>

Claims on Foods for Infants and Children Less than 2 Years of Age

Nutrient content claims are not permitted on foods intended specifically for infants and children less than 2 years of age except:

- Claims describing the percentage of vitamins and minerals in a food in relation to a daily value.

- Claims on infant formulas provided for in Part 107.
- The terms "Unsweetened" and "Unsalted" as taste claims.
- "Sugar Free" and "No Added Sugar" claims on dietary supplements only.

Terms Covered That Are Not Nutrient Content Claims				
"Fresh"	"Fresh" A raw food that has not been frozen, heat processed, or otherwise preserved.			
"Fresh Frozen"	Food was quickly frozen while still fresh.			

B1.2 GENERAL IMPLEMENTATION

B1.2.1 Main Obstacles in Implementation

Three main obstacles in implementing the nutrition labelling scheme in the U.S. were noted:

Tight schedule

The Congress passed the Nutrition Labelling and Education Act of 1990 (NLEA) expanding mandatory nutrition labelling to virtually all foods regulated by FDA. The FDA was given the task to have the nutrition labelling regulations ready to be enforced in 1994.

Resistance from Industry

Rounds and rounds of meetings were conducted with trade associations and industry groups to reach the common ground especially on the definition of nutrient content claims and health claims.

Training of Field Investigators

30 FDA officials and thousands of district field investigators were trained in a couple of months to understand the 2,000-page law on nutrition labelling and be comfortable to carry out inspections at manufacturing facilities and port of entry.

B1.2.2 Tolerance Limits

The agency analyzes composites by appropriate methods found in the most recent edition of Official Methods of Analysis of AOAC International (AOAC International, Gaithersburg, MD, 16th edition, 1995, and yearly revisions/updates). The ratio between the nutrient level derived by analytical testing and the label value is calculated to determine whether the nutrient in question is in compliance with applicable regulations. The ratio is defined as:

(laboratory value / label value) x 100 = %

In order to evaluate the accuracy of nutrition label information against a standard for compliance purposes, FDA regulations define two nutrient classes (Class I and Class II) (21 CFR 101.9(g)(3)) and list a third group (Third Group) of nutrients (21 CFR 101.9(g)(5)). Class I nutrients are those added in fortified or fabricated foods. These nutrients are vitamins, minerals, protein, dietary fiber, or potassium. Class I nutrients must be present at 100% or more of the value declared on the label ; in other words, the nutrient content identified by the laboratory analysis must be at least equal to the label value.

Class II nutrients are vitamins, minerals, protein, total carbohydrate, dietary fiber, other carbohydrate, polyunsaturated and monounsaturated fat, or potassium that occur naturally in a food product. Class II nutrients must be present at 80% or more of the value declared on the label.

The Third Group nutrients include calories, sugars, total fat, saturated fat, cholesterol, and sodium. However, for products (eg fruit drinks, juices, and confectioneries) with a sugars content of 90 percent or more of total carbohydrate, to prevent labelling anomalies due in part to rounding, FDA treats total carbohydrate as a Third Group nutrient instead of a Class II nutrient. For foods with label declarations of Third Group nutrients, the ratio between the amount obtained by laboratory analysis and the amount declared on the product label in the Nutrition Facts panel must be 120% or less, ie the label is considered to be out of compliance if the nutrient content of a composite of the product is greater than 20% above the value declared on the label.

Reasonable excesses of class I and II nutrients above labelled amounts and reasonable deficiencies of the Third Group nutrients are usually considered acceptable by the agency within good manufacturing practices.

B1.2.3 Advice to the Regulators in Hong Kong

Their advice was to get the industry participated in discussions, get the investigators trained and get everybody informed early on.

B1.3 STAKEHOLDER ISSUES

B1.3.1 Resistance from Stakeholders

The main two areas of resistance from stakeholders were:

- The definition of various content claims/ health claims; and
- Implementation dates.

Local stakeholders were concerned with both areas, while overseas stakeholders paid more attention to implementation dates. Local stakeholders threatened the FDA that they would oppose the nutrition labelling regulation through the Congress but they did not do so at the end. Rounds and rounds of meetings were conducted with trade associations and industry groups to come to a common ground for both areas above. The implementation dates were delayed from May to August 1994 as a result of industry consultation.

B1.3.2 Assistance to Industry

A form of assistance stated in the NLEA was the exemption given to products manufactured, packed, or distributed by small businesses if no nutrition information is declared on the label.

Other assistance was mainly communication and training industry stakeholders to comply to the regulation, ie to let them understand what the regulation says, what they should do to comply and what the enforcement priorities were. These were done through workshops, meetings and newsletters.

They also sought help from the embassies to provide necessary assistance, to manufacturers, exporters or distributors from respective countries, eg communications and relabelling assistance.

B1.3.3 Advice to the Regulators in Hong Kong

Their advice was to ensure that that the legislation process is very transparent and the industry understand clearly what to expect. These can be done through rounds and rounds of meetings, trainings, newsletters and websites. Considering the high proportion of imported products in Hong Kong, they also suggested us asking the embassies to provide necessary assistance to manufacturers, exporters or distributors from respective countries.

B1.4 EXEMPTIONS

A product is exempt from nutrition labelling if no nutrition information is declared on the label or labelling, if no nutrient content claim or health claim is made and if the manufacturer/packer or distributor meets one or more of the following provisions:

1. Small Business Exemption based on value of gross sales (Note: after May 8, 1995, this exemption based on value of gross sales will apply only to retailers).

For foreign firms importing foods, this exemption is based on the total amount of sales to consumers in the United States. The product is exempt from nutrition labelling if the firm whose name appears on the label has annual gross sales of food to consumers of not more than \$50,000; or has total annual gross sales to consumers of not more than \$500,000 [101.9(j)(1)]

Sales in Food	Total Sales (Food & Non-food)	Status
US\$50,000 or less	US\$500,000 or less	Exempt
US\$50,000 or less	US\$500,001 or more	Exempt
US\$50,001 or more	US\$500,000 or less	Exempt
US\$50,001 or more	US\$500,001 or more	Not Exempt

2. Small Business Exemption for low volume food products based on the average number of full time equivalent employees (FTE's) and approximate units (of sale) of food products sold in the United States. The following is provided for your information, but only those products listed with the Office of Food Labelling are eligible for the exemption, (Note: a firm with less than 10 employees and less than 10,000 units does not have to apply to FDA for an exemption).

For products marketed prior to May 8, 1994, there are the following provisions:

- a. the effective date is delayed until May 8, 1995 providing that the firm had fewer than 300 FTE's and less than 600,000 units of the product sold between 5/8/93 and 5/7/94.
- b. the effective date is further delayed from May 8, 1995 until May 8, 1996 providing that the firm had fewer than 300 FTE's and less than 400,000 units of the product sold between 5/8/94 and 5/7/95.
- c. the effective date is further delayed from May 8, 1996 until May 8, 1997 providing the firm had fewer than 200 FTE's and less than 200,000 units of the product were sold between 5/8/95 and 5/7/96.
- d. the effective date is delayed after May 8, 1997 providing the firm had fewer than 100 FTE's and less than 100,000 units were sold in the previous year.

Products initially marketed after May 8, 1994 are exempt providing the firm has fewer than 100 FTE's and less than 100,000 units are projected for marketing in the first 12 months.

- 3. Foods served or sold in restaurants are exempt unless a claim is made on a label available to the consumer, (eg fat free salad dressing)[101.9(j)(2)(i)].
- 4. Foods served and sold for immediate consumption (eg schools, cafeterias, trains, airplanes, and retail stores, such as bakeries and deli's), where there are facilities for immediate consumption[101.9(j)(2)(ii)].
- 5. Foods that are not for immediate consumption, that are processed and prepared primarily in a retail establishment and not offered for sale outside that establishment (eg bakeries and deli's)[101.9(j)(3)].
- 6. Foods that are not for immediate consumption and are not processed or prepared on the premises, but are packaged and portioned on a consumers' request [101.9(j)(3)].

- 7. Foods that contain insignificant amounts of all nutrients required to be listed in nutrition labelling (eg coffee and most spices) [101.9(j)(4)].
- 8. Infant formula subject to the Infant Formula Act [101.9(j)(7)].
- 9. Dietary supplements of vitamins and minerals not in conventional food form [101.9(j)(6)]. NOTE: After July 1, 1995 these must comply with the requirements of 101.36.
- 10. Medical Foods [101.9(j)(8)].
- 11. Bulk foods for further manufacturing or repacking [101.9(j)(9)].
- 12. Raw fruits, vegetables, and fish (covered by voluntary program for display at retail level; however, when a claim is made, nutrition information must be displayed by the retailer) [101.9(j)(10)].

The key to the inclusion of fish in the voluntary program is the product, as sold to the consumer, is packaged at the retail establishment. In addition, raw shellfish, in or out of the shell is under the voluntary program; as is refrigerated or iced pasteurized crab meat that is not shelf-stable.

- 13. Custom processed fish and game meat [101.9(j)(11)(ii)]. All game meats may provide nutrition information on labelling.
- 14. Foods in packages with available label space of less than 12 square inches (eg pack of gum), provided that the label provides a means for consumers to obtain nutrition information (eg address, phone number). If a claim is made a nutrition label must be provided in accordance with 101.9(j)(13).
- 15. Food sold from bulk containers, provided that nutrition information is provided at point of sale [101.9(j)(16)].
- 16. Shell eggs packed in a carton that has a top lid designed to conform to the shape of the eggs are exempt from outer carton label requirements when the required information is presented inside the carton lid or in an insert. The agency does not object to presenting the required nutrition label inside the heading 3d of any egg carton [101.9(j)(14)].
- 17. Foods for infants and children less than 4 years of age. Nutrient names and quantitative amounts must be presented in two separate columns. Also percent Daily Values may only be listed for protein, vitamins and minerals. The footnote is prohibited [101.9(j)(5)(ii)].

Foods for infants and children less than 2 years of age: In addition to the referenced restrictions for children less than 4; foods intended for children less than 2 years of age may not list calories from fat, saturated fat, polyunsaturated fat, monounsaturated fat, and cholesterol in the nutrition label [101.9(j)(5)(i)].

Additional References to Foods for Infants and Children in this Guide: Refer to Nutrient Declaration 'Protein', 'Sodium', 'Simplified Format', and 'Nutrient Content Claims'. **18. Multi-unit packages** [101.9(j)(15)].

B1.4.1 Monitoring Exempted Products

For small business exemptions, FDA created small business database with product details and the company history. Field investigators can then retrieve the information at the office or at the port of entry to plan inspections.

B1.5 ENFORCEMENT

B1.5.1 At Manufacturing Facilities and Port of Entry

Inspections were conducted at manufacturing facilities for local products and the port of entry for imported goods. Field investigators visit about 80% of the local manufacturing facilities every year.

FDA analyzes food samples that have been randomly collected from food lots to determine compliance with labelling regulations. The agency defines a food lot as a collection of the same size, type and style of the food that is designated by a common container code or marking, or that constitutes a day's production. The sample for nutrient analysis shall consist of a composite of 12 subsamples (consumer units), taken 1 from each of 12 randomly chosen shipping cases. FDA will then analyze the nutrient content of this 1 composite test sample.

B1.5.2 At Retail Outlets

District investigators review the nutrition label panel of products to check compliance. Collection of samples can either be directly from the retail outlets or via contractors who buy the products from retail outlets and send them to the district office for inspection. In this case, the check only involves the inspection of the list of nutrients listed on the panel but not testing of nutrient contents at laboratories.

B1.5.3 Penalties

Penalties are detailed in Section 303 of the Federal Food, Drug, and Cosmetic Act. It applies to the non-compliance of nutrition labelling as well as other regulations in the Federal Food, Drug, and Cosmetic Act. Three levels of penalties are as follows:

- First level: A warning letter will be issued, allowing the company 15 days to respond to FDA about how they intend to comply to the nutrition labelling requirements.
- Second level: products with invalid labels will be ceased in the manufacturing facility (not retail outlets) by inspectors.
- Third level: maximum penalty being a court order against the firm and all production of the manufacturing facility will be ceased. This applies only

when public health hazards are associated. It is rarely applied to cases of only non-compliance to nutrition labelling requirements.

B1.6 EVALUATION OF THE SCHEME

Informal survey forms are given to investigators to ask for feedback regarding compliance. Constant feedback has also been received from the public in the form of petitions. Petitions involving a significant public health impact are into account and the nutrition labelling scheme have been constantly revised, for example the recent addition of Trans-fat in the Nutrition Panel.

B1.7 FUTURE PLANS

- Definition of claims for carbohydrates⁽¹⁾ (proposal due in early 2005);
- FDA obesity initiative (proposal due in early/mid 2005) including reference amount of serving size and nutrition information on calories;
- Mandatory Labelling of trans-fat (implementation, 1st January 2006);
- Definition of nutrition content claim for whole grain (ongoing/early 2005);
- Definition of qualified health claims (ongoing).

B1.8 SOURCES AND FURTHER READINGS

Resource Persons:

- Dr John W. Jones, Associate Director, Office of Constituent Operations, HFS-550. Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, 5100 Paint Branch Parkway, College Park, Maryland 20740, USA. Ph + 1-301-436-1709, Fax: +1-301-436-2618. John.Jones@cfsan.fda.gov
- 2. Ms Wanda Kelker, Team Leader, Compliance and Enforcement, Food Labelling and Standards Staff, Office of Nutritional Products, Labelling and Dietary Supplements, U.S. Food and Drug Administration, 5100 Paint Branch Parkway, College Park, Maryland 20740, USA. Ph+1-301-436-2371. wanda.kelker@cfsan.fda.gov
- FDA website: http://www.fda.gov/
- CFSAN website: http://www.cfsan.fda.gov/list.html
- Government Printing Office access to food labelling regulations in Title 21 of the Code of Federal Regulations (21 CFR) part 101: http://www.access.gpo.gov/nara/cfr/waisidx_04/21cfr101_04.html

⁽¹⁾ Note: Claims on carbohydrates are currently not allowed.

- Food Labelling and Nutrition: Overview and Recent Announcements: http://www.cfsan.fda.gov/label.html
- Food Label Education Tools and General Information: http://www.cfsan.fda.gov/~dms/lab-gen.html
- Consumer Nutrition and Health Information: http://www.cfsan.fda.gov/~dms/lab-cons.html
- Information for Industry: Food Labelling, Guidance and Regulations: http://www.cfsan.fda.gov/~dms/lab-ind.html

Various links included in Information for Industry:

- Food Labelling Guide: http://www.cfsan.fda.gov/~dms/flg-toc.html
- Labelling Questions and Answers: Volume #1: http://www.cfsan.fda.gov/~lrd/qa2.html
- Labelling Questions and Answers: Volume #2: http://www.cfsan.fda.gov/~frf/qaintro.html
- Small Business Food Labelling Exemption: http://www.cfsan.fda.gov/~dms/sbel.html
- FDA Nutrition Labelling Manual: http://www.cfsan.fda.gov/~dms/nutrguid.html
- FDA Federal Register Documents, Code of Federal Regulations, & Food Drug and Cosmetic Act: http://www.cfsan.fda.gov/~dms/reg-2.html
- Label Claims: http://www.cfsan.fda.gov/~dms/lab-hlth.html
- Specific Labelling Topics and Categories: http://www.cfsan.fda.gov/~dms/lab-hlth.html

Various links included in Specific Labelling Topics and Categories:

- Trans Fatty Acids in Nutrition Labelling, Nutrient Content Claims, and Health Claims Final Rule, July 11, 2003: http://www.cfsan.fda.gov/~lrd/fr03711a.html
- Information for Consumers: Trans Fat Now with Saturated Fat and Cholesterol on the Nutrition Facts Label: http://www.cfsan.fda.gov/~dms/transfat.html
- Guidance for Industry Food Labelling: Trans Fatty Acids in Nutrition Labelling, Nutrient Content Claims, and Health Claims - Small Entity Compliance Guide: http://www.cfsan.fda.gov/~dms/transgui.html
- Questions and Answers about Trans Fat Nutrition Labelling: http://www.cfsan.fda.gov/~dms/qatrans2.html

- Examples of Revised Nutrition Facts Panel Listing Trans Fat: http://www.cfsan.fda.gov/~dms/labtr.html
- Trans Fatty Acids in Nutrition Labelling: Consumer Research to Consider Nutrient Content and Health Claims and Possible Footnote or Disclosure Statements – Federal Register Advance Notice of Proposed Rulemaking July 11, 2003: http://www.cfsan.fda.gov/~lrd/fr03711b.html
- Additional Background Information on Trans Fatty Acids: http://www.cfsan.fda.gov/~dms/lab-cat2.html
- Search & Subject Index: http://www.cfsan.fda.gov/~dms/wsearch.html

B2 AUSTRALIA AND NEW ZEALAND

B2.1 NUTRITIONAL LABELLING REQUIREMENTS

The Australia New Zealand Food Standards Code is a cooperative arrangement between Australia, New Zealand, the Australian states and mainland territories with a view to develop and implement uniform food standards. The Code is adopted as the required standards for food products sold or prepared for sale in Australia and/or New Zealand; and/or imported into Australia and/or New Zealand under the following Acts:

Food Act 1981 (New Zealand)

Health Act 1911 (Western Australia)

Food Act 1992 (Australian Capital Territory)

Food Act 1981 (Queensland)

Food Act 1989 (New South Wales)

Food Act 1998 (Tasmania)

Food Act 1986 (Northern Territory)

Food Act 1984 (Northern Territory)

Food Act 1985 (South Australia)

Imported Food Control Act 1992 (Commonwealth)

In Australia, the Code is regulated by the *Australia New Zealand Food Authority Act 1991* (the ANZFA Act), and in New Zealand by food legislation in each state and territory. The ANZFA Act establishes the mechanisms for the development of joint food regulatory measures and creates the Australia New Zealand Food Authority as the agency responsible for the development and maintenance of a joint Australia New Zealand Food Standards Code.

The Code stipulates that general labelling is mandatory for:

- Foods that include a nutrition claim;
- Food for retail sale or catering purposes;
- Food not for retail sale or catering purposes; and
- Food as an intra company transfer.

Exemptions from the Code include:

- Infant formula products for which food standards have been otherwise regulated; and
- Other foods as specified by the Code.

The Code sets out nutrition labelling requirements for food that is required to be labelled. In addition, the Code prescribes nutrition information that must be provided, and the manner in which such information is provided.

A nutrition information panel shall include the following particulars:

- number of servings of the food in the package;
- average quantity of the food in a serving expressed, in the case of a solid or semi-solid food, in grams or, in the case of a beverage or other liquid food, in millilitres;
- unit quantity of the food;
- average energy content, expressed in kilojoules or both in kilojoules and in calories (kilocalories), of a serving of the food and of the unit quantity of the food;
- average quantity, expressed in grams of, protein, fat, saturated fat, carbohydrate and sugars, in a serving of the food and in a unit quantity of the food;
- average quantity, expressed in milligrams or both milligrams and millimoles, of sodium in a serving of the food and in the unit quantity of the food;
- name and the average quantity of any other nutrient or biologically active substance in respect of which a nutrition claim is made, expressed in grams, milligrams or micrograms or other units as appropriate, that is in a serving of the food and in the unit quantity of the food.

Unless otherwise prescribed in the Code, a nutrition label shall follow the format as shown in *Figure B2.1*.

Figure B2.1 Prescribed Declarations in a Nutrition Label

NU	NUTRITION INFORMATION					
Servings per package: (ins	ert number of servings)					
Serving size: g (or mL or o	ther units as appropriate)					
	Quantity per Serving	Quantity per 100g				
		(or 100mL)				
Energy	kJ (Cal)	kJ (Cal)				
Protein	G	g				
Fat, total	G	g				
- saturated	g	g				
Carbohydrate	G	g				
sugars	g	g				
Sodium	mg (mmol)	mg (mmol)				
(insert any other nutrient or biologically active substance to be declared)	g, mg, μg (or other units as appropriate)	g, mg, μg (or other units as appropriate)				

A nutrition label shall clearly indicate that the average quantities set out in the panel are average quantities, and any minimum and maximum quantities set out in the panel are minimum and maximum quantities.

A nutrition label shall also include declarations of the trans, polyunsaturated and monounsaturated fatty acids in accordance with the Code, where a nutrition claim is made in respect of: cholesterol; or saturated, trans, polyunsaturated or monounsaturated fatty acids; or omega-3, omega-6 or omega-9 fatty acids.

In addition, a nutrition label shall include a declaration of the presence or absence of dietary fibre in accordance with the Code, where a nutrition claim is made in respect of: fibre; or any specifically named fibre; or sugars; or any other type of carbohydrate.

Following on from above, the Code stipulates that a nutrition label shall adopt, as appropriate, the format as shown in *Figure B2.2*.

Figure B2.2 Example of Full Option Nutrition Label

NUTRITION INFORMATION

Servings per package: (insert number of servings) Serving size: g (or mL or other units as appropriate)

Serving size. g (or file of othe	Quantity per Serving	Quantity per 100g (or 100mL)
7		,
Energy	kJ (Cal)	kJ (Cal)
Protein, total	g	g
- *	g	g
Fat, total	g	g
- saturated	g	g
- *	g	g
- trans	g	g
- *	g	g
- polyunsaturated	g	g
- *	g	g
- monounsaturated	g	g
- *	g	g
Cholostorol	ma	ma
Cholesteror	IIIg	ing
Carbohydrate	g	g
- sugars	g	g
- *	g	g
- *	g	g
- *	g	g
Distance Characteria		
Dietary fibre, total	g	g
- *	g	g
Sodium	mg (mmol)	mg (mmol)
(insert any other nutrient or biologically active substance to be declared)	g, mg, μg (or other units as appropriate)	g, mg, μg (or other units as appropriate)

B2.2 GENERAL IMPLEMENTATION

B2.2.1 Main Obstacles in Implementation

The main concerns regarding the implementation of mandatory nutrition labelling in Australia and New Zealand were raised primarily by food industry groups, and were based on the costs of compliance and labelling and lack of relevance of the information for many foods. It was also argued that food composition data are unreliable and inadequate for industry, and therefore will force them to analyze their products. FSANZ introduced a two-year transitional period for the implementation of mandatory nutrition labelling to allow manufacturers sufficient time to make label changes. In this way many of the costs would be no more than those borne by manufacturers in the normal course of business as labels are changed over time. FSANZ also introduced 'stock-in-trade' provisions in September 2002. Under these provisions, food with a shelf life of more than 12 months (long shelf-life food products), that were manufactured and packaged prior to 20 December 2002 in compliance with applicable food standards at the time, can continue to be lawfully sold until 20 December 2004.

In addition, FSANZ has developed a web-based Nutrition Panel Calculator (NPC) to provide food manufacturers with the ability to readily calculate the average nutrient content of their food products and to prepare a nutrition information panel (NIP) as required under Standard 1.2.8 of the Code.

B2.2.2 Tolerance Limits

The Australian New Zealand Food Standards Code does not specify the tolerance levels for nutrients. Nutrients are expressed as average quantities. Average quantity is defined as: average quantity in relation to a substance in a food is the quantity determined from one or more of the following:

- the manufacturer's analysis of the food;
- calculation from the actual or average quantity of nutrients in the ingredients used; or
- calculation from generally accepted data.

which best represents the quantity of the substance that the food contains, allowing for seasonal variability and other known factors that could cause actual values to vary.

B2.2.3 Advice to regulators in Hong Kong

FSANZ's advice to regulators in Hong Kong would be to establish a set of core principles, undertake appropriate consultation and ensure processes are transparent.

B2.3 STAKEHOLDER ISSUES

B2.3.1 Resistance from Stakeholders

The specific areas that met with resistance from stakeholders included issues around exemptions and the prescribed format for the declaration of nutrients in the NIP.

Specifically in relation to exemptions, FSANZ received representations from the meat industry and Members of Parliament regarding the requirement for nutrition labelling on packaged composite meat products, such as sausages and schnitzels. Whereas meat is exempt from NIP labelling, composite meat products are not, as they contain additional ingredients and therefore do not meet the criteria developed by FSANZ for exemptions. Manufacturers claimed that NIP labelling was excessively costly and burdensome as they would need to have laboratory analysis undertaken of each batch of composite meat product supplied for sale.

The requirement for nutrients to be displayed in a prescribed order in the NIP has also been raised as an issue by an enforcement agency. This issue is currently the subject of an application to amend the Code to allow for greater flexibility in the order of nutrients and in the ordering of the 'per serve' and 'per 100g' columns. The Applicant has indicated that several imported foods do not comply with the prescriptive requirements in Standard 1.2.8, although they do provide similar information, with slight differences in the presentation of the information.

In terms of the exemptions sought for composite meat products, FSANZ confirmed its original view that such products should not be exempt from nutrition labelling. One of the key principles of mandatory nutrition labelling is to provide standardised nutrition information on as many foods as possible to enable consumers to make informed choices about foods. Therefore to grant exemptions for composite meat products would undermine this principle and would also be inequitable in terms of other composite products that are required to have NIPs.

B2.3.2 Assistance to Industry

To assist industry with nutrition labelling, FSANZ has developed an automatic Nutrition Panel Calculator (NPC) which is available on the FSANZ website, free of charge, and this allows a NIP to be generated for a wide range of products.

In terms of the prescribed order of nutrients in the NIP, this application is still being considered by FSANZ. Whilst we are unable to pre-empt the outcomes of this process, it is pertinent to note that the existing requirements in the Code are based on the outcomes of consumer research conducted by FSANZ and internationally that shows that the consistency of format is essential to facilitate both the use of information and comparison of products. A more recent quantitative consumer survey commissioned by FSANZ in 2003 has confirmed the importance to consumers of consistency in nutrient order, column order, specific wording and label format.

B2.3.3 Advice to the Regulators in Hong Kong

FSANZ's advice to regulators in Hong Kong would be to establish a set of core principles, undertake appropriate consultation and ensure processes are transparent. FSANZ is not aware of any significant differences in perceptions between local producers, overseas manufacturers and importers.

B2.4 EXEMPTIONS

There are a number of specific exemptions to the requirement for foods to bear a nutrition information panel (NIP). These exemptions are listed in clause 3, Standard 1.2.8 in the Code. The exemptions are based on the following criteria established during the development of the Code:

The information is unlikely to be of use and/or used by the consumer. For example, the absence of nutrition information would not affect the nutrient composition of a recipe or add a significant nutrient contribution to the diet;

It is not practical for the producer/manufacturer to provide this information. For example, the product is not standardised and the ingredients and ingoing weights could change on a daily basis; and

The product is one of the following items - fruit, vegetables, meat, poultry or fish. These products are exempt because they are single ingredient foods, there are difficulties in reliably analysing and declaring such items and general nutrition information about them is more readily known.

In addition to these specific criteria, under subclause 2(1) Standard 1.2.1 in the Code there are certain circumstances where a food is exempt from bearing a label, and therefore is exempt from the requirement to bear a NIP.

Any exemptions to nutrition labelling do not apply if a nutrition claim is made.

B2.4.1 Monitoring the Exempted Products

FSANZ has developed a monitoring and evaluation strategy, which provides quantitative and qualitative information about the impact of the new Code, how well the regulatory arrangements are working, and the level of monitoring and enforcement activity. As part of this strategy, a label monitoring survey was initiated with the intention of developing an ongoing monitoring system for food labels.

Findings from the survey indicate that of the 448 labels fully assessed, 72% (320 labels) required a NIP. 28% of labels were not required to provide a NIP and of these, approximately one third (39 labels) voluntarily provided a NIP. The research also showed that whilst there was a high level of consistency with the Code in terms of ingredient labelling, NIP labelling had a low level of consistency, particularly in relation to the prescribed format (ie case, layout, punctuation and wording). Inconsistency with respect to NIP labelling requirements accounted for 94% of the 383 inconsistent labels.

Many of the exemptions identified in clause 3, Standard 1.2.8 are very specific. There is therefore a risk that FSANZ will continue to receive applications from the food industry for further exemptions to nutrition labelling and for specific products, providing they are consistent with the criteria developed by FSANZ for exemptions. Since the initial introduction of the Code in December 2000, FSANZ has already amended the list of exemptions in response to a request from industry and has also received requests from the food industry for exemptions for a number of other products including honey, nuts and legumes, mixed herbs and spices and baking powder.

A further problem is that currently there are no definitions included in Standard 1.2.8 that clearly articulate which products are exempt. For example, Standard 1.2.8 exempts 'fruit, vegetables, meat, poultry and fish that comprise a single ingredient or category of ingredients'. However, there is nothing to indicate which specific products are captured by 'fruit, meat, poultry and fish'. The commodity standards in the Code do provide definitions on products captured by 'meat', 'poultry', 'fish' and 'fruit and vegetables', however, the definition of 'fruit and vegetables' in the commodity standard does not necessarily apply to the exemptions to nutrition labelling in Standard 1.2.8.

Given these problems, FSANZ is planning to raise a proposal to review this issue of exemptions and exemption categories for nutrition labelling.

B2.4.2 Advice to the Regulators in Hong Kong

FSANZ's advice to regulators in Hong Kong would be to ensure that the rationale for establishing exemptions to nutrition labelling is clearly identified to ensure that there is no ambiguity. It is also important to ensure that stakeholders are adequately consulted and that processes are transparent.

B2.5 ENFORCEMENT

In Australia, food standards are enforced by the states and territories, usually their Health or Human Services Departments, or, in some cases, by local government. Crown Public Health Officers (CPHO) enforce food standards in New Zealand. In relation to imported foods, enforcement of the Code is undertaken by the Australian Quarantine and Inspection Service (AQIS). The relevant contact details on the FSANZ website can be found at the following address:

http://www.foodstandards.gov.au/assistanceforindustry/contactslist.cfm

Baseline qualitative research conducted with stakeholders (including enforcement agencies) in 2002 and commissioned by FSANZ, indicates that food safety issues assume a greater priority than labelling. Consequently enforcement of nutrition labelling is likely to assume a low priority, particularly when considered in the context of the low priority of labelling overall, however we believe that in future, labelling will assume a higher priority.

B2.6 SOURCES AND FURTHER READINGS

 Resource person: Dean Stockwell, General Manager - New Zealand Office, Food Standards Australia New Zealand, Wellington, New Zealand. Ph + 64 (4) 474 0631, Mobile +64 (21) 513 232, Fax +64 (4) 473 9855, dean.stockwell@foodstandards.govt.nz

- Food Standards Australia New Zealand's website: <u>http://www.foodstandards.gov.au/</u>
- A general quantitative survey that contains some information on how consumers use nutrition information on food labels:
 <u>http://www.foodstandards.gov.au/mediareleasespublications/publications/foodlabell</u>
 <u>ingissuesquantitativeresearchconsumersjune2003/index.cfm</u>.
- A qualitative consumer study on nutrition content claims on food labels: <u>http://www.foodstandards.gov.au/mediareleasespublications/publications/consume</u> <u>rstudyrelatedtonutritioncontentclaimsjuly2003/index.cfm</u>.

B3.1 NUTRITIONAL LABELLING REQUIREMENTS

In Article 31of Health Promotion Law, any person who wishes to provide nutrition labelling or any person who wishes to import foods for sale in Japan with nutrition labelling shall provide such labels in accordance with the nutrition labelling standards set by Minister of Health, Labour and Welfare (hereinafter referred to simply as "nutrition labelling standards").

Under the Health Promotion Law, the definition of "nutrients" is limited to the substances designated by Ministry of Health, Labour and Welfare or calories.

In addition, the requirement as it applies to imported food excludes foods for which approvals, as stipulated in Paragragh 1 of Article 29, have been obtained.

However, conformance to the standards is not required when nutrition labelling is made on objects other than the container/package and the attached document of the food (excluding Food for Special Dietary Uses) for sale, and shall not apply to the other cases designated by the government ordinance.

Generally, those who wish to make a claim or label about energy or a particular nutrient under the *Health Promotion Law* shall indicate the quantities of the following nutrients on the label:

- Calorie;
- Protein;
- Fat;
- Carbohydrates (or sugars and dietary fibres); and
- Sodium.

If one or more of the nutrients listed below are claimed, it is mandatory to display nutrition information of nutrients that have been used in claims or mentioned on labels.

- Minerals: Calcium, Iron, Potassium, Phosphorus, Magnesium, Zinc, Copper, Manganese, Iodine, Selenium, Chrome.
- Vitamins: A, B₁, B₂, B₆, B₁₂, C, D, E, K, Folic acid, Pantothenic acid, Biotin.

Nutrition information shall be presented in Japanese on its containers or package in a manner that is easily readable. There is a mandatory requirement for the presentation of nutrition labelling. The amount of each nutrient shall be indicated per 100g or 100ml, or per serving, per package, or per other appropriate unit. The amount shall be expressed in the following corresponding unit:

- Calorie: kilocalorie (kcal)
- Protein: gram (g)
- Fat: gram (g)
- Carbohydrates: gram (g)
- Minerals Calcium, Iron and Sodium: milligram (mg). If 1,000mg or more of sodium is indicated, gram (g) can be used.
- Vitamins A and D: microgram (μ g) or international unit. Niacin, Pantothenic acid, Vitamins B₁, B₂, B₆, C, E: milligram (mg). Biotin, Vitamin B₁₂ and Folic acid: microgram (μ g).

Foods with a particular calorie or nutrition claim intended for sale are required to declare the amount of that particular nutrient together with the principle nutrients and calorie level of the food. In addition, when making a qualitative claim using term **high** or **low** for a particular nutrient, it is a requirement to observe the corresponding standards established by the Minister of Health, Labour and Welfare.

B3.2 DEFINITION OF CLAIMS

B3.2.1 Claim using the term "high," "source of," or "fortified"

Target nutrients: Protein, Dietary fibers, Zinc, Calcium, Iron, Copper, Magnesium, Niacin, Pantothenic acid, Biotin, Vitamin A, Vitamin B1, Vitamin B2, Vitamin B6, Vitamin B12, Vitamin C, Vitamin D, Vitamin E, and Folic acid.

For the above-mentioned target nutrients:

- A food bearing the claim "high" or "rich" must contain the given level or more of the nutrient as shown in *Table B3.1.*
- A food bearing the claim "source of a nutrient" or "containing a nutrient" must contain the given level or more of the nutrient as shown in *Table B3.2*.

For the above-mentioned target nutrients, a food bearing the claim that a specific nutrient is fortified to a certain level as compared with the reference food must satisfy the following requirements:

- The reference food must be indicated, and
- The fortified level must be the given level or more as shown in *Table B3.2*.

Table B3.1Claim using the term, "high" or "rich"

Nutrient	Minimum level
Protein	12 g/100 g (solid), 6 g/100ml (liquid), 6 g/100kcal
Dietary fiber	6 g/100 g (solid), 3 g/100ml (liquid), 3 g/100kcal
Zinc	3 mg/100 g (solid), 1.5 mg/100 ml (liquid), 1 mg/100 kcal
Calcium	210 mg/100 g (solid), 105 mg/100 ml (liquid), 70 mg/100 kcal
Iron	3.6 mg/100 g (solid), 1.8 mg/100 ml (liquid), 1.2 mg/100 kcal
Copper	0.5 mg/100 g (solid), 0.25 mg/100 ml (liquid), 0.18 mg/100 kcal
Magnesium	75 mg/100 g (solid), 38 mg/100 ml (liquid), 25 mg/100 kcal
Niacin	4.5 mg/100 g (solid), 2.3 mg/100 ml (liquid), 1.5 mg/100 kcal
Pantothenic acid	1.50 g/100 g (solid), 0.75 g/100 ml (liquid), 0.50 g/100 kcal
Biotin	9.0 μg/100 g (solid), 4.5 μg/100ml (liquid), 3.0 μg/100 kcal
Vitamin A	162 μg/100 g (solid), 81 μg/100 ml (liquid), 54 μg/100 kcal
Vitamin B ₁	0.30 mg/100 g (solid), 0.15 mg/100 ml (liquid), 0.10 mg/100 kcal
Vitamin B ₂	0.33 mg/100 g (solid), 0.17 mg/100 ml (liquid), 0.11 mg/100 kcal
Vitamin B ₆	0.45 mg/100g (solid), 0.23 mg/100 ml (liquid), 0.15 mg/100 kcal
Vitamin B ₁₂	0.72 μg/100 g (solid), 0.36 μg/100 ml (liquid), 0.24 μg/100 kcal
Vitamin C	30 mg/100 g (solid), 15 mg/100 ml (liquid), 10 mg/100 kcal
Vitamin D	$0.75~\mu g/100~g$ (solid), $0.38~\mu g/100~ml$ (liquid), $0.25~\mu g/100~kcal$

Table B3.2Claim using the term, "containing" or "source of," or "fortified"

Nutrient	Minimum level
Protein	6 g/100 g (solid), 3 g/100ml (liquid), 3 g/100 kcal
Dietary fiber	3 g/100 g (solid), 1.5 g/100 ml (liquid), 1.5 g/100 kcal
Zinc	1.5 mg/100 g (solid), 0.8 mg/100 ml (liquid), 0.5 mg/100 kcal
Calcium	105 mg/100 g (solid), 53 mg/100 ml (liquid), 35 mg/100 kcal
Iron	1.8 mg/100 g (solid), 0.9 mg/100 ml (liquid), 0.6 mg/100 kcal
Copper	0.27 mg/100 g (solid), $0.14 mg/100 ml$ (liquid), $0.09 mg/100 kcal$
Magnesium	38 mg/100 g (solid), 19 mg/100 ml (liquid), 13 mg/100 kcal
Niacin	2.3 mg/100 g (solid), 1.1 mg/100 ml (liquid), 0.8 mg/100 kcal
Pantothenic acid	0.75 g/100 g (solid), 0.38 g/100 ml (liquid), 0.25 g/100 kcal
Biotin	$4.5 \mu g/100 g$ (solid), $2.3 \mu g/100 ml$ (liquid), $1.5 \mu g/100 kcal$
Vitamin A	81 μg/100 g (solid), 41 μg/100 ml (liquid), 27 μg/100 kcal
Vitamin B ₁	0.15 mg/100 g (solid), 0.08 mg/100 ml (liquid), 0.05 mg/100 kcal
Vitamin B ₂	0.17 mg/100 g (solid), 0.09 mg/100 ml (liquid), 0.06 mg/100 kcal
Vitamin B ₆	0.23 mg/100 g (solid), 0.11 mg/100 ml (liquid), 0.08 mg/100 kcal
Vitamin B ₁₂	0.36 μg/100 g (solid), 0.18 μg/100 ml (liquid), 0.12 μg/100 kcal
Vitamin C	15mg/100g (solid), 8mg/100ml (liquid), 5mg/100kcal
Vitamin D	0.38 μg/100 g (solid), 0.19 μg/100 ml (liquid), 0.13 μg/100 kcal
Vitamin E	1.5 mg/100 g (solid), 0.8 mg/100 ml (liquid), 0.5 mg/100 kcal
Folic acid	30 $\mu g/100$ g (solid), 15 $\mu g/100$ ml (liquid), 10 $\mu g/100$ kcal

B3.2.2 Claim using the term "non," "free" or "zero," or "low" or "reduced"

Target nutrients: Calorie Fat, Saturated fatty acid, Cholesterol, Sugars (monosaccharides and disaccharides only, except sugar alcohols), and Sodium.

For the above-mentioned target nutrients:

- A food bearing the claim "non," "free," or "zero" must contain the given level or less of the nutrient as shown in *Table B3.3.*
- A food bearing the claim "low" or "light" must contain the given level or less of the nutrient as shown in *Table B3.4.*

Table B3.3Claim using the term, "free," "zero," or "non"

Item	Maximum level
Energy	5 kcal/100 g or 100 ml
Fat	0.5 g/100 g or 100 ml
Saturated fatty acid	0.1 g/100 g or 100 ml
Cholesterol	5 mg/100 g or 100 ml*, 1.5 g saturated fatty acid/100 g (solid) or 0.75 g $$
	saturated fatty acid/100 ml (liquid), and Energy derived from saturated
	fatty acid: 10% of the total energy
Sugars	0.5 g/100 g or 100 ml
Sodium	5 mg/100 g or 10 0ml

Table B3.4Claim using the term, "low," "light" or "less," or "reduced" or "cut off"

Item	Maximum level (or reduced level)	
Energy	40 kcal/100 g (solid) or 20 kcal/100 ml (liquid)	
Fat	3 g/100 g (solid) or 1.5 g/100 ml (liquid)	
Saturated fatty	1.5 g/100 g (solid) or 0.75 g/100 ml (liquid) and	
acid	Energy derived from saturated fatty acid: 10% of the total energy	
Cholesterol	20 mg/100 g (solid) or 10 mg/100 ml (liquid)	
	1.5 g saturated fatty acid/100 g (solid) or 0.75 g saturated fatty acid/100 ml	
	(liquid), and	
	Energy derived from saturated fatty acid: 10% of the total energy	
Sugars	5 g/100 g (solid) or 2.5 mg/100 ml (liquid)	
Sodium	120 mg/100 g or 100 ml	

Note: This requirement does not apply to a food for which the single serving size is 15g or less and in which saturated fatty acid accounts for 15% or less of the total fatty acid.

For the above-mentioned target nutrients, a food bearing the claim that a specific nutrient is reduced by a certain level as compared with the reference food must satisfy the following requirements:

- The reference food must be indicated, and,
- The reduced level must be the given level or more as shown in.

B3.2.3 Claim using the expression "reduced-sodium soy sauce"

For soy sauce bearing the claim "reduced sodium," sodium must be reduced by 20% or more as compared with ordinary products.

B3.3 EXEMPTIONS

Exemptions for nutrition labelling were developed for fresh foods such as vegetables, meats and fish, on the understanding that their nutrients were so variable depending on seasons and areas of production. In addition, monitoring was likely to be a problem as there are many kinds of fresh foods and that they are produced widely in Japan.

B3.4 ENFORCEMENT

Inspections of retail outlets are undertaken on a needs basis. A national-wide inspection in Japan will be done annually in cooperation with local self-governing bodies. Professionals are employed by the Japanese authority to analyze food samples and check accuracy of the food labels.

B3.4.1 Tolerance Limits

In the enforcement stage, samples are taken to laboratories for testing. The testing results will then be expressed as follows:

[value identified through laboratory test/ label value] x 100 = %].

which will then be compared with the tolerance limits presented in *Table B 3.5*.

Table B 3.5Tolerance Limits

Nutrients	Tolerance limit	Limit for claim as "zero"
Calorie	±20%	5kcal
Protein	±20%	0.5g
Fat	±20%	0.5g
Saturated fatty acid	±20%	0.1g
Cholesterol	±20%	5mg
Carbohydrate	±20%	0.5g
Sugars	±20%	0.5g
Dietary fiber	±20%	-
Sodium	±20%	5mg
Vitamin A	-20%~+50%	-
Vitamin D	-20%~+50%	-
Vitamin E	-20%~+50%	-
Calcium	-20%~+50%	-
Zinc	-20%~+50%	-
Ion	-20%~+50%	-
Copper	-20%~+50%	-
Magnesium	-20%~+50%	-
Vitamin B1	-20%~+80%	-
Vitamin B2	-20%~+80%	-
Vitamin B6	-20%~+80%	-
Vitamin B12	-20%~+80%	-
Vitamin C	-20%~+80%	-
Niacin	-20%~+80%	-
Pantothenic acid	-20%~+80%	-
Biotin	-20%~+80%	-
Folic acid	-20%~+80%	-

B3.4.2 Penalties for Non-compliance

If a person does not comply with the established nutrition labelling standards, the Minister will recommend the person to provide food label with the necessary information as appropriate. If that person does not follow the recommendation, an order will be issued by the Japanese authority. Non-compliance with the order would lead to a maximum penalty of 500,000 yen.

Figure B3.1 summarises an outline of the Japanese nutrition labelling regulation.

B3.5 SOURCES AND FURTHER READINGS

Resource person: Mr Hiroyukith Tanaka,田中弘之. 厚生労働省医薬局食品安全部基準審査課,新開発食品保健対策室 〒100-8916東京都千代田区霞が関1-2-2, Phone: 81-(0) 3-5253-1111(内線2458), 81-(0) 3-3595-2327(夜間直通), Fax: 81-(0)3-3501-4867, e-mail:<u>tanaka-</u> hiroyukith@mhlw.go.jp


B4.1 NUTRITIONAL LABELLING REQUIREMENTS

Nutritional labelling in Thailand is regulated under the *Ministry of Public Health Regulation No 182 (1998) Re: Nutritional Labelling,* and *amendment regulation No. 219 (2001).*

Nutritional labelling is mandatory for:

- Foods that include a nutrition claim;
- Food that use nutritional values in sales promotion;
- Food specifically target a group of consumers eg elderly people, children etc; and
- Other foods as may be specified by the FDA.

Exemptions from the nutrition labelling regulations include:

- Infant food, supplementary food for infants and children, and other types of food for which labelling requirements have been otherwise regulated;
- Food not sold directly to consumers; and
- Food packaged in small containers that is intended for re-packaging and sale in a larger container.

B4.2 NUTRITION CLAIMS

A nutritional claim refers to any presentation which states, suggests or implies that a food has particular nutritional properties including but not limited to the energy value and the content of protein, fat and carbohydrates, as well as the content of vitamins and minerals. Nutrition claims constitute nutrient content claim, comparative claim and nutrient function claim.

A nutrient content claim is a nutrition claim that describes the level of nutrient contained in a food. Examples are "source of calcium", "high in fibre and low in fat", etc. A food that is by its nature low in or free of the nutrient that is the subject of the claim shall not include the term "low" or "free" in the name of the food. Instead, a claim statement may be made in a general form that refers of all foods of that type eg vegetable oil, a cholesterol-free food. However, foods that have been specially processed, altered, formulated or reformulated so as to lower the amount of nutrient in the food or remove the nutrient from the food may bear such a claim.

Comparative claim is a claim that compares the nutrient levels and/or energy value of two or more foods. Examples are "less than", "fewer", "more than",

"reduced", "lite/light", etc. Comparative claims can be made if the foods being compared or "reference foods" are different versions of the same food or similar foods that are representative of the same type available in the market. The identity of the reference food shall be given and a statement of the amount difference in the nutrient content or energy value shall be expressed as a percentage or fraction, higher or lower than that of the food being compared. Also, the nutrient content per serving shall be provided. Full details of the comparison are needed.

Nutrient function claim is a claim relating to the function of a nutrient to the body. Examples are "calcium aids in the development of strong bones and teeth" and "Iron is a factor in red blood cell formation". Nutrient function claims are permitted provided the following conditions are met:

- only those essential nutrients listed in the Thai RDIs shall be the subject of a nutrient function claim;
- the food for which the claim is made shall be a significant source of the nutrient in the diet;
- the claim must be made with reference to the nutrient not to the food product;
- the claim must be based on reliable scientific evidence;
- the claim must not imply or include any statement to the effect that the nutrient would afford a cure or treatment for or protection from disease.

B4.3 FORMAT

Nutrition information must be presented on the label in Thai with or without a foreign language. It is mandatory to display nutritional information of nutrients that have been used in claims or mentioned on labels.

There is a mandatory format for the presentation of nutrition labelling as shown in *Figure B 4.1*. Depending upon the label space available, different formats can be used, although these need to follow approved FDA formats. For example, labels with space less than 250 cm² the details on standard dietary intakes (part 3 of the label) can be omitted. For labels less than 80 cm² a list-type format can be used. A reduced format (omitting Section 2) can also be used where the content of 8 out of the 15 items shown in Part 2 of the list have negligible values.

Typical serving quantities for certain types of food are listed in the Appendix 2 of the Regulation. This includes dairy products, beverages, snack food and desserts, semi-processed food, bakery products, cereal and grain products, and other miscellaneous food. Details on serving size and servings per container may be omitted where the reference on serving size cannot be determined due to the nature of that food. Hence, instead of the statement "Amount per serving", the statement "Amount per 100g "or "Amount per 100ml" shall be used as appropriate.

Nutritional Information

Figure B 4.1 Example of Full Option Thai Nutrition Label

Part 1	Serving size:()									
	Servings per container:									
Part 2	Nutritional value per serving									
Section1	Total calorieskcal (calories from fat	tkcal)								
Section 2		% Rec daily intake*								
	Total fatg	%								
	Saturated fatg	%								
	Cholesterol%	%								
	Proteing	%								
	Total carbohydrateg	%								
	dietary fiberg	%								
	Sugarg	%								
	Sodiummg	%								
Section 3	% Rec daily intake*									
	Vitamin A%	Vitamin B1								
	Vitamin B2%	Calcium								
	Iron%									
Section 3	* Percent recommended daily intake	s are based on a 2,000 kcal diet for Thais								
	ageu six anu upwarus.									
	nutrient intakes shall be as follows.									
Part 3	Total Fat - Less than 65 g									
	Saturated Fat - Less than 20 g									
	Cholesterol - Less than 300 mg									
	Dietary Fiber - 1 g									
	Sodium - Less than 2,400 mg									
	Calories (kcal) per gram: Fat = 9; Pro	otein = 4; Carbohydrate = 4								

Manufacturers can display additional nutrition information only if Thai recommended daily intakes (RDIs) have been established (see Section B4.4). Furthermore, if this additional nutrition information is to be displayed on the label then it must be done in the order shown in *Figure B 4.2*. Other nutrition data cannot be displayed on nutritional labels in Thailand.

Figure B 4.2 Order of Nutrient Listing in Thai Nutrition Label

Part 2	Nutritional value per serving					
Section1	Total calories					
Section 2	Total fat					
	Saturated fat					
	Monounsaturated fat					
	Polyunsaturated fat					
	Cholesterol					
	Protein					
	Total carbohydrate					
	Dietary Fibre					
	Soluble Dietary Fibre					
	Non-soluble Dietary Fibre					
	Sugar					
	Sugar from Alcohol					
	Other carbohydrate					
	Sodiummg					
	Potassiummg					
Section 3	Vitamin A					
	Vitamin B1					
	Vitamin B2					
	Calcium					
	Iron					
	Other vitamins and minerals in the Thai RDI list shall be listed from high to low contents.					

B4.4 THAI RECOMMENDED DAILY INTAKES

Thai recommended daily intakes (Thai RDIs) for people of six years of age and older were established as guidelines for nutrition labelling and are reproduced below.

Table B4.1 Thai Recommended Daily Intakes

No.	Nutrient	Thai RDI	Unit
1.	Total Fat	65*	Gram
2.	Saturated Fat	20*	Gram
3.	Cholesterol	300	Milligram
4.	Protein	50*	Gram
5.	Total Carbohydrate	300*	Gram
6.	Dietary Fiber	25	Gram
7.	Vitamin A	800	Microgram RE (2,664) (IU)
8.	Thiamin	1.5	Milligram
9.	Riboflavin	1.7	Milligram
10.	Niacin	20	Milligram NE
11.	Vitamin B6	2	Milligram
12.	Folic Acid	200	Microgram
13.	Biotin	150	Microgram
14.	Pantothenic Acid	6	Milligram
15.	Vitamin B12	2	Microgram
16.	Vitamin C	60	Milligram

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17.	Vitamin D	5	Microgram (200) (IU)
18.	Vitamin E	10	Milligram Alpha TE (15) (IU)
19.	Vitamin K	80	Microgram
20.	Calcium	800	Milligram
21.	Phosphorus	800	Milligram
22.	Iron	15	Milligram
23.	Iodine	150	Microgram
24.	Magnesium	350	Milligram
25.	Zinc	15	Milligram
26.	Copper	2	Milligram
27.	Potassium	3,500	Milligram
28.	Sodium	2,400	Milligram
29.	Manganese	3.5	Milligram
30.	Selenium	70	Microgram
31.	Fluoride	2	Milligram
32.	Molybdenum	160	Microgram
33.	Chromium	130	Microgram
34.	Chloride	3,400	Milligram

Notes:

(1) * RDIs for total fat, saturated fat, protein and total carbohydrate are 30, 10, 10 and 60 respectively of the total daily calories (2,000 kilo-calories).

(2) Sugar intake should not be more than 10% of the total daily calories.

B4.5 LEGISLATION FORMULATION PROCESS (THAILAND)

The nutritional labelling regulation in Thailand was promulgated as an umbrella law regulating the presentation of nutritional labelling. Labelling is currently done on a voluntary basis with manufacturers that wish to make claims about food benefits applying the labelling scheme. However, the regulation includes a provision for the FDA to prescribe types of food that require labelling.

FDA reported that specific food sectors such as food for consumers with special needs and health food have been previously subjected to individual labelling schemes. There has not been a drastic adjustment to the new requirements.

Enactment of laws was carried out though the normal process by a working sub-committee appointed by the Cabinet comprising FDA officers, Hygiene Division officers, academics and representatives from the Industrial Council. The industry's participation through the industrial council was considered adequate in this case. FDA noted that the nutritional labelling law was enacted to promote public health awareness and was therefore not considered a controversial issue. This view was reflected in the lack of significant resistances from stakeholders.

The sub-committee and FDA working groups gathered baseline information for drafting the requirements, which reportedly took approximately 3 years.

Public Hearings were conducted by:

• Organising conferences with public sectors to discuss the content of the regulation and propose enforcement; and

• Publication of draft requirements on the FDA website.

It was reported that as the law is not mandatory there were not much resistance from the industry. Industry was reportedly active in the negotiation of the regulation details such as the period in which the law will come into force and details of the labels such as size, and reduced format.

The regulation was reportedly issued 1 year after the public hearing process.

B4.6 GENERAL IMPLEMENTATION

To assist industry during the initial stage of the implementation of the regulation, FDA organized seminars to clarify the requirements of the law and provided assistance in connecting the industry with the infrastructure available eg for testing of products. The initial registration of products for nutritional labelling was sub-contracted to Mahidol University.

FDA reported that the main obstacle during the initial implementation was the lack of infrastructure to provide advice and testing of the products. FDA tried to resolve this issue by encouraging various Universities to provide testing services to the industry. FDA reported that there are now adequate laboratory facilities and experts available to assist the industry.

To promote the nutritional labels to the public, FDA's Public Relation and Advertisement Control Division launched several campaigns to strengthen consumers understanding of nutritional label and their benefits. These included:

- Provision of comprehensive introduction articles on the nutrition labels to the industry which was also available to public.
- Campaigns on reading labels before purchasing. These was conducted in 2001, 2002 and 2003 using radio, newspaper, magazines and TV advertisements.
- Publishing of a booklet (organizer) on nutrition label with limited examples of typical packaged food consumed by youngsters and their nutritional values.
- Publishing promotional posters for posting at various hot spots.
- Establishing a **Consumers Hot Lines Telephone** numbers. These are available to the public 24 hours a day to report any frauds, illegal cases, substandard products, adverse reactions or hazards pertaining to health products.

Thai FDA felt that public education, information services, promotion and appropriate technical assistance to the industry were the keys to successful implementation.

B4.7 EXEMPTIONS

The law is not mandatory but only applies to those products that are making claims, use nutritional values in sales promotion or are targeted as specific groups of consumers. Exemption was made for specific baby/infant food products where there are comprehensive laws covering labelling already.

Food that is not registered for nutritional labelling is not allowed to make claims (either on label or in advertisement) about nutrition benefits. The annual inspection programme (see *Section B4.8*) targets such compliance with this rule and non-compliance is subject to penalties of selling false food.

B4.8 ENFORCEMENT

FDA has annual inspection plans to sample products on their compliance with the regulation. The sampling programme covers sampling of products from manufacturers, retail outlets and at customs.

A priority list is established on an annual basis for each province. It was reported that non-compliances including wrong reporting of nutritional values and false claims on benefits. These non-compliances were identified during these inspections.

No specific problems were reported on enforcement issues. Few problems were found with imported products. It was noted that food materials imported from nearby countries with less developed infrastructures on labelling are mostly raw materials and are unlikely to be subject to such labelling.

Enforcement of the nutritional labelling regulations is conducted under the scope of the *Food Act*. Breach of the *Nutritional Labelling Regulation* can be classified under two categories:

- False food typical cases are food which nutritional qualities not complying with claims/label made by manufacturers. Penalties range between fines of 5,000 THB to 100,000 THB (roughly HK\$ 1,000 to HK\$ 20,000) and imprisonment from 6 months to 10 years; and
- Food not complying with standards where deviation of the quality are not as severe as in the case of false food. Typical cases are non-compliance with the label requirements. Penalty is fine up to 50,000 THB (roughly HK\$ 10,000).

B4.8.1 Tolerance Limits

The Thai *Nutritional Labelling Regulation* does not specify the tolerance levels for nutrient testing. However, FDA has internal practical rules for tolerance limits of errors for the actual contents of nutrient against the values on the labels as follows:

- Natural macro nutrient allow the actual values from 80-120% of the label values;
- Natural micro nutrient allow actual value from 80% to not more than RDI values per serving, ie the FDA consideration is based on the fact that food can loose micro nutrient but not exceed the maximum RDI for safety reason); and
- For all fortify nutrients (added) the actual values must not be less than the values on the label and not exceed the maximum RDI for safety reason.

B4.9 SOURCES

- Interview with the Director of Food Control Division (Ms Chitra Settaudom), Food and Drug Administration, Ministry of Public Health, Thailand, Tel +66 2 590 7175
- Interview with the responsible officer at Public Relation and Advertisement Control Division (Ms Sauwanee Ketmabroongporn), Food and Drug Administration, Ministry of Public Health, Thailand, Tel +66 2 590 7125
- Food Laws under the <u>http://www.fda.moph.go.th</u>
- Thailand's Food Import Regulations A Guide for Canadian Food Exporters, January 2000, <u>http://atn-riae.agr.ca/asean/e2782.htm</u>

Annex C

Market Survey

C1 MARKET SURVEY PROTOCOL

This protocol describes the methodology for conducting the market survey on existing nutrition labelling practice of prepackaged food/drinks in Hong Kong.

C1.1 SURVEY DESIGN

The market survey is a stratified, simple random sampling of over 2,000 food and drinks products sold in Hong Kong. The sample strata are defined by 50 food and drinks categories in the ACNielsen Market Track Database and 13 non-ACNielsen categories from the Park n' Shop product list. The ACNielsen categories and non-ACNielsen categories are mutually exclusive.

ERM analysis of Wellcome data showed that approximately 12,000 out of 14,000products lines sold in Wellcome in 2003 were covered in the ACNielsen categories. Park n' Shop and CitySuper are unable to provide product level data due to confidentiality concerns so no verification of this number with other supermarkets is possible. Thus the survey was designed to follow the 85%-15% split between ACNielsen categories and Non-ACNielsen categories.

C1.2 SAMPLE SELECTION

C1.2.1 ACNielsen Categories

Product lines were selected from 50 food and drink categories in the ACNielsen database shown in *Table C1.1*, while the definition of each category is presented in *Annex C2*.

Table C1.1 Food and Drink Categories in the ACNielsen Database

Food (33 Categories)		Drinks (17 Categories)
Biscuits	Frozen Seafood	Carbonated Soft Drinks
Breakfast Cereals	Frozen Vegetable	Chocolate Malt Drinks
Canned Fruit	Ice-Cream	Asian/Cooling Drinks
Canned Meals	Instant Noodles & Pasta	Energy/Health Drinks
Canned Meat	Nutritional Supplement	Flavoured Water
Canned Seafood	Oriental Noodle	Packaged Water ⁽¹⁾
Canned Vegetables	Packaged Rice	Instant Soluble Coffee
Cheese	Pre-packed Bread	Juice Drink
Chewing Gum/Mint Candies	Pre-packed Cake	Juice
Chilled Dessert	Pre-packed Soup	Liquid Milk
Confectionary	Salad Dressing	Milk Powder
Cream	Sauces	Ready To Drink Coffee
Edible Oil	Seasoned Seaweed	Ready To Drink Health Food Drink
Egg Roll	Snacks	Ready To Drink Tea
Eggs	Total Bouillon	Soya Drinks
Frozen Dim Sum	Yoghurt	Tea
Frozen Meat		Yoghurt Drinks

Note: (1) Packaged water included as it covers mineralised water.

The allocation of samples among food and drink categories was based on the number of products lines in each category. More samples were allocated to the strata with relatively large population, eg more samples were selected from the carbonated soft drink category than the egg category. The sample size of each stratum was adjusted to distribute the samples units across the different categories to maximise the representativeness of the sample at the category level.

After allocating samples to each ACNielsen category, two criteria were then imposed to select samples within each category to reflect its characteristics:

- Split between imported and locally manufactured product lines for each category. This split was based on a review of available data on the source of products within each category. For example, ACNielsen data might suggest that 40% of noodle products are manufactured locally. Thus our allocation of samples for the oriental noodle category would reflect this split; and,
- Split between high and low volume product lines across all categories. As agreed with the Steering Group, high volume products represent the top 10% selling items in each category. According to Wellcome data, the top 10% of sales items represent 70% of the unit sales volume in 2003. No similar or comparable information has been made available by other industry stakeholders, so this split cannot be verified by third party data.

C1.2.2 Categories not covered in the ACNielsen Database

Product lines were selected from 13 food and drink categories not captured in the ACNielsen database shown in *Table C1.2.* These categories have been identified through mapping the ACNielsen categories with supermarket data and C&SD Household Expenditure Survey.

The allocation of samples among food/drink categories is based on the representation of sales volume of each category from all of the above categories, according to the analysis of Wellcome data in 2003. Again, more samples were allocated to the strata with a relatively large population, the sample size of each stratum is adjusted to distribute the samples units across the categories to minimize the overall variance. Within each category, samples were selected from Park n' Shop's product list in a systematic basis.

C1.3 SAMPLING AND SAMPLING FRACTION

With the list of product lines to the sampled, the survey team identified the retail outlets that had the widest coverage of products based on the sales data in 2003 in retail outlets in Hong Kong. The four retail outlets identified were Park n' Shop in Festival Walk, Wellcome on Great George Street, Causeway Bay, Jusco in Quarry Bay and CRC in Homantin Plaza. The survey team attempted to find 2,488 food and drinks product lines in those outlets and 1,959 were successfully found. With the exemption of 25 products found out of

scope of this Study, the results of 1,934 products were analysed and presented in *Annex C3*.

Data on number of product lines in the database, attempted, found and sampling fraction are presented in *Table C1.3*.

Table C1.2 Non-ACNielsen Categories

Non-ACNielsen Categories
Baking aids (including baking powder , add-water pancake, self-raising flour, rice flour, plain
flour, cake-mix, maple syrup, vanilla tart filling)
Butter (including margarine and table spread)
Cooking Aids (including curry powder, corn starch, red/yellow/brown sugar, salt, pepper,
spices, coconut spread)
Condensed/ evaporated milk
Chilled and frozen meat balls, ham and sausage;
Dried food (including preserved fruits, dried beans/vegetables/mushrooms/seafood, Chinese
dry herbs and Chinese soup ingredients such as "Ching Po Leung", sago, whole lotus)
Frozen pies/ ready meals (including hotdogs, burgers, pizzas excluding rice and noodle- based
ready meals)
Jam and spread (including honey, fruit jam, chocolate spread)
Meat snacks (including meat jerky)
Non-cereal breakfast food
Nuts;
Pickle and Relish
Soya food
Others (eg non-chilled jelly, ice-cream wafer cones, pop-tarts, pretzels)

Table C1.3Market Survey Sampling Fraction

Category Names	Number of Product Lines in the Database	Number of Product Lines Attempted to sample	Number of Product Lines Found ⁽¹⁾	% of Product Lines Attempted (out of total)	% of Product Lines Found (out of attempted)		
ACN Food Categories							
Biscuits	1,319	91	66	7%	73%		
Breakfast Cereal	324	54	42	17%	78%		
Canned Fruit	60	29	21	48%	72%		
Canned Meals	85	35	31	41%	89%		
Canned Meat	43	26	25	60%	96%		
Canned Seafood	190	42	36	22%	86%		
Canned Vegetables	117	38	31	32%	82%		
Cheese	254	48	38	19%	79 %		
Chewing Gum/Mint Candies	215	43	38	20%	88%		
Chilled Dessert	101	26	15	26%	58%		
Confectionery	928	79	74	9 %	94%		
Cream	25	15	7	60%	47%		
Edible Oil	128	41	38	32%	93%		
Egg Roll**	47	5	4	11%	80%		
Eggs	39	27	22	69 %	81%		
Frozen Dim Sum	456	62	49	14%	79 %		
Frozen Meat	186	44	37	24%	84%		
Frozen Seafood	177	44	32	25%	73%		
Frozen Vegetable	133	38	28	29 %	74%		
Ice-cream	249	56	51	22%	91%		
Instant Noodle & Pasta	932	94	89	10%	95%		
Nutritional Supplement	28	10	3	36%	30%		
Oriental Noodle	296	55	48	19%	87%		
Packaged Rice	69	27	25	39%	93%		

Category Names	Number of Product Lines in the Database	Number of Product Lines Attempted	Number of Product Lines Found ⁽¹⁾	% of Product Lines Attempted (out of total)	% of Product Lines Found (out of attempted)
	Dutubuse	to sample	I ound	(out of total)	uttempted)
Prepackaged Bread	160	40	34	25%	85%
Prepackaged Cake	517	60	43	12%	72%
Prepackaged soup	483	64	56	13%	88%
Salad Dressing	112	37	34	33%	92%
Sauces	683	86	68	13%	79 %
Seasoned Seaweed	86	20	13	23%	65%
Snacks	710	64	48	9 %	75%
Total Bouillon	37	24	21	65%	88%
Yoghurt	266	54	32	20%	59%
Total ACN Food	9,455	1,478	1,199	16%	81%
ACN Drinks Categories					
Asian/Cooling Drink	180	46	30	26%	65%
Carbonated Soft Drinks (excluding glass bottles)	125	34	32	27%	94%
Chocolate Malt Drinks	35	23	17	66%	74%
Energy / Health Drinks	85	30	23	35%	77%
Flavoured Water	37	24	1	65%	4%
Instant Soluble Coffee	139	42	29	30%	69 %
Juice	359	71	55	20%	77%
Juice Drink	264	53	40	20%	75%
Liquid Milk	65	44	36	68 %	82%
Milk Powder	38	28	18	74%	64%
Packaged Mineral Water	70	28	25	40%	89%
Ready To Drink Coffee	104	33	25	32%	76%
Ready To Drink Malt Drinks	13	8	2	62%	25%
Ready To Drink Tea	279	65	55	23%	85%
Soya Drinks	56	26	24	46%	92%
Tea	399	82	63	21%	77%
Yoghurt Drinks	64	19	16	30%	84%
Total ACN Drinks	2,312	656	491	28%	75%
Non-ACN Categories ⁽²⁾		40	00		050/
Baking alds		46	39		85%
Butter		44	25		57%
		3	3		100%
Condensed/evaporated milk		13	9		69%
Cooking Aids		46	45		98%
Dried Food		25	15		60%
Frozen Pies/Ready		15	10		67%
Meals Jam & Spread		51	40		78%
Meat snacks		17	15		88%
Miscellaneous		32	24		75%
Nuts		25	21		84%
Pickle/Relish		29	18		62%
Sova Food		8	5		63%
Total Non-ACN	2.233	354	269	16%	76%
Categories All Total	14,000	2,488	1,959	18%	79 %

Notes:

25 among the 1,959 product lines found are exempted. The 25 items include 21 packaged water, 3 nutrition supplements and 1 milk powder item. Thus, Annex C3 covers the analysis of the result from the 1,934 non-exempted items found.

(2) The total number of product lines in non-ACN categories is not known.

1. Biscuits

A type of unleavened bread baked to dry crispness, or a crisp food baked with wheat / flour, as opposed to soft spongy texture cake.

2. Breakfast Cereal

Any kind of processed grain (eg wheat, rye, barley) usually consumed at breakfast time.

3. Canned Fruits

Processed food which is a product of plant which may contain seeds. Fruit is usually preserved in syrup or juice. Products are prepackaged in a hermetically sealed metal or glass container, and usually consumed as a substitute for fresh or dried fruit.

4. Canned Meals

Processed food designed to "heat and eat". Usually contains meat, pasta or beans in a sauce. Sometimes contains other foods such as vegetables. Products are prepackaged in a hermetically sealed metal container.

5. Canned Meat

Processed flesh of animal – typically pork or beef based. Products are prepackaged in a hermetically metal sealed container, or may be packaged in glass bottles.

6. Canned Seafood

Processed marine fish or shellfish, which are formally living in water. Products are prepackaged in a hermetically sealed metal container. Usually consumed as a substitute for fresh, frozen, or dried fish or seafood.

7. Canned Vegetable

Processed food which is plant based in nature – typically grown in the ground or on trees/vines. They are prepackaged in a hermetically sealed metal or glass container, and usually consumed as a substitute for fresh or frozen vegetables. May be labelled as a salad.

8. Cheese

A food made from the curds of soured milk pressed together to form a solid that is usually allowed to ripen.

9. Chewing Gum/ Mint Candies

Any preparation which is able to refresh breath through the chewing process. Could not be swallowed after chewing. Mint Candies is a kind of candy which is able to refresh breath.

10. Chilled dessert

Chilled dessert is kind of ready-to-eat sweet course (as of jelly / pudding /mousse / paste / soup/ milk flan.etc), which is stored under 11 °C.

11. Confectionery (sugar & chocolate)

These are sweets and chocolate for self-consumption or gift giving.

12. Cream

Cream is the yellowish white liquid, which rises to the top of milk containing from 18% to about 40% butterfat.

13. Edible oil

Pre-Packed oil for cooking purpose.

14. Egg Roll

The kind of roll-form Chinese pastry, made from a mixture of egg, fat and flour; some is wrapped round, some is rolled flat; and usually name itself as 'egg roll'/ 'phoenix roll'.

15. Egg

Egg is kind of hard-shelled reproductive body produced by a bird, and especially by the common domestic chicken. Its contents can be used as food.

16. Frozen Dim Sum

Light Chinese food items served as a light meal, appetizer or savoury dish. They are frozen, NOT ready to be served in its current state, and required defrosting and heating before consumption.

17. Frozen Meat

Frozen meat is kind of flesh from domesticated poultry / mammal (eg cattle, pig, goat, horse, lamb). Some may be marinated or processed (eg salted/ breaded with crumbs). It must be stored under -18° C.

18. Frozen Seafood

Frozen seafood is kind of marine fish or shellfish, which are formally living in water, usually consumed as a substitute for fresh seafood. Some may be processed / marinated. It must be stored under -18° C.

19. Frozen Vegetable

Frozen vegetable is kind of food which is plant based, usually consumed as a substitute for fresh or canned vegetables. Some may be processed / breaded with crumbs. It must be stored under -18° C.

20. Ice Cream (frozen desserts)

Any frozen preparation of milk or cream of milk products, with or without sugar and/or glucose and /or other carbohydrate sweetening substances, with or without stabilizers and which must be stored at or below-18°C, usually with flavour added or with fruit added, and served as a dessert. Products can be in various formats such as bars, cones, cups/tubs or sticks

21. Instant Noodles and Pasta

Paste in all forms, made from a dough of flour and water mixed, including Japanese noodles, Chinese noodles, rice noodles, vermicelli, Kua Teaw, Udon, macaroni, penne...etc, with flavorings inside packages, and is ready for eating after a few minutes of cooking in water or submergence in hot water.

22. Nutritional Supplement

Western drinks in dehydrated milk powder form, with added vitamins and minerals to form a beneficial drink. It is particularly designed to meet the increased dietary needs of specific sector people such as pregnant, lactating women, junior / toddler / infant and so on. It is always used as a supplement for such deficiency (for mum) and growth (for junior / infant).

23. Oriental Noodles

Noodle which is made of a dough of flour (wheat flour / rice flour / yam flour / green bean flour) and water mixed, including all kinds of Oriental noodles, usually in form of long strips / flat rectangular shape / ball shape (eg Rice noodles, Vermicelli, Kua Teaw, Soba, Udon, Shrimp Noodle, Egg Noodle, etc), without flavourings inside packages.

24. Packaged Rice

Rice is a natural grain which is cooked in many forms for eating. They are usually packed in plastic bags through a vacuum process.

25. Prepacked Bread

Food made by mixing flour with water and yeast, kneading and baking in an oven. It must be prepacked by and bearing the name of the manufacturer, distributor or retailer.

26. Prepacked Cake

Sweet mixture of flour, eggs, butter etc baked in an oven, having a soft, spongy texture. It must be prepacked with the name of the manufacturer, distributor or retailer listed on the packing.

27. Prepacked Soup

Any preparation which is either meat, vegetables or a combination of these, with perhaps added ingredients such as rice. They are prepackaged in a hermetically sealed container, usually labelled as soup, consommé or broth. For Soup, we will include all forms of products, such as liquid, powder, paste, etc.

28. Salad Dressing

A type of sauce which is primarily intended to be used as a dressing on salads to give added flavouring and piquancy.

29. Sauce

Sauce is kind of condiment, in form of liquid or paste, used for giving a special taste to food.

30. Seasoned Seaweed

Any kind of dehydrated and processed seaweed. Rich in protein, iron, iodine, phosphate, calcium and vitamins for instant consumption as snacks.

- 31. Snacks Corn / Maize based / Potato based / Prawn / Lobster based Ready-to-consume chips / crisps / crackers which are made of Potato / Corn / Maize / Prawn / Lobster.
- 32. Total Bouillon

Culinary flavourings or additives which is made of chicken, packaged in cube / powder / paste or broth form

33. Yogurt

Yogurt/ Yoghurt is kind of ready - to - eat food made of fermented milk (milk which turn acid via the action of certain bacteria).

34. Carbonated Soft Drinks

Carbonated, flavored, non-alcoholic drinks (0% alcoholic content) ready for consumption without dilution. Made gassy or fizzy by impregnation of carbon dioxide under pressure during manufacturing ie carbonated.

35. Chocolate Malt Drink

Western drink in powder or granulated form incorporating malt, cocoa, dried milk, dried eggs etc., with added vitamins and minerals and with or without additional flavours (eg honey, chocolate). Water has to be added to form the actual drink.

36. Asian / Cooling Drinks

Asian / cooling drink is kind of ready to drink beverage that is non-alcoholic without dilution before consumption usually of Asian ethnic origin usually made of Chinese vegetable, mix with vinegar/ honey with function of cooling/ quenching fire.

37. Energy / Health Drink

A beverage which

- positions as refreshing or otherwise beneficial when consumed in conjunction with sports or exercise related activities
- helps to replenish water and salt/mineral which is lost through perspiration/exercise.
- may emphasise frequent consumption can help to regain energy lost and maintain good health and beauty.
- flavoured water claims with added benefits, usually Vitamins and minerals (based on long description)
- 38. Flavoured Water

Prepacked water with flavoring added. Either carbonated or non-carbonated.

39. Packaged Water

Distilled and mineral/mineralised water. Distilled water refers to those that have been purified by distillation. Mineral water / Mineralized water refers to those naturally or artificially infused with mineral salts.

40. Instant Soluble Coffee

Instant soluble coffee is a derivative of the coffee bean or the seed itself. After coffee extract is being dehydrated, it will be turned into powder or granules, often by freeze-drying. It is prepared by adding hot/boiling water to completely dissolve the coffee powders (ie no residue will be left) for instant consumption.

41. Juice Drinks

Non-alcoholic juice beverages (0% alcoholic content) ready for consumption without dilution.

42. Juice

Ready to drink beverage that is extracted from fruit or vegetable. Either with juice content \geq 30% or label itself as 'Natural Juice' / 'Pure Juice'. Can be carbonated and non-carbonated.

43. Liquid Milk

Fluid produced by female mammals as food for their young, especially that of cows. Could be drunk by human beings after being sterilized or processed.

44. Milk Powder (Skim/ Full Cream/ Hi-Calcium)

Is made from pure, fresh pasteurised milk from which only the water has been removed, FCMP is claimed to be a balanced nutritious food of protein, carbohydrates, fat and vitamins for growing children, teenagers and adults. Skim Milk Powder is a non-fat milk powder, particularly for health conscious adults.

45. Ready-To-Drink Coffee

A ready-to-drink beverage, which is a derivative of the coffee bean or the seed itself. It could be consumed immediately once opened without adding any water / milk / sugar or heating. Usually, no residue will be left.

46. R-T-D Health food Drink

Ready-to-drink beverages that incorporate condensed milk/ milk powder/milk with malt/ cocoa/ fruit. Usually with added vitamins and minerals. Some may with additional flavours (eg honey, chocolate).

47. Ready-To-Drink Tea

Ready-to-drink tea is kind of tea-based beverage, made of either tealeaves or flower. It can be consumed immediately once opened without adding any milk/ sugar/ water and heating.

48. Soya Drinks

Packaged ready-to-drink beverage grounded with soya bean, which do not require adding in water before consumption eg soya drinks, soya milk.

49. Tea

Dried and cut leaves / flowers of plant. It is consumed as a drink by adding hot/boiling water on it.

50. Yogurt Drinks

A slightly sour beverage made from fermented milk/ yogurt, usually milky in colour, sometimes sweetened and flavored with fruit.

C3 MARKET SURVEY PRIMARY RESULTS

- Is the product manufactured/ packaged/ canned/ produced/ made in Hong Kong?
 Yes: 18% No: 82%
- 2. Do the words Hong Kong (or HK) appear anywhere on the package? Yes: 72% No: 28%
- 3. Is there a Hong Kong telephone (country code 852) on the package? Yes: 23% No: 77%
- 4. Is there a bar code with the first three digits 489 on the package? Yes: 34% No: 66%
- 5. Is this product specifically packaged for the Hong Kong market (ie product whose answers for Q2, Q3 or Q4 is yes)?
 Yes: 73% No: 27%
- 6. Is any nutrition value shown on the label (in any language)? Yes: 51% No: 49%
- Is English <u>OR</u> Chinese nutrition information shown on the label? Yes: 50% No: 50%
- 8. Is the nutrition information shown on the label in "Per 100g/ mL" format (% of which labelled) ?
 Yes: 52% No: 48%
- 9. Is the nutrition information shown on the label in "Per package as a single portion" format (% of which labelled)?
 Yes: 19% No: 81%
- 10. Is the nutrition information shown on the label in "Per 100g/mL or per package as a single portion" format (ie product whose answers for Q8 or Q9 is yes, % of which labelled)?
 Yes: 63% No: 37%

11. Does the label contain the following nutrients? Is there any nutrient claim on the package of the product? If yes, what is the claim and is there any relevant labelling?

		Label?		<u>Required U</u> (%of which	<u>Jnits</u> 1 labelled)	<u>Nutrient Claim?</u> (% of total products)					
•	Energy	Yes: 49%	No: 51%	Yes: 92%	No: 8%	Yes: 3%	No: 97%				
•	Protein	Yes: 48%	No: 52%	Yes: 99%	No: 1%	Yes: 2%	No: 98%				
•	Carbohydrate	Yes: 48%	No: 52%	Yes: 99%	No: 1%	Yes: 1%	No: 99%				
•	Fat	Yes: 49%	No: 51%	Yes: 99%	No: 1%	Yes: 9%	No: 91%				
•	Saturated Fat	Yes: 28%	No: 72%	Yes: 99%	No: 1%	Yes: 1%	No: 99%				
•	Sodium	Yes: 36%	No: 64%	Yes: 99%	No: 0%	Yes: 1%	No: 99%				
•	Cholesterol	Yes: 19%	No: 81%	Yes: 99%	No: 1%	Yes: 5%	No: 95%				
•	Sugar	Yes: 28%	No: 72%	Yes: 100%	No: 0%	Yes: 7%	No: 93%				
•	Dietary fibre	Yes: 25%	No: 75%	Yes: 96%	No: 4%	Yes: 3%	No: 97%				
•	Calcium	Yes: 20%	No: 80%	Yes: 44%	No: 56%	Yes: 7%	No: 93%				

For nutrients other than the above listed, records were only taken when there was a nutrient claim.

		<u>Nutrient (</u> (% of total	<u>Claim?</u> products)	<u>Label?</u> (% of whic	ch claimed)	<u>Required Units</u> (% of which labelled)					
•	General Vitamins	Yes: 3%	No: 97%	Yes: 61%	No: 39%	Yes: 56%	No: 44%				
•	Vitamin A	Yes: 2%	No: 98%	Yes: 75%	No: 25%	Yes: 45%	No: 55%				
•	Vitamin B	Yes: 2%	No: 98%	Yes: 74%	No: 26%	Yes: 86%	No: 14%				
•	Vitamin C	Yes: 4%	No: 96%	Yes: 82%	No: 18%	Yes: 68%	No: 32%				
•	Vitamin D	Yes: 1%	No: 99%	Yes: 79%	No: 21%	Yes: 55%	No: 45%				
•	Vitamin E	Yes: 2%	No: 98%	Yes: 68%	No: 32%	Yes: 43%	No: 57%				
•	Minerals & Other	Yes: 6%	No: 94%	Yes: 41%	No: 59%	Yes: 43%	No: 57%				

~End of Questionnaire~

	Number Surveyed Number Found ⁽¹⁾ % Found		% of those Found that are HK Packaged	% of those Found that have Nutrition Labels	% of those Found with Claims	% of those Found with Claims & Supporting Nutrition Information? (2)	% of Products Found That Require No Action Under Option I&V? ⁽³⁾	% of Products Found That Require No Action Under Option II&VI? ⁽³⁾	% of Products Found That Require No Action Under Option III&VII? ⁽³⁾	% of Products Found That Require No Action Under Option IV&VIII? ⁽³⁾	
All Surveyed Products	2381	1934	81.2%	72.8%	51.3%	27.6%	8.9%	0.4%	3.1%	10.3%	23.3%
Local	580	461	79.5%	99.3%	43.8%	23.2%	3.5%	0.7%	4.6%	5.0%	26.2%
High Volume	119	104	87.4%	100.0%	47.1%	21.2%	2.9%	1.9%	3.8%	4.8%	35.6%
Low Volume	461	357	77.4%	99.2%	42.9%	23.8%	3.6%	0.3%	4.8%	5.0%	23.5%
Import	1496	1204	80.5%	63.0%	56.0%	30.0%	12.1%	0.3%	3.1%	13.3%	23.9%
High Volume	258	229	88.8%	78.2%	34.9%	23.1%	7.4%	0.4%	2.6%	6.6%	15.7%
Low Volume	1238	975	78.8%	59.5%	60.9%	31.6%	13.2%	0.3%	3.2%	14.9%	25.8%
Undefined	305	269	88.2%	71.0%	43.5%	24.2%	3.7%	0.0%	0.7%	6.3%	15.6%
Notes:											

(1) Found products excludes 25 products that were found but are exempted.

(2) These products have nutrient claims on the package and provide relevant nutrition information to substantiate the claims which is, a. in English or Chinese; b. on a per 100g, per 100mL, or per package as a single portion basis; and c. in correct kcal/metric units. (3) These products have nutrition information, either for supporting a nutrient claim and/or for required nutrients for the options: a. in English or Chinese; b. on a per 100g, per 100mL, or per package as a single portion basis; and c. in correct kcal/metric units.

In the following tables the percentages are the percentage of those products found in each category (e.g. local, local high volume, etc) that require either relabelling or testing in Phase I or II

Option I	Hong Kon	Hong Kong Packaged ⁽⁴⁾ Not Hong Kong Packaged			Require Relabelling ⁽⁷⁾ Require Testing ⁽⁸⁾																					
	All Nutrients? (5)	Correct Labels? (6)	All Nutrients? ⁽⁵⁾	Correct Labels? ⁽⁶⁾	% in Phase I	% in Phase II	En	ergy	Pn	otein	Ca	rbo.	F	lat	Sat	. Fat	Sod	lium	Chole	estorol	Su	gars	Fi	bre	Cal	lcium
					%I	% I I	%I	%II	%I	%II	% I	%II	%I	%II	%I	% I I	%I	%П	%I	%II	%I	%II	%I	%II	%I	%II
All Surveyed Products	6.0%	0.3%	4.7%	0.1%	8.0%	19.1%	7.9%	42.9%	8.8%	42.7%	8.7%	43.1%	8.7%	42.8%	16.9%	55.5%	13.3%	50.7%	20.2%	60.7%	17.5%	54.6%	17.7%	57.1%	18.4%	62.0%
Local	6.1%	0.7%	0.0%	0.0%	0.0%	0.7%	9.5%	47.5%	9.5%	47.1%	9.5%	47.3%	9.5%	47.3%	19.7%	68.1%	18.7%	65.3%	16.9%	67.2%	21.5%	66.4%	18.2%	67.0%	16.9%	69.6%
High Volume	3.8%	1.9%	0.0%	0.0%	0.0%	0.0%	10.6%	42.3%	10.6%	42.3%	10.6%	43.3%	10.6%	42.3%	20.2%	72.1%	18.3%	68.3%	16.3%	72.1%	22.1%	71.2%	17.3%	73.1%	18.3%	72.1%
Low Volume	6.7%	0.3%	0.0%	0.0%	0.0%	0.8%	9.2%	49.0%	9.2%	48.5%	9.2%	48.5%	9.2%	48.7%	19.6%	66.9%	18.8%	64.4%	17.1%	65.8%	21.3%	65.0%	18.5%	65.3%	16.5%	68.9%
Import	6.5%	0.2%	6.6%	0.2%	12.0%	24.8%	6.1%	40.9%	7.3%	40.9%	7.2%	41.2%	7.1%	40.8%	15.8%	49.7%	10.9%	44.4%	21.8%	56.9%	16.3%	49.3%	17.4%	52.3%	18.7%	57.9%
High Volume	7.0%	0.4%	2.2%	0.0%	2.6%	19.2%	9.6%	56.3%	10.5%	56.3%	10.5%	56.8%	11.4%	56.3%	18.8%	62.0%	14.0%	58.1%	20.5%	66.8%	19.2%	59.8%	18.8%	65.5%	13.5%	65.9%
Low Volume	6.4%	0.1%	7.7%	0.2%	14.3%	26.1%	5.2%	37.2%	6.6%	37.2%	6.5%	37.5%	6.1%	37.1%	15.1%	46.8%	10.2%	41.2%	22.1%	54.6%	15.6%	46.8%	17.1%	49.2%	19.9%	56.0%
Undefined	3.7%	0.0%	4.1%	0.0%	3.7%	25.3%	13.4%	43.9%	14.5%	43.5%	14.1%	44.6%	14.5%	44.2%	17.1%	59.9%	15.2%	53.5%	18.6%	66.5%	16.4%	58.4%	17.8%	61.3%	19.7%	67.7%

Option II	Hong Kon	g Packaged ⁽⁴⁾	Not Hong K	ong Packaged	Require R	elabelling ⁽⁷⁾										Require	Testing ⁽⁸⁾									
	All Nutrients? (5)	Correct Labels? (6)	All Nutrients? ⁽⁵⁾	Correct Labels?(6)	% in Phase I	% in Phase II	En	nergy	Pro	otein	Ca	rbo.	I	Fat	Sat	. Fat	Soc	lium	Chole	estorol	Su	gars	Fi	bre	Cal	cium
					%I	%П	%I	%П	%I	%II	%I	% I I	%I	%II	%I	%II	%I	%П	%I	%II	%I	%II	%I	%II	%I	%II
All Surveyed Products	8.1%	2.6%	5.9%	0.5%	7.9%	18.8%	7.9%	42.9%	8.8%	42.7%	8.7%	43.1%	8.7%	42.8%	16.9%	55.5%	13.3%	50.7%	20.2%	60.7%	17.5%	54.6%	1.1%	0.0%	2.2%	0.0%
Local	8.7%	4.6%	0.0%	0.0%	0.0%	0.7%	9.5%	47.5%	9.5%	47.1%	9.5%	47.3%	9.5%	47.3%	19.7%	68.1%	18.7%	65.3%	16.9%	67.2%	21.5%	66.4%	1.7%	0.0%	3.7%	0.0%
High Volume	4.8%	3.8%	0.0%	0.0%	0.0%	0.0%	10.6%	42.3%	10.6%	42.3%	10.6%	43.3%	10.6%	42.3%	20.2%	72.1%	18.3%	68.3%	16.3%	72.1%	22.1%	71.2%	3.8%	0.0%	2.9%	0.0%
Low Volume	9.8%	4.8%	0.0%	0.0%	0.0%	0.8%	9.2%	49.0%	9.2%	48.5%	9.2%	48.5%	9.2%	48.7%	19.6%	66.9%	18.8%	64.4%	17.1%	65.8%	21.3%	65.0%	1.1%	0.0%	3.9%	0.0%
Import	8.4%	2.3%	8.4%	0.7%	11.9%	24.3%	6.1%	40.9%	7.3%	40.9%	7.2%	41.2%	7.1%	40.8%	15.8%	49.7%	10.9%	44.4%	21.8%	56.9%	16.3%	49.3%	0.6%	0.0%	1.7%	0.0%
High Volume	7.9%	2.6%	2.6%	0.0%	2.6%	19.2%	9.6%	56.3%	10.5%	56.3%	10.5%	56.8%	11.4%	56.3%	18.8%	62.0%	14.0%	58.1%	20.5%	66.8%	19.2%	59.8%	0.4%	0.0%	1.3%	0.0%
Low Volume	8.5%	2.3%	9.7%	0.9%	14.1%	25.5%	5.2%	37.2%	6.6%	37.2%	6.5%	37.5%	6.1%	37.1%	15.1%	46.8%	10.2%	41.2%	22.1%	54.6%	15.6%	46.8%	0.6%	0.0%	1.7%	0.0%
Undefined	5.6%	0.4%	5.2%	0.4%	3.7%	24.9%	13.4%	43.9%	14.5%	43.5%	14.1%	44.6%	14.5%	44.2%	17.1%	59.9%	15.2%	53.5%	18.6%	66.5%	16.4%	58.4%	2.2%	0.0%	1.9%	0.0%

Option III	Hong Kon	g Packaged ⁽⁴⁾	Not Hong K	ong Packaged	Require Re	elabelling ⁽⁷⁾										Require	Testing ⁽⁸⁾									
-	All Nutrients? (5)	Correct Labels? (6)	All Nutrients? ⁽⁵⁾	Correct Labels?(6)	% in Phase I	% in Phase II	En	ergy	Pro	otein	Ca	rbo.	F	at	Sat.	Fat	Sod	ium	Chole	storol	Sug	ars	Fi	bre	Cal	cium
-					%I	%П	%I	%II	%I	%II	%I	%∏	%I	%П	% I	% I I	%I	%П	%I	%II	%I	%II	%I	%II	%I	%II
All Surveyed Products	12.4%	5.4%	13.5%	4.9%	5.8%	16.5%	7.9%	42.9%	8.8%	42.7%	8.7%	43.1%	8.7%	42.8%	16.9%	55.5%	13.3%	50.7%	2.1%	0.0%	4.5%	0.0%	1.1%	0.0%	2.2%	0.0%
Local	10.8%	5.0%	0.0%	0.0%	0.0%	0.7%	9.5%	47.5%	9.5%	47.1%	9.5%	47.3%	9.5%	47.3%	19.7%	68.1%	18.7%	65.3%	2.4%	0.0%	3.5%	0.0%	1.7%	0.0%	3.7%	0.0%
High Volume	6.7%	4.8%	0.0%	0.0%	0.0%	0.0%	10.6%	42.3%	10.6%	42.3%	10.6%	43.3%	10.6%	42.3%	20.2%	72.1%	18.3%	68.3%	0.0%	0.0%	1.9%	0.0%	3.8%	0.0%	2.9%	0.0%
Low Volume	12.0%	5.0%	0.0%	0.0%	0.0%	0.8%	9.2%	49.0%	9.2%	48.5%	9.2%	48.5%	9.2%	48.7%	19.6%	66.9%	18.8%	64.4%	3.1%	0.0%	3.9%	0.0%	1.1%	0.0%	3.9%	0.0%
Import	13.4%	6.1%	19.4%	7.1%	8.6%	21.3%	6.1%	40.9%	7.3%	40.9%	7.2%	41.2%	7.1%	40.8%	15.8%	49.7%	10.9%	44.4%	1.5%	0.0%	5.1%	0.0%	0.6%	0.0%	1.7%	0.0%
High Volume	11.4%	5.7%	7.0%	0.9%	2.2%	18.8%	9.6%	56.3%	10.5%	56.3%	10.5%	56.8%	11.4%	56.3%	18.8%	62.0%	14.0%	58.1%	0.4%	0.0%	8.3%	0.0%	0.4%	0.0%	1.3%	0.0%
Low Volume	13.8%	6.3%	22.3%	8.6%	10.1%	21.8%	5.2%	37.2%	6.6%	37.2%	6.5%	37.5%	6.1%	37.1%	15.1%	46.8%	10.2%	41.2%	1.7%	0.0%	4.3%	0.0%	0.6%	0.0%	1.7%	0.0%
Undefined	10.8%	3.0%	10.8%	3.3%	3.3%	22.3%	13.4%	43.9%	14.5%	43.5%	14.1%	44.6%	14.5%	44.2%	17.1%	59.9%	15.2%	53.5%	4.1%	0.0%	3.7%	0.0%	2.2%	0.0%	1.9%	0.0%

Option IV	Hong Kon	g Packaged ⁽⁴⁾	Not Hong K	ong Packaged	Require R	elabelling ⁽⁷⁾										Require	Testing ⁽⁸⁾									
L	All Nutrients? (5)	Correct Labels? (6)	All Nutrients? ⁽⁵⁾	Correct Labels?(6)	% in Phase I	% in Phase II	En	nergy	Pro	otein	Ca	rbo.	F	at	Sat.	Fat	Sod	ium	Chole	storol	Su	gars	Fi	bre	Cal	cium
					% I	%П	%I	%II	%I	%II	%I	%II	%I	%II	%I	%II	%I	%II	%I	%II	%I	%II	%I	%II	%I	%II
All Surveyed Products	28.1%	16.0%	17.4%	7.3%	5.3%	14.5%	7.9%	42.9%	8.8%	42.7%	8.7%	43.1%	8.7%	42.8%	0.4%	0.0%	0.1%	0.0%	2.1%	0.0%	4.5%	0.0%	1.1%	0.0%	2.2%	0.0%
Local	39.5%	26.2%	0.2%	0.0%	0.0%	0.7%	9.5%	47.5%	9.5%	47.1%	9.5%	47.3%	9.5%	47.3%	1.5%	0.0%	0.0%	0.0%	2.4%	0.0%	3.5%	0.0%	1.7%	0.0%	3.7%	0.0%
High Volume	44.2%	35.6%	0.0%	0.0%	0.0%	0.0%	10.6%	42.3%	10.6%	42.3%	10.6%	43.3%	10.6%	42.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	3.8%	0.0%	2.9%	0.0%
Low Volume	38.1%	23.5%	0.3%	0.0%	0.0%	0.8%	9.2%	49.0%	9.2%	48.5%	9.2%	48.5%	9.2%	48.7%	2.0%	0.0%	0.0%	0.0%	3.1%	0.0%	3.9%	0.0%	1.1%	0.0%	3.9%	0.0%
Import	24.7%	13.4%	24.3%	10.5%	7.8%	18.6%	6.1%	40.9%	7.3%	40.9%	7.2%	41.2%	7.1%	40.8%	0.1%	0.0%	0.1%	0.0%	1.5%	0.0%	5.1%	0.0%	0.6%	0.0%	1.7%	0.0%
High Volume	22.7%	13.5%	9.2%	2.2%	2.2%	17.5%	9.6%	56.3%	10.5%	56.3%	10.5%	56.8%	11.4%	56.3%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	8.3%	0.0%	0.4%	0.0%	1.3%	0.0%
Low Volume	25.1%	13.3%	27.8%	12.5%	9.1%	18.9%	5.2%	37.2%	6.6%	37.2%	6.5%	37.5%	6.1%	37.1%	0.1%	0.0%	0.1%	0.0%	1.7%	0.0%	4.3%	0.0%	0.6%	0.0%	1.7%	0.0%
Undefined	23.8%	10.0%	16.0%	5.6%	3.3%	20.1%	13.4%	43.9%	14.5%	43.5%	14.1%	44.6%	14.5%	44.2%	0.0%	0.0%	0.0%	0.0%	4.1%	0.0%	3.7%	0.0%	2.2%	0.0%	1.9%	0.0%
Notes:																										

(4) Products are considered packaged specifically for the Hong Kong market when they have either; a. The words Hong Kong (or H.K.) appear anywhere on the package, b. a bar code with the first three digit 489 on the package, or c. a Hong Kong telephone (country code 852) on the package.

(5) All nutrients refers to the % of products that include information on the 10 specific nutrients for Options I & V, the 8 specific nutrients for Options II and VI, the 6 specific nutrients for Options III and VII, and the 4 specific nutrients for Options IV and VIII.

(6) Correct labels refer to the correct expression of nutrition information, 1. in English or Chinese; 2. on a per 100g, per 100mL, or per package as a single portion basis; and 3. in correct kcal/metric units.

(7) Products require relabelling when they are not packaged specifically for the Hong Kong market (specified in note (4)) and do not provide sufficient nutrition information in correct format specified in note (6), either for supporting a nutrient claim and/or for required nutrients for the options.

(8) Products require testing when they do not provide sufficient nutrition information mentioned in note (6), either for supporting a nutrient claim and/or for required nutrients for the options.

Option V	Hong Kon	g Packaged ⁽⁴⁾	Not Hong K	ong Packaged	Require Re	elabelling ⁽⁷⁾										Require	Testing ⁽⁸⁾									
	All Nutrients? (5)	Correct Labels? (6)	All Nutrients?(5)	Correct Labels?(6)	% in Phase I	% in Phase II	En	ergy	Pro	otein	Ca	rbo.	F	Fat	Sat	. Fat	Soc	lium	Chole	estorol	Su	gars	Fi	bre	Cal	cium
					%I	%П	%I	%II	%I	%II	%I	%П	%I	%П	%I	% I I	%I	%П	%I	%II	%I	%II	%I	%П	%I	%II
All Surveyed Products	6.0%	0.3%	4.7%	0.1%	19.4%	7.7%	9.7%	41.1%	10.5%	41.1%	10.8%	41.1%	10.4%	41.1%	31.3%	41.1%	23.0%	41.1%	39.8%	41.1%	31.1%	41.1%	33.7%	41.1%	39.4%	41.1%
Local	6.1%	0.7%	0.0%	0.0%	0.2%	0.4%	10.2%	46.9%	9.8%	46.9%	10.0%	46.9%	10.0%	46.9%	41.0%	46.9%	37.1%	46.9%	37.3%	46.9%	41.0%	46.9%	38.4%	46.9%	39.7%	46.9%
High Volume	3.8%	1.9%	0.0%	0.0%	0.0%	0.0%	10.6%	42.3%	10.6%	42.3%	11.5%	42.3%	10.6%	42.3%	50.0%	42.3%	44.2%	42.3%	46.2%	42.3%	51.0%	42.3%	48.1%	42.3%	48.1%	42.3%
Low Volume	6.7%	0.3%	0.0%	0.0%	0.3%	0.6%	10.1%	48.2%	9.5%	48.2%	9.5%	48.2%	9.8%	48.2%	38.4%	48.2%	35.0%	48.2%	34.7%	48.2%	38.1%	48.2%	35.6%	48.2%	37.3%	48.2%
Import	6.5%	0.2%	6.6%	0.2%	26.9%	9.9%	8.6%	38.4%	9.8%	38.4%	10.0%	38.4%	9.5%	38.4%	27.1%	38.4%	16.9%	38.4%	40.3%	38.4%	27.2%	38.4%	31.4%	38.4%	38.2%	38.4%
High Volume	7.0%	0.4%	2.2%	0.0%	10.5%	11.4%	10.5%	55.5%	11.4%	55.5%	11.8%	55.5%	12.2%	55.5%	25.3%	55.5%	16.6%	55.5%	31.9%	55.5%	23.6%	55.5%	28.8%	55.5%	24.0%	55.5%
Low Volume	6.4%	0.1%	7.7%	0.2%	30.8%	9.5%	8.1%	34.4%	9.4%	34.4%	9.6%	34.4%	8.8%	34.4%	27.5%	34.4%	17.0%	34.4%	42.3%	34.4%	28.0%	34.4%	32.0%	34.4%	41.5%	34.4%
Undefined	3.7%	0.0%	4.1%	0.0%	19.0%	10.0%	14.1%	43.1%	14.9%	43.1%	15.6%	43.1%	15.6%	43.1%	33.8%	43.1%	25.7%	43.1%	42.0%	43.1%	31.6%	43.1%	36.1%	43.1%	44.2%	43.1%

Option VI	Hong Kor	ng Packaged ⁽⁴⁾	Not Hong K	ong Packaged	Require R	labelling ⁽⁷⁾										Require	Testing ⁽⁸⁾									
	All Nutrients? (5) Correct Labels? (6)	All Nutrients?(5)	Correct Labels?(6)	% in Phase I	% in Phase II	En	ergy	Pro	otein	Ca	rbo.	I	Fat	Sat	. Fat	Soc	lium	Chole	estorol	Su	gars	Fi	bre	Ca	lcium
					%I	% I I	%I	%П	%I	%II	%I	%П	%I	% II	%I	%II	%I	%П	%I	%II	%I	%П	%I	%II	%I	%II
All Surveyed Products	8.1%	2.6%	5.9%	0.5%	19.0%	7.7%	9.7%	41.1%	10.5%	41.1%	10.8%	41.1%	10.4%	41.1%	31.3%	41.1%	23.0%	41.1%	39.8%	41.1%	31.1%	41.1%	1.1%	0.0%	2.2%	0.0%
Local	8.7%	4.6%	0.0%	0.0%	0.2%	0.4%	10.2%	46.9%	9.8%	46.9%	10.0%	46.9%	10.0%	46.9%	41.0%	46.9%	37.1%	46.9%	37.3%	46.9%	41.0%	46.9%	1.7%	0.0%	3.7%	0.0%
High Volume	4.8%	3.8%	0.0%	0.0%	0.0%	0.0%	10.6%	42.3%	10.6%	42.3%	11.5%	42.3%	10.6%	42.3%	50.0%	42.3%	44.2%	42.3%	46.2%	42.3%	51.0%	42.3%	3.8%	0.0%	2.9%	0.0%
Low Volume	9.8%	4.8%	0.0%	0.0%	0.3%	0.6%	10.1%	48.2%	9.5%	48.2%	9.5%	48.2%	9.8%	48.2%	38.4%	48.2%	35.0%	48.2%	34.7%	48.2%	38.1%	48.2%	1.1%	0.0%	3.9%	0.0%
Import	8.4%	2.3%	8.4%	0.7%	26.3%	9.9%	8.6%	38.4%	9.8%	38.4%	10.0%	38.4%	9.5%	38.4%	27.1%	38.4%	16.9%	38.4%	40.3%	38.4%	27.2%	38.4%	0.6%	0.0%	1.7%	0.0%
High Volume	7.9%	2.6%	2.6%	0.0%	10.5%	11.4%	10.5%	55.5%	11.4%	55.5%	11.8%	55.5%	12.2%	55.5%	25.3%	55.5%	16.6%	55.5%	31.9%	55.5%	23.6%	55.5%	0.4%	0.0%	1.3%	0.0%
Low Volume	8.5%	2.3%	9.7%	0.9%	30.1%	9.5%	8.1%	34.4%	9.4%	34.4%	9.6%	34.4%	8.8%	34.4%	27.5%	34.4%	17.0%	34.4%	42.3%	34.4%	28.0%	34.4%	0.6%	0.0%	1.7%	0.0%
Undefined	5.6%	0.4%	5.2%	0.4%	18.6%	10.0%	14.1%	43.1%	14.9%	43.1%	15.6%	43.1%	15.6%	43.1%	33.8%	43.1%	25.7%	43.1%	42.0%	43.1%	31.6%	43.1%	2.2%	0.0%	1.9%	0.0%

Option VII	Hong Kon	g Packaged ⁽⁴⁾	Not Hong K	ong Packaged	Require R	elabelling ⁽⁷⁾										Require	Testing ⁽⁸⁾									
	All Nutrients? (5)	Correct Labels? (6)	All Nutrients? ⁽⁵⁾	Correct Labels?(6)	% in Phase I	% in Phase II	En	ergy	Pro	tein	Ca	rbo.	F	at	Sat.	. Fat	Soc	lium	Choles	torol	Sug	ars	Fil	ore	Cale	cium
					%I	%П	%I	%П	%I	%II	%I	%П	%I	%II	%I	% II	%I	%II	%I	%II	%I	%II	%I	%П	%I	%II
All Surveyed Products	12.4%	5.4%	13.5%	4.9%	14.6%	7.7%	9.7%	41.1%	10.5%	41.1%	10.8%	41.1%	10.4%	41.1%	31.3%	41.1%	23.0%	41.1%	2.1%	0.0%	4.5%	0.0%	1.1%	0.0%	2.2%	0.0%
Local	10.8%	5.0%	0.0%	0.0%	0.2%	0.4%	10.2%	46.9%	9.8%	46.9%	10.0%	46.9%	10.0%	46.9%	41.0%	46.9%	37.1%	46.9%	2.4%	0.0%	3.5%	0.0%	1.7%	0.0%	3.7%	0.0%
High Volume	6.7%	4.8%	0.0%	0.0%	0.0%	0.0%	10.6%	42.3%	10.6%	42.3%	11.5%	42.3%	10.6%	42.3%	50.0%	42.3%	44.2%	42.3%	0.0%	0.0%	1.9%	0.0%	3.8%	0.0%	2.9%	0.0%
Low Volume	12.0%	5.0%	0.0%	0.0%	0.3%	0.6%	10.1%	48.2%	9.5%	48.2%	9.5%	48.2%	9.8%	48.2%	38.4%	48.2%	35.0%	48.2%	3.1%	0.0%	3.9%	0.0%	1.1%	0.0%	3.9%	0.0%
Import	13.4%	6.1%	19.4%	7.1%	19.9%	9.9%	8.6%	38.4%	9.8%	38.4%	10.0%	38.4%	9.5%	38.4%	27.1%	38.4%	16.9%	38.4%	1.5%	0.0%	5.1%	0.0%	0.6%	0.0%	1.7%	0.0%
High Volume	11.4%	5.7%	7.0%	0.9%	9.6%	11.4%	10.5%	55.5%	11.4%	55.5%	11.8%	55.5%	12.2%	55.5%	25.3%	55.5%	16.6%	55.5%	0.4%	0.0%	8.3%	0.0%	0.4%	0.0%	1.3%	0.0%
Low Volume	13.8%	6.3%	22.3%	8.6%	22.4%	9.5%	8.1%	34.4%	9.4%	34.4%	9.6%	34.4%	8.8%	34.4%	27.5%	34.4%	17.0%	34.4%	1.7%	0.0%	4.3%	0.0%	0.6%	0.0%	1.7%	0.0%
Undefined	10.8%	3.0%	10.8%	3.3%	15.6%	10.0%	14.1%	43.1%	14.9%	43.1%	15.6%	43.1%	15.6%	43.1%	33.8%	43.1%	25.7%	43.1%	4.1%	0.0%	3.7%	0.0%	2.2%	0.0%	1.9%	0.0%

Option VIII	Hong Kon	g Packaged ⁽⁴⁾	Not Hong K	ong Packaged	Require R	elabelling ⁽⁷⁾										Require	Testing ⁽⁸⁾									
	All Nutrients? (5)	Correct Labels? (6)	All Nutrients? ⁽⁵⁾	Correct Labels?(6)	% in Phase I	% in Phase II	En	ergy	Pro	tein	Ca	rbo.	F	at	Sat.	. Fat	Soc	lium	Chole	estorol	Su	gars	F	ibre	Cal	cium
					%I	%П	%I	%II	%I	%II	%I	%П	%I	%II	%I	% I I	%I	%П	%I	%II	%I	%II	%I	%П	%I	%II
All Surveyed Products	28.1%	16.0%	17.4%	7.3%	12.2%	7.7%	9.7%	41.1%	10.5%	41.1%	10.8%	41.1%	10.4%	41.1%	0.4%	0.0%	0.1%	0.0%	2.1%	0.0%	4.5%	0.0%	1.1%	0.0%	2.2%	0.0%
Local	39.5%	26.2%	0.2%	0.0%	0.2%	0.4%	10.2%	46.9%	9.8%	46.9%	10.0%	46.9%	10.0%	46.9%	1.5%	0.0%	0.0%	0.0%	2.4%	0.0%	3.5%	0.0%	1.7%	0.0%	3.7%	0.0%
High Volume	44.2%	35.6%	0.0%	0.0%	0.0%	0.0%	10.6%	42.3%	10.6%	42.3%	11.5%	42.3%	10.6%	42.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	3.8%	0.0%	2.9%	0.0%
Low Volume	38.1%	23.5%	0.3%	0.0%	0.3%	0.6%	10.1%	48.2%	9.5%	48.2%	9.5%	48.2%	9.8%	48.2%	2.0%	0.0%	0.0%	0.0%	3.1%	0.0%	3.9%	0.0%	1.1%	0.0%	3.9%	0.0%
Import	24.7%	13.4%	24.3%	10.5%	16.5%	9.9%	8.6%	38.4%	9.8%	38.4%	10.0%	38.4%	9.5%	38.4%	0.1%	0.0%	0.1%	0.0%	1.5%	0.0%	5.1%	0.0%	0.6%	0.0%	1.7%	0.0%
High Volume	22.7%	13.5%	9.2%	2.2%	8.3%	11.4%	10.5%	55.5%	11.4%	55.5%	11.8%	55.5%	12.2%	55.5%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	8.3%	0.0%	0.4%	0.0%	1.3%	0.0%
Low Volume	25.1%	13.3%	27.8%	12.5%	18.5%	9.5%	8.1%	34.4%	9.4%	34.4%	9.6%	34.4%	8.8%	34.4%	0.1%	0.0%	0.1%	0.0%	1.7%	0.0%	4.3%	0.0%	0.6%	0.0%	1.7%	0.0%
Undefined	23.8%	10.0%	16.0%	5.6%	13.4%	10.0%	14.1%	43.1%	14.9%	43.1%	15.6%	43.1%	15.6%	43.1%	0.0%	0.0%	0.0%	0.0%	4.1%	0.0%	3.7%	0.0%	2.2%	0.0%	1.9%	0.0%

Options I to VIII (Phase I)					R	equire Testing (Nutrient	s and Vitan	nins)		
	General Vitamins ⁽⁹⁾	Vitamin A	Vitamin B	Vitamin C	Vitamin D	Vitamin E		Minerals (10)	Fatty Acids & Organic Nutrients ⁽¹¹⁾
	Three Tests						One test	Two tests	Three tests	Test(s)
All Surveyed Products	1.2%	0.6%	0.2%	0.6%	0.3%	0.6%	0.6%	0.2%	1.2%	0.9%
Local	2.4%	1.5%	0.2%	0.9%	0.2%	0.2%	0.9%	0.2%	2.8%	1.3%
High Volume	0.0%	1.9%	1.0%	1.9%	0.0%	0.0%	1.0%	0.0%	5.8%	2.9%
Low Volume	3.1%	1.4%	0.0%	0.6%	0.3%	0.3%	0.8%	0.3%	2.0%	0.8%
Import	0.7%	0.3%	0.2%	0.7%	0.4%	0.3%	0.4%	0.2%	0.8%	0.6%
High Volume	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.9%	0.9%
Low Volume	0.8%	0.4%	0.3%	0.8%	0.5%	0.4%	0.5%	0.1%	0.8%	0.5%
Undefined	1.1%	0.4%	0.0%	0.0%	0.0%	2.2%	1.1%	0.0%	0.4%	1.5%

Notes

(4) Products are considered packaged specifically for the Hong Kong market when they have either: a. The words Hong Kong (or H.K.) appear anywhere on the package, b. a bar code with the first three digit 489 on the package, or c. a Hong Kong telephone (country code 852) on the package. (5) All nutrients refers to the % of products that include information on the 10 specific nutrients for Options I & V, the 8 specific nutrients for Options II and VI, the 6 specific nutrients for Options III and VII.

(6) Correct labels refer to the correct expression of nutrition information, 1. in English or Chinese; 2. on a per 100g, per 100mL, or per package as a single portion basis; and 3. in correct kcal/metric units.

(9) Orderets require relabelling when they are not packaged specifically for the function (a) and (b) and (b) are paragonal and and an area in concrete taution in correct dama and an area matching and (b) area (b) and (b) area (b) and (b) area (b

(8) Products require testing when they do not provide sufficient nutrition information mentioned in note (6), either for supporting a nutrient claim and/or for required nutrients for the options.

(b) Products require using when they do not provide sumcent nutrinon mormation memoria on nore (a), either for supporting a nutrient cann and/or for required nutrients for the options.
 (c) General Vitamins refers to nutrient claims on vitamins without specifying a particular type. In this case, it is assumed that an average of 3 testings will be carried out to substantiate the claim.
 (d) This refers to any claims regarding general or specific types of minerals/electrolytes in the case for general inneral/ electrolyte claim, it is assumed that an average of 3 testings will be carried out to substantiate the claim.
 (11) Examples of fatty acids and organic nutrients include DHA, ARA, AA, SA, Omega-3, Omega-6, beta-carotene, lypoene, 蘋果酸, 油酸, 亞油酸, 亞語酸, 皮語敏酸 and EFA.

NB Found products exclude 25 products that were found but are exempted.

Annex D

Cost-Benefit Analysis of Options

	Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Revenue Impacts to Trade (HK\$ millions)					Phase I										Phase II								
а	Phase I Relabelling Costs	-	-	-	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0
b	Phase II Relabelling Costs	-	-	-	-	-	-	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0	106.0
с	Phase I Testing Costs (including discount)	-	-	-	27.6	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
d	Phase II Testing Costs (including discount)	-	-	-	-	-	-	77.1	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
e	Total (Phase I Trade Costs)	-	-	-	58.6	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9
f	Total (Phase II Trade Costs)	-	-	-	-	-	-	183.1	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8
g	Total (All Trade Costs)	-	-	-	58.6	34.9	34.9	218.0	151.7	151.7	151.7	151.7	151.7	151.7	151.7	151.7	151.7	151.7	151.7	151.7	151.7	151.7	151.7	151.7
h	% of Applicable Household Expenditure (Phase I Trade Costs)	-	-	-	0.25%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%
1	% of Applicable Household Expenditure (lotal lrade Costs)	-	-	-	0.25%	0.15%	0.15%	0.95%	0.66%	0.66%	0.66%	0.66%	0.66%	0.66%	0.66%	0.66%	0.66%	0.66%	0.66%	0.00% 79.0	0.00% 60.9	0.00%	0.00%	0.00%
J	Net Descent Value of Tatal Tarde Costs	-	-	-	30.1 N-4 D	20.1	27.0	105.0	110.0	100.0	102.3	96.5	94.7	91.1	07.0	04.2	01.0	77.9	74.9	72.0	03.2	00.0	04.0	01.5
	Max. % of Applicable Household Expenditure			0.95%	Max.	% of App	licable Ho	se i i rau ousehold l	e Costs Expenditu	ure (Phase	I Trade (Costs)			0.25%									
	Economic Impacts (HK\$ millions)																							
	Economic Costs																							
k	Administration Costs	-	-	-	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
1	Phase I Relabelling and Testing Costs	-	-	-	58.6	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9
m	Phase I Lost Products Impacts	-	-	-	28.1	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
n	Phase II Relabelling and Testing Costs	-	-	-	-	-	-	183.1	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8	116.8
0	Phase II Lost Products Impacts	-	-	-	-	-	-	60.8	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
р	Total (Phase I Costs) - including Administration Costs	-	-	-	91.1	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2
q	Total (Phase II Costs) - excluding Administration Costs	-	-	-	-	-	-	243.9	125.3	125.3	125.3	125.3	125.3	125.3	125.3	125.3	125.3	125.3	125.3	125.3	125.3	125.3	125.3	125.3
r	Total (All Costs)	-	-	-	91.1	43.2	43.2	287.1	168.5	168.5	168.5	168.5	168.5	168.5	168.5	168.5	168.5	168.5	168.5	168.5	168.5	168.5	168.5	168.5
\$	Discounted Total Costs	-	-	-	77.9	35.5	34.2	218.2	123.1	118.4	113.9	109.5	105.3	101.2	97.3	93.6	90.0	86.5	83.2	80.0	76.9	74.0	71.1	68.4
	Net Present Value of Total Costs Economic henefits			1,838.1	Net P	resent Val	lue of Pha	se I Tota	Costs						303.3									
t	Phase I (excluding mortality benefits)	-	-	-	7.0	14.0	21.0	27.9	34.9	41.9	48.9	55.9	62.9	69.8	76.8	83.8	90.8	97.8	104.8	104.8	104.8	104.8	104.8	104.8
u	Phase II (excluding mortality benefits)	-	-	-	-	-	-	18.5	37.0	55.5	74.0	92.5	111.0	129.5	148.0	166.5	185.0	203.5	222.0	240.5	259.0	277.5	277.5	277.5
v	Phase I (mortality benefits)	-	-	-	25.7	51.4	77.1	102.8	128.5	154.1	179.8	205.5	231.2	256.9	282.6	308.3	334.0	359.7	385.4	385.4	385.4	385.4	385.4	385.4
w	Phase II (mortality benefits)	-	-	-	-	-	-	68.1	136.1	204.2	272.2	340.3	408.3	476.4	544.4	612.5	680.6	748.6	816.7	884.7	952.8	1020.8	1020.8	1020.8
х	Phase I Benefits (including mortality benefits)	-	-	-	32.7	65.3	98.0	130.7	163.4	196.0	228.7	261.4	294.1	326.7	359.4	392.1	424.8	457.4	490.1	490.1	490.1	490.1	490.1	490.1
у	Phase II Benefits (including mortality benefits)	-	-	-	-	-	-	86.6	173.1	259.7	346.2	432.8	519.3	605.9	692.4	779.0	865.5	952.1	1038.7	1125.2	1211.8	1298.3	1298.3	1298.3
z	Total Benefits (excluding mortality benefits)	-	-	-	7.0	14.0	21.0	46.4	71.9	97.4	122.9	148.4	173.8	199.3	224.8	250.3	275.8	301.3	326.7	345.2	363.7	382.2	382.2	382.2
aa	Discounted Total Benefits (excluding mortality benefits)	-	-	-	6.0	11.5	16.6	35.3	52.5	68.4	83.0	96.4	108.6	119.7	129.8	139.0	147.2	154.7	161.3	163.9	166.0	167.7	161.3	155.1
ab	Total Benefits (including mortality benefits)	-	-	-	32.7	65.3	98.0	217.3	336.5	455.7	574.9	694.2	813.4	932.6	1051.9	1171.1	1290.3	1409.5	1528.8	1615.3	1701.9	1788.4	1788.4	1788.4
ac	Discounted Total Benefits (including mortality benefits)	-	-	-	27.9	53.7	77.5	165.1	245.9	320.2	388.4	450.9	508.0	560.1	607.4	650.3	688.9	723.6	754.6	766.7	776.7	784.8	754.6	725.6
	Net Present Value of Total Benefits (excluding mortality benefit	s)		2,144.0	Net P	resent Va	lue of Pha	se I Benei	fits (exclu	ding mor	tality ben	efits)			732.2									
	Net Present Value of Total Benefits (including mortality benefit	s)		10,031.0	Net P	resent Val	lue of Pha	se I Benei	tits (inclu	ding mort	tality ben	efits)			3,425.6									
ad	Phase I Net Benefits (excluding mortality benefits)	-	-	-	-84.1	-29.3	-22.3	-15.3	-8.3	-1.3	5.6	12.6	19.6	26.6	33.6	40.6	47.5	54.5	61.5	61.5	61.5	61.5	61.5	61.5
ae	Phase II Net Benefits (excluding mortality benefits)	-	-	-	-	-	-	-225.4	-88.3	-69.8	-51.3	- <i>32.8</i>	-14.3	4.2	22.7	41.2	59.7	7 8 .2	96.7	115.2	133.7	152.2	152.2	152.2
af	Total Net Benefits (excluding mortality benefits)	-	-	-	-84.1	-29.3	-22.3	-240.7	-96.6	-71.1	-45.7	-20.2	5.3	30.8	56.3	81.8	107.2	132.7	158.2	176.7	195.2	213.7	213.7	213.7
ag	Discounted Total Net Benefits (excluding mortality benefits)	-	-	-	-71.9	-24.1	-17.6	-182.9	-70.6	-50.0	-30.8	-13.1	3.3	18.5	32.5	45.4	57.3	68.1	78.1	83.9	89.1	93.8	90.2	86.7
ah	Phase I Net Benefits (including mortality benefits)	-	-	-	-58.4	22.1	54.8	87.5	120.1	152.8	185.5	218.1	250.8	283.5	316.2	348.8	381.5	414.2	446.9	446.9	446.9	446.9	446.9	446.9
ai	Phase II Net Benefits (including mortality benefits)	-	-	-	-	-	-	-157.3	47.8	134.4	220.9	307.5	394.0	480.6	567.1	653.7	740.3	826.8	913.4	999.9	1086.5	1173.0	1173.0	1173.0
aj	Total Net Benefits (including mortality benefits)	-	-	-	-58.4	22.1	54.8	-69.9	167.9	287.2	406.4	525.6	644.9	764.1	883.3	1002.5	1121.8	1241.0	1360.2	1446.8	1533.3	1619.9	1619.9	1619.9
ak	Discounted Total Net Benefits (including mortality benefits)	-	-	-	-49.9	18.2	43.3	-53.1	122.7	201.8	274.6	341.4	402.8	458.9	510.1	556.7	598.9	637.1	671.4	686.7	699.8	/10.9	683.5	657.Z
	Net Present Value of Total Net Benefits (excluding mortality)			285.8	Net P	resent Val	lue of Pha	se I Net E	Senefits (e	xcluding	mortality	9			168.8									
	Benefit to Cost Ratio (excluding mortality)			1.Z	Benef.	it to Cost	Katio								1.3									
	Net Present Value of Total Net Benefits (Including mortality) Benefit to Cost Datis (including mortality)			8,172.9 5 A	Net P	resent val	Detie	se i net E	senerits (1	nciuaing	mortanty	9			2,802.3									
	benefit to Cost Ratio (including mortanty)			J.4	Denen		кано								0.1									
	Key Data:						D (%)	anze	k							Tered C		、 、						
	General Discount Pate			40/			Benefits	(HK\$ mill	nons)	(ovel-di-	a montalia	52)		104.0		I rade Co	osts (cont.	<u>)</u> sting Com	te (UV0	nilliona)			90.4	
	Discount Rate			4% 93 000			Phase I N	aximum	Benefits	excluding	g mortalit	y)		104.8		One off I	nase I Te Phase II T	esting Cos	ete (HKS I	millions)			28.4	
	Vears to accrue maximum benefits			۵3,000 15			Phase I	Maximum	n Repofite	(excludin	a mortali	ity)		303.4 977 ¤		New Pro	ducte Por	- Δnnum	313 (IJK)	minons)			90.9 1 <i>1</i> 04	
	Value of Statistical Life (HKS millions)			10			Phase II	Mortality	Benefits	(EXCIUUII	ig moriali	ity)		1 020 8		Phase I T	esting Co	st Discou	nt (Adius	ted)			2.8%	
	Government Costs (HK\$ millions)			10			Trade Co	osts	Senents					1,020.0		Phase II	Testing C	ost Discou	unt (Adiu	sted)			15.2%	
	Enforcement Costs			3.0			Annual I	hase I Re	labelling	Costs (HI	X\$ millior	ns)		31.0		Phase I L	ost Produ	ict Costs	(HK\$ mill	ions)			28.1	
	Promotion Costs			1.4			Annual I	Phase II R	elabelling	Costs (H	K\$ millio	ns)		106.0		Phase II	Lost Prod	uct Costs	(HK\$ mil	llions)			60.8	

Table D1: Cost Benefit Analysis of Option I

Table D2: Cost Benefit Analysis of Option II

	Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Revenue Impacts to Trade (HKS millions)					Phase I										Phase II								
а	Phase I Relabelling Costs	-	-	-	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7
b	Phase II Relabelling Costs	-	-	-	-	-	-	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3	105.3
c	Phase I Testing Costs (including discount)	-	-	-	21.9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
d	Phase II Testing Costs (including discount)	-	-	-	-	-	-	63.3	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
e	Total (Phase I Trade Costs)	-	-	-	52.6	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7
f	Total (Phase II Trade Costs)	-	-	-	-	-	-	168.6	114.1	114.1	114.1	114.1	114.1	114.1	114.1	114.1	114.1	114.1	114.1	114 1	114.1	114 1	114.1	114 1
σ	Total (All Trade Costs)	-	-	-	52.6	33 7	33 7	202.4	147.9	147.9	147.9	147.9	1479	147.9	147.9	147.9	147.9	147.9	1479	147.9	147.9	147.9	147.9	147 9
ь h	% of Applicable Household Expenditure (Phase I Trade Costs)	-	-	-	0.23%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%	0 15%	0 15%	0 15%	0 15%	0 15%	0 15%	0 15%
i	% of Applicable Household Expenditure (Total Trade Costs)	-	-	-	0 23%	0 15%	015%	0 88%	0 64%	0 64%	0 64%	0 64%	0 64%	0 64%	0 64%	0 64%	0 64%	0.64%	0 64%	0 64%	0 64%	0 64%	0 64%	0 64%
i	Discounted Total Trade Costs	-	-	-	45.0	27.7	26 7	153.8	108 1	103.9	99.9	96.1	92.4	88.8	85.4	82.1	79.0	75.9	73.0	70.2	67.5	64.9	62.4	60.0
,	Net Present Value of Total Trade Costs			1 562 7	Net P	resent Va	lue of Ph	ase I Tra	le Costs	100.0	00.0	00.1	02.1	00.0	423.8	02.1	10.0	1010	10.0	10.2	07.0	01.0	02.1	00.0
	Max. % of Applicable Household Expenditure			0.88%	Max.	% of App	licable H	ousehold	Expendit	ure (Phas	e I Trade	Costs)			0.23%									
	Economic Impacts (HKS millions)																							
	Franchic Casts																							
ı	Administration Costs				12	19	19	19	19	19	19	1 2	19	19	1 2	12	1 2	12	19	19	19	4.9	19	4.9
1	Phase I Pelabelling and Testing Costs		-		52.6	32.7	33.7	32.7	33.7	32.7	33.7	33.7	33.7	32.7	33.7	33.7	32.7	32.7	327	32.7	32.7	4.2	4.2	4.2
m	Phase I Lost Products Impacts				27.3	38	38	38	38	38	38	38	38	3.8	38	38	38	3.8	3.8	3.8	3.8	3.8	3.8	3.8
n.	Phase II Relabelling and Testing Costs	-	_	_	-	-	-	168.6	114.1	114.1	114.1	114 1	114.1	114.1	114 1	114.1	114 1	114.1	114 1	114.1	114 1	114 1	114 1	114 1
0	Phase II Lost Products Impacts	-	_	-	-	-	-	59.1	8.3	8.3	8.3	8.3	8.3	8.3	83	83	83	83	83	83	83	83	83	83
D	Total (Phase I Costs) - including Administration Costs	-	-	-	84.1	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8
r a	Total (Phase II Costs) - excluding Administration Costs	-	-	-	-	-	-	227.7	122.4	122.4	122.4	122.4	122.4	122.4	122.4	122.4	122.4	122.4	122.4	122.4	122.4	122.4	122.4	122.4
ч r	Total (All Costs)	-	-	-	84.1	41.8	41.8	269.5	164.2	164.2	164.2	164.2	164.2	164.2	164.2	164.2	164.2	164 2	164 2	164 2	164 2	164 2	164 2	164 2
۰ د	Discounted Total Costs	-	-	-	71.9	34.4	33.0	204.8	120.0	115.4	110.9	106 7	102.6	98.6	94.8	91.2	87 7	84.3	81.1	77.9	74.9	72 1	69.3	66.6
3	Net Present Value of Total Costs			1 798 2	Net P	resent Va	lue of Ph	ase I Tota	al Costs	110.4	110.0	100.7	102.0	50.0	541.1	01.2	07.7	04.0	01.1	11.0	74.5	12.1	05.5	00.0
	Economic benefits			1,700.2		i cocine y d	140 01 1 1								01111	1								
t	Phase I (excluding mortality benefits)	-	_	_	2.6	5.1	77	10.2	12.8	15.3	179	20.5	23.0	25.6	28.1	30.7	33.3	35.8	38.4	38.4	38.4	38.4	38.4	38.4
	Phase II (excluding mortality benefits)	-		_	-	-	-	7.0	14.0	21.0	28.0	35.1	42.1	49.1	56.1	63.1	70.1	77.1	84.1	91.1	98.2	105.2	105.2	105.2
v	Phase I (mortality benefits)	-	_	_	19.1	38.2	57.3	76.4	95.5	114.5	133.6	152.7	171.8	190.9	210.0	229.1	248.2	267.3	286.4	286.4	286.4	286.4	286.4	286.4
w	Phase II (mortality benefits)	-	_	_	- 10.1	-	-	52.3	104.6	157.0	209.3	261.6	313.9	366.3	418.6	470.9	523.2	575.6	627.9	680.2	732.5	784.9	784.9	784.9
x	Phase I Benefits (including mortality benefits)	-	-	-	21.6	43.3	64.9	86.6	104.0	129.9	151.5	173.2	194.8	216.5	238.1	259.8	281.4	303.1	324 7	324 7	324 7	324 7	324 7	324 7
v	Phase II Benefits (including mortality benefits)	-	-	-	-	-	-	59.3	118 7	178.0	237.3	296 7	356.0	415.4	474 7	534.0	593 4	652 7	712.0	771 4	830 7	890.0	890.0	890.0
у 7	Total Bonefits (avcluding mortality benefits)		_		26	51	77	179	26.8	364	46 0	55 5	65 1	74 7	819	03.8	103 4	119 0	199 5	190 5	136 5	143 5	142 5	143 5
2	Discounted Total Benefits (excluding mortality benefits)		-		2.0	4.2	61	13.1	19.6	25.6	31.0	36.1	40.7	44.8	48.6	52 1	55.2	58.0	60 5	61 5	623	63.0	60 G	58.2
ah	Total Benefits (including mortality benefits)		-		21.6	43 3	64 9	145.9	226.9	307 9	388 9	469.9	550.9	631 8	7198	793.8	874 8	955.8	1036 8	1096 1	1155 4	1214.8	1214.8	1214.8
ac	Discounted Total Benefits (including mortality benefits)	-	-	_	18.5	35.6	51.3	110.9	165.8	216.3	262.7	305.2	344 1	379.5	411.6	440.8	467.1	490 7	511.8	520.3	527 3	533.1	5126	1014.0
	Not Procent Volue of Total Panafite (avaluding mortality banafi	te)		902 2	Not D	recent Vo	lue of Dh	neo I Pon	afite (aval	uding me	rtality h	nofite)			969 9				01110	02010	02110	000.1	012.0	102.0
	Net Present Value of Total Benefits (including mortality benefit	ts)		6.798.0	Net P	resent Va	lue of Ph	ase I Ben ase I Ben	efits (incl	uding mo	rtality be	nefits)			2.269.7									
				.,	01 5	90.7	94.1	91.0	90.0	90 4	99.0	91.9	100	10.9	10.7									
au	Phase I Net Benefits (excluding mortality benefits)	-	-	-	-01.5	-30.7	-34.1	-31.0	-29.0	-20.4	-23.9	-21.3	-10.0	-10.2	-13.7	-11.1	-8.3 29.9	-0.0	-3.4	-3.4	-3.4	-3.4	-3.4	-3.4
ae	r nase if Net Benefits (excluding mortality benefits)	-	-	-	-	-	-	-220.7	-108.4	-101.4	-94.4	-ð/.4	-80.4	-/3.3	-00.3	-59.3	-52.3	-43.3	-38.3	-31.3	-24.3	-17.3	-17.3	-17.3
af	Total Net Benefits (excluding mortality benefits)	-	-	-	-81.5	-36.7	-34.1	-252.3	-137.4	-127.8	-118.3	-108.7	-99.1	-89.6	-80.0	-70.4	-60.9	-51.3	-41.7	-34.7	-27.7	-20.7	-20.7	-20.7
ag	Discounted Total Net Benefits (excluding mortality benefits)	-	-	-	-09.7	-30.1	-27.0	-191.7	-100.4	-89.8	-79.9	-70.6	-01.9	-23.8	-40.2	-39.1	-32.5	-26.3	-20.6	-16.5	-12.6	-9.1	-8.7	-8.4
an	Phase I Net Benefits (including mortality benefits)	-	-	-	-62.5	1.5	23.Z	44.8	66.4	88.1	109.7	131.4	153.0	174.7	196.3	218.0	239.6	261.3	282.9	282.9	282.9	282.9	282.9	282.9
a1	Phase II Net Benefits (including mortality benefits)	I Net Benefits (including mortality benefits) (et Benefits (including mortality benefits)								55.6	114.9	174.3	233.6	292.9	352.3	411.6	470.9	530.3	589.6	648.9	708.3	767.6	767.6	767.6
aj	Total Net Benefits (including mortality benefits)	-	-	-62.5	1.5	23.2	-123.6	62.7	143.7	224.7	305.7	386.6	467.6	548.6	629.6	710.6	791.6	872.6	931.9	991.Z	1050.6	1050.6	1050.6	
ак	Discounted Total Net Benefits (Including mortality benefits)	-	-	-33.4	1.2	18.3	-93.9	43.8 D	101.0	131.8	198.5	241.5	280.8	310.8	349.0	379.4	406.4	430.7	442.3	432.4	461.0	443.3	426.2	
	Net Present value of lotal Net Benefits (excluding mortality) Banafit to Cost Botic (uncluding mortality)	It to Cost Ratio (excluding mortality)									g mortani	(y)			-2/2.9									
	Benefit to Cost Ratio (excluding mortality)			0.4 1 000 9	Not D	n to Cost	NALIU Jue of Dh	aco I Not	Ponofito	(includin)	, montali)			0.J 1 790 B									
	Net Present value of Total Net Benefits (including mortality) Repetit to Cost Patio (including mortality)			4,999.0	Net P	resent va it to Cost	Detio	ase I ivel	Denents (menuanng	g mortani	<i>y)</i>			1,720.0									
	benefit to Cost Ratio (including inortainty)			5.8	Dener	ii io cosi	кано								4.2									
	Key Data:																							
	General						Benefits	(HK\$ mil	lions)							Trade Co	osts (cont.	1					00.0	
	Discount Kate			4%			Phase I M	/aximum	Benefits	(excludir	ng mortali	ity)		38.4		Une-off I	nase I Te	esting Cos	sts (HK\$ 1	millions)			22.3	
	Household Expenditure on Pre-packaged Food (HK\$ millions)			23,000			Phase I M	nortality	Benefits			P.E. 3		286.4		Une-off I	nase II T	esting Co	sts (HKS	millions)			69.6	
	rears to accrue maximum benefits			15			Phase II	Mart 1	n Benefits	s (excludi	ng morta	uty)		105.2		INEW Pro	aucts Per	Annum		ata d)			14%	
	Value of Statistical Life (HKS millions)			10			rnase II	wortality	Benefits					784.9		rnase I I	esting Co	IST DISCOU	uit (Adju:	sted)			1.6%	
	Enforcement Costs (FIX) IIIIIIOIIS)			9.0			Approx11	Dhace I P	alabellis	Conta (1)	Ke mille	.nc)		20.7		r nase II	oct Pro 1	ust Cast	uni (Adju /Linze''	lione)			9.0%	
	Promotion Costs			2.8 1.4				hase I R Phase II P	eiabelling	r Costs (H	-K\$ milli	ons)		30.7 105 9		Phase II	lost Prod	uct Costs	(HK\$ mi	llions)			27.3 59.1	
		1.4									Tree of the second seco	····)		100.0		- mase II .		aut Costs	. (* 1126 111				00.1	

Table D3: Cost Benefit Analysis of Option III

	Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Revenue Impacts to Trade (HKS millions)					Phase I										Phase II								
а	Phase I Relabelling Costs	-	-	-	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
h	Phase II Relabelling Costs	-	-	_	-	-	-	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1	98.1
c	Phase I Testing Costs (including discount)	-	-	-	15.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
d	Phase II Testing Costs (including discount)	-	-	-	-	-	-	40.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
e	Total (Phase I Trade Costs)	-	-	-	38.0	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1
f	Total (Phase II Trade Costs)	-	_	-	-	-	-	138 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7	103 7
o o	Total (All Trade Costs)	-	_	-	38.0	25 1	25 1	163.8	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9
ь h	% of Applicable Household Expenditure (Phase I Trade Costs)	-		-	017%	0 11%	0 11%	011%	0 11%	0 11%	0 11%	0 11%	0 11%	0 11%	0 11%	0 11%	0 11%	0 11%	0.11%	0 11%	0 11%	0 11%	0 11%	0.11%
i.	% of Applicable Household Expenditure (Total Trade Costs)	-	_	-	017%	011%	0 11%	0 71%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%
	Discounted Total Trade Costs				32.5	20.6	19.8	124 4	94.2	90.5	87.0	83.7	80.5	77.4	74.4	71.5	68.8	66.2	63.6	61.2	58.8	56 5	54.4	52.3
J	Net Present Value of Total Trade Costs			1 338 4	Net P	resent Va	lue of Ph	ase I Tra	le Costs	00.0	07.0	00.1	00.0		314.4	1	00.0	00.2	00.0	01.2	00.0	00.0	0	02.0
	Max. % of Applicable Household Expenditure			0.71%	Max.	% of App	licable H	ousehold	Expendit	ure (Phas	e I Trade	Costs)			0.17%									
	Economic Impacts (HKS millions)								-							4								
	Economic Costs																							
k	Administration Costs	-	-	-	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	41	4 1
1	Phase I Relabelling and Testing Costs	-	-	-	38.0	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1	25.1
m	Phase I Lost Products Impacts	-	-	-	22.5	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
n	Phase II Relabelling and Testing Costs	-	-	-	-	-	-	138.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7
0	Phase II Lost Products Impacts	-	-	-	-	-	-	53.4	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
р	Total (Phase I Costs) - including Administration Costs	-	-	-	64.6	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3	32.3
q	Total (Phase II Costs) - excluding Administration Costs	-	-	-	-	-	-	192.1	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2
r	Total (All Costs)	-	-	-	64.6	32.3	32.3	224.4	143.5	143.5	143.5	143.5	143.5	143.5	143.5	143.5	143.5	143.5	143.5	143.5	143.5	143.5	143.5	143.5
s	Discounted Total Costs	-	-	-	55.2	26.6	25.5	170.5	104.9	100.9	97.0	93.2	89.7	86.2	82.9	79.7	76.6	73.7	70.9	68.1	65.5	63.0	60.6	58.2
	Net Present Value of Total Costs			1,548.9	Net P	resent Va	lue of Ph	ase I Tota	al Costs						418.0	1								
	Economic benefits															•								
t	Phase I (excluding mortality benefits)	-	-	-	2.0	4.0	6.1	8.1	10.1	12.1	14.2	16.2	18.2	20.2	22.3	24.3	26.3	28.3	30.4	30.4	30.4	30.4	30.4	30.4
u	Phase II (excluding mortality benefits)	-	-	-	-	-	-	6.6	13.2	19.7	26.3	32.9	39.5	46.1	52.7	59.2	65.8	72.4	79.0	85.6	92.2	98.7	98.7	98.7
v	Phase I (mortality benefits)	-	-	-	14.6	29.2	43.8	58.4	72.9	87.5	102.1	116.7	131.3	145.9	160.5	175.1	189.6	204.2	218.8	218.8	218.8	218.8	218.8	218.8
w	Phase II (mortality benefits)	-	-	-	-	-	-	47.4	94.8	142.3	189.7	237.1	284.5	331.9	379.3	426.8	474.2	521.6	569.0	616.4	663.8	711.3	711.3	711.3
x	Phase I Benefits (including mortality benefits)	-	-	-	16.6	33.2	49.8	66.5	83.1	99.7	116.3	132.9	149.5	166.1	182.7	199.4	216.0	232.6	249.2	249.2	249.2	249.2	249.2	249.2
у	Phase II Benefits (including mortality benefits)	-	-	-	-	-	-	54.0	108.0	162.0	216.0	270.0	324.0	378.0	432.0	486.0	540.0	594.0	648.0	702.0	756.0	810.0	810.0	810.0
z	Total Benefits (excluding mortality benefits)	-	-	-	2.0	4.0	6.1	14.7	23.3	31.9	40.5	49.1	57.7	66.3	74.9	83.5	92.1	100.8	109.4	115.9	122.5	129.1	129.1	129.1
aa	Discounted Total Benefits (excluding mortality benefits)	-	-	-	1.7	3.3	4.8	11.2	17.0	22.4	27.4	31.9	36.1	39.8	43.3	46.4	49.2	51.7	54.0	55.0	55.9	56.7	54.5	52.4
ab	Total Benefits (including mortality benefits)	-	-	-	16.6	<i>33.2</i>	49.8	120.5	191.1	261.7	332.3	402.9	473.5	544.1	614.7	685.4	75 6.0	826.6	89 7.2	<i>951.2</i>	1005.2	1059.2	1059.2	1059.2
ac	Discounted Total Benefits (including mortality benefits)	-	-	-	14.2	27.3	39.4	91.5	139.6	183.8	224.5	261.7	295.8	326.8	355.0	380.6	403.6	424.3	442.9	451.5	458.8	464.8	446.9	429.7
	Net Present Value of Total Benefits (excluding mortality benef	its)		714.6	Net P	resent Va	lue of Ph	ase I Ben	efits (excl	uding mo	ortality be	enefits)			212.3									
	Net Present Value of Total Benefits (including mortality benef	its)		5,862.7	Net P	resent Va	lue of Ph	ase I Ben	efits (incl	uding mo	ortality be	enefits)			1,741.7									
ad	Phase I Net Benefits (excluding mortality benefits)	-	-	-	-62.5	-28.3	-26.2	-24.2	-22.2	-20.2	-18.1	-16.1	-14.1	-12.1	-10.0	-8.0	-6.0	-4.0	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9
ae	Phase II Net Benefits (excluding mortality benefits)	-	-	-	-	-	-	-185.5	-98.1	-91.5	-84.9	-78.3	-71.7	-65.1	-5 8.6	-52.0	-45.4	-38.8	-32.2	-25.7	-19.1	-12.5	-12.5	-12.5
af	Total Net Benefits (excluding mortality benefits)	-	-	-	-62.5	-28.3	-26.2	-209.7	-120.3	-111.6	-103.0	-94.4	-85.8	-77.2	-68.6	-60.0	-51.4	-42.8	-34.2	-27.6	-21.0	-14.4	-14.4	-14.4
ag	Discounted Total Net Benefits (excluding mortality benefits)	-	-	-	-53.4	-23.2	-20.7	-159.4	-87.9	-78.4	-69.6	-61.3	-53.6	-46.4	-39.6	-33.3	-27.4	-22.0	-16.9	-13.1	-9.6	-6.3	-6.1	-5.9
ah	Phase I Net Benefits (including mortality benefits)	-	-	-	-47.9	.9	17.5	34.1	50.7	67.4	84.0	100.6	117.2	133.8	150.4	167.0	183.6	200.3	216.9	216.9	216.9	216.9	216.9	216.9
ai	Phase II Net Benefits (including mortality benefits)	-	-	-	-	-	-	-138.1	-3.2	50.8	104.8	158.8	212.8	266.8	320.8	374.8	428.8	482.8	536.8	590.8	644.8	698.8	698.8	698.8
aj	Total Net Benefits (including mortality benefits)	-	-	-	-47.9	.9	17.5	-104.0	47.5	118.1	188.7	259.4	330.0	400.6	471.2	541.8	612.4	683.0	753.6	807.6	861.6	915.6	915.6	915.6
ak	Discounted Total Net Benefits (including mortality benefits)	-	-	-	-41.0	0.7	13.8	-79.0	34.7	83.0	127.5	168.5	206.1	240.6	272.1	300.8	327.0	350.7	372.0	383.3	393.2	401.8	386.4	371.5
	Net Present Value of Total Net Benefits (excluding mortality)			-834.2	Net P	resent Va	lue of Ph	ase I Net	Benefits ((excludinį	g mortali	ty)			-205.7	1								
	Benefit to Cost Ratio (excluding mortality)			0.5	Benef	it to Cost	Ratio								0.5									
	Net Present Value of Total Net Benefits (including mortality)			4,313.9	313.9 Net Present Value of Phase I Net Benefits (including mortality) 3.8 Benefit to Cost Ratio																			
	Benefit to Cost Ratio (including mortality)			3.8	3.8 Benefit to Cost Ratio										4.2									
	Key Data:																							
	General						Benefits	(HK\$ mil	lions)							Trade Co	osts (cont.)						
	Discount Rate			4%	4% Phase I Maximum Benefits (excluding mortality) 3.000 Phase I Mortality Benefits											One-off l	Phase I Te	esting Cos	sts (HK\$	millions)			15.2	
	Household Expenditure on Pre-packaged Food (HK\$ millions)			23,000			Phase I M	/lortality	Benefits					218.8		One-off I	Phase II T	esting Co	sts (HK\$	millions)			44.3	
	Years to accrue maximum benefits			15			Phase II	Maximur	n Benefits	s (excludi	ng morta	lity)		98.7		New Pro	ducts Per	r Annum					14%	
	Value of Statistical Life (HK\$ millions)			10	10 Phase II Mortality Benefits Trade Costs											Phase I T	Cesting Co	ost Discou	ınt (Adju	sted)			1.6%	
	Government Costs (HK\$ millions)				Trade Costs											Phase II	Testing C	ost Disco	unt (Adjı	isted)			8.4%	
	Enforcement Costs	2.7 Annual Phase I Relabelling Costs (HK\$ millions)												23.0		Phase I I	Lost Prod	uct Costs	(HK\$ mi	llions)			22.5	
	Promotion Costs	1.4 Annual Phase II Relabelling Costs (HK\$ mill								ons)		98.1		Phase II	Lost Proc	luct Costs	: (HK\$ m	illions)			53.4			

Table D4: Cost Benefit Analysis of Option IV

	Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Revenue Impacts to Trade (HKS millions)					Phase I										Phase II								· · · · · ·
a	Phase I Relabelling Costs	-	-	-	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6
b	Phase II Relabelling Costs	-	-	-	-	-	-	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
с	Phase I Testing Costs (including discount)	-	-	-	8.7	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
d	Phase II Testing Costs (including discount)	-	-	-	-	-	-	21.7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
е	Total (Phase I Trade Costs)	-	-	-	30.2	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
f	Total (Phase II Trade Costs)	-	-	-	-	-	-	110.7	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0
g	Total (All Trade Costs)	-	-	-	30.2	22.8	22.8	133.5	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8
h	% of Applicable Household Expenditure (Phase I Trade Costs)	-	-	-	0.13%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%
i	% of Applicable Household Expenditure (Total Trade Costs)	-	-	-	0.13%	0.10%	0.10%	0.58 %	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
j	Discounted Total Trade Costs	-	-	-	25.8	18.7	18.0	101.4	83.9	80.6	77.5	74.6	71.7	68.9	66.3	63.7	61.3	58.9	56.7	54.5	52.4	50.4	48.4	46.6
	Net Present Value of Total Trade Costs			1,180.3	Net P	resent Va	lue of Ph	ase I Trac	le Costs						281.4									
	Max. % of Applicable Household Expenditure			0.58 %	Max.	% of App	licable H	ousehold	Expenditu	ure (Phas	e I Trade	Costs)			0.13%									
	Economic Impacts (HK\$ millions)																							
	Economic Costs																							
k	Administration Costs	-	-	-	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
1	Phase I Relabelling and Testing Costs	-	-	-	30.2	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
m	Phase I Lost Products Impacts	-	-	-	19.1	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
n	Phase II Relabelling and Testing Costs	-	-	-	-	-	-	110.7	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0
0	Phase II Lost Products Impacts	-	-	-	-	-	-	47.1	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
р	Total (Phase I Costs) - including Administration Costs	-	-	-	53.2	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3
q	Total (Phase II Costs) - excluding Administration Costs	-	-	-	-	-	-	157.8	98.6	98.6	98.6	98.6	98.6	98.6	98.6	98.6	98.6	98.6	98.6	98.6	98.6	98.6	98.6	98.6
r	Total (All Costs)	-	-	53.2	29.3	29.3	187.1	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	
s	Discounted Total Costs	-	-	-	45.5	24.1	23.2	142.2	93.5	89.9	86.4	83.1	79.9	76.8	73.9	71.0	68.3	65.7	63.2	60.7	58.4	56.1	54.0	51.9
	Net Present Value of Total Costs			1,367.8	Net P	resent Va	lue of Ph	ase I Tota	al Costs						374.7									
	Economic benefits																							
t	Phase I (excluding mortality benefits)	-	-	-	0.6	1.2	1.8	2.4	3.0	3.6	4.1	4.7	5.3	5.9	6.5	7.1	7.7	8.3	8.9	8.9	8.9	8.9	8.9	8.9
u	Phase II (excluding mortality benefits)	-	-	-	-	-	-	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7	23.1	25.4	27.7	30.0	32.3	34.6	34.6	34.6
v	Phase I (mortality benefits)	-	-	-	1.5	2.9	4.4	5.9	7.4	8.8	10.3	11.8	13.3	14.7	16.2	17.7	19.1	20.6	22.1	22.1	22.1	22.1	22.1	22.1
w	Phase II (mortality benefits)	-	-	-	-	-	-	5.7	11.5	17.2	22.9	28.7	34.4	40.2	45.9	51.6	57.4	63.1	68.8	74.6	80.3	86.0	86.0	86.0
x	Phase I Benefits (including mortality benefits)	-	-	-	2.1	4.1	6.2	8.3	10.3	12.4	14.4	16.5	18.6	20.6	22.7	24.8	26.8	28.9	31.0	31.0	31.0	31.0	31.0	31.0
у	Phase II Benefits (including mortality benefits)	-	-	-	-	-	-	8.0	16.1	24.1	32.2	40.2	48.3	56.3	64.3	72.4	80.4	88.5	96.5	104.5	112.6	120.6	120.6	120.6
z	Total Benefits (excluding mortality benefits)	-	-	-	0.6	1.2	1.8	4.7	7.6	10.5	13.4	16.3	19.2	22.1	25.0	27.8	30.7	33.6	36.5	38.8	41.2	43.5	43.5	43.5
aa	Discounted Total Benefits (excluding mortality benefits)	-	-	-	0.5	1.0	1.4	3.6	5.5	7.4	9.0	10.6	12.0	13.2	14.4	15.5	16.4	17.3	18.0	18.4	18.8	19.1	18.3	17.6
ab	Total Benefits (including mortality benefits)	-	-	-	2.1	4.1	6.2	16.3	26.4	36.5	46.6	56.7	66.8	76.9	87.0	97.1	107.3	117.4	127.5	135.5	143.5	151.6	151.6	151.6
ac	Discounted Total Benefits (including mortality benefits)	-	-	-	1.8	3.4	4.9	12.4	19.3	25.7	31.5	36.8	41.7	46.Z	50.3	53.9	57.3	60.Z	62.9	64.3	65.5	66.5	64.0	61.5
	Net Present Value of Total Benefits (excluding mortality benefit	its)		238.0	Net P	resent Va	lue of Ph	ase I Ben	efits (excl	uding mo	ortality be	enefits)			62.0									
	Net Present Value of Total Benefits (including mortality benefi	its)		830.1	Net P	resent Va	lue of Ph	ase I Ben	efits (incli	uding mo	rtality be	nefits)			216.4									
ad	Phase I Net Benefits (excluding mortality benefits)	-	-	-	-52.6	-28.1	-27.5	-27.0	-26.4	-25.8	-25.2	-24.6	-24.0	-23.4	-22.8	-22.2	-21.6	-21.0	-20.4	-20.4	-20.4	-20.4	-20.4	-20.4
ae	Phase II Net Benefits (excluding mortality benefits)	-	-	-	-	-	-	-155.5	-94.0	-91.7	-89.4	-87.1	-84.8	-82.5	-80.2	-77.9	-75.6	-73.2	-70.9	-68.6	-66.3	-64.0	-64.0	-64.0
af	Total Net Benefits (excluding mortality benefits)	-	-	-	-52.6	-28.1	-27.5	-182.5	-120.4	-117.5	-114.6	-111.7	-108.8	-105.9	-103.0	-100.1	-97.2	-94.3	-91.4	-89.1	-86.8	-84.5	-84.5	-84.5
ag	Discounted Total Net Benefits (excluding mortality benefits)	-	-	-	-45.0	-23.1	-21.8	-138.7	-87.9	-82.5	-77.4	-72.5	-67.9	-63.6	-59.5	-55.6	-51.9	-48.4	-45.1	-42.3	-39.6	-37.1	-35.6	-34.3
ah	Phase I Net Benefits (including mortality benefits)	-	-	-	-51.1	-25.2	-23.1	-21.1	-19.0	-16.9	-14.9	-12.8	-10.7	-8.7	-6.6	-4.6	-2.5	4	1.6	1.6	1.6	1.6	1.6	1.6
ai	Phase II Net Benefits (including mortality benefits)	-	-	-	-	-149.8	-82.5	-74.5	-66.4	-58.4	-50.4	-42.3	-34.3	-26.2	-18.2	-10.1	-2.1	5.9	14.0	22.0	22.0	22.0		
aj	Total Net Benefits (including mortality benefits)	Net Benefits (including mortality benefits) - - - nted Total Net Benefits (including mortality benefits) - - -								-91.4	-81.3	-71.2	-61.1	-51.0	-40.9	-30.8	-20.7	-10.6	5	7.6	15.6	23.7	23.7	23.7
ak	Discounted Total Net Benefits (including mortality benefits)	unted Total Net Benefits (including mortality benefits)									-54.9	-46.3	-38.2	-30.6	-23.6	-17.1	-11.0	-5.4	-0.2	3.6	7.1	10.4	10.0	9.6
	Net Present value of Total Net Benefits (excluding mortanty) Repetit to Cost Datis (evoluting mortality)			-1,129.8	Net P	resent va it to Cost	Detio	ase I Net	Benerits (exciuainį	g mortain	(y)			-312.0									
	Denenii to Cost Ratio (excluding mortality) Nat Present Value of Total Nat Panefits (including mortality)			527 B	Not D	n to Cost	Natio	aco I Not	Ponofite ((including	, montolit)			159.2									
	Renefit to Cost Ratio (including mortality)			-337.0	Renef	it to Cost	Ratio	ase I ivel	Denents (menuumg	; mortani	<i>y)</i>			-138.3									
	Benefit to Cost Ratio (including mortanty)			0.0	Dener	n to cost	Ratio								0.0									
	Key Data:						D Ct	a 112 é	P							Tube		,						
	General Discount Pata			40/			Benefits	(HK\$ mil forimum	HONS)	(ovoludi-	or montal	(t++)		0 0		Irade Co	DSIS (CONT.	1 seting Car		nillione)			07	
	Household Expenditure on Pre-packaged Food (HK¢ millions)			4% 93 000			T Hase I M	Aortality	Bonofite	(excludif	ig mortali	uy)		0.9 99 1		One-off I	nase i 16 Phase II T	osting Cos	ete (HK 9	millione)			0.7 91.7	
	Vears to accrue maximum benefits			23,000			Phase II	Maximur	n Benefite	e (evcludi	ng mortal	lity)		24 R		New Pro	ducts Po	coung C0 r Δnnum	313 (1113	minons)			21.7 14%	
	Value of Statistical Life (HKS millions)			10			Phase II	Mortality	Benefits	GACIUUI	ng mortal	iity)		34.0 86 0		Phase I 7	Cesting Cr	ost Discor	unt (Adim	sted)			0.0%	
	Government Costs (HKS millions)			10			Trade Co	osts	Senento					00.0		Phase II	Testing C	lost Disco	unt (Adiu	isted)			0.0%	
	Enforcement Costs			2.5			Annual	Phase I Re	elabelling	Costs (H	KS millio	ns)		21.6		Phase I I	Lost Produ	uct Costs	(HKS mil	lions)			19.1	
	Promotion Costs	n Costs							elabelling	g Costs (I	IK\$ millio	ons)		89.0		Phase II	Lost Prod	luct Costs	(HK\$ mi	llions)			47.1	

Table D5: Cost Benefit Analysis of Option V

	Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Revenue Impacts to Trade (HKS millions)					Phase I										Phase II								
а	Phase I Relabelling Costs	-	-	-	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5
h	Phase II Relabelling Costs	-	-	-	-	-	-	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6
с	Phase I Testing Costs (including discount)	-	-	-	47.0	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
d	Phase II Testing Costs (including discount)	-	-	-	-	-	-	59.8	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
e	Total (Phase I Trade Costs)	-	-	-	130.4	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
f	Total (Phase II Trade Costs)	-	-	-	-	-	-	113.4	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0
ø	Total (All Trade Costs)	-	-	-	130.4	90.0	90.0	203.4	152.0	152.0	152.0	152.0	152.0	152.0	152.0	152.0	152.0	152.0	152.0	152.0	152.0	152.0	152.0	152.0
h	% of Applicable Household Expenditure (Phase I Trade Costs)	-	_	-	0.57%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%
i	% of Applicable Household Expenditure (Total Trade Costs)	-	_	-	0.57%	0.39%	0.39%	0 88%	0 66%	0 66%	0 66%	0 66%	0 66%	0 66%	0 66%	0 66%	0 66%	0.66%	0.66%	0.66%	0.66%	0.66%	0.66%	0.66%
i	Discounted Total Trade Costs	-	_	-	111.5	74.0	71.2	154.6	111.1	106.8	102.7	98 7	94.9	91.3	87.8	84.4	81.2	78.0	75.0	72.1	69.4	66 7	64 1	61 7
J	Net Present Value of Total Trade Costs			1 757 9	Net P	resent Va	lue of Ph	se I Trad	le Costs						1 199 3									
	Max. % of Applicable Household Expenditure			0.88%	Max.	% of Ann	licable H	usehold	Expenditi	ure (Phas	e I Trade	Costs)			0.57%									
	Economic Impacts (HKS millions)					FF			F			,												
	Economic Costs																							
ı	Administration Costs	_	_		4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
1	Phase I Relabelling and Testing Costs				130.4	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
m	Phase L Lost Products Impacts	-	-	-	58.2	81	81	81	81	8 1	81	81	81	8 1	81	81	81	81	8 1	81	81	8 1	81	8 1
n	Phase II Relabelling and Testing Costs	-	-	-	-	-	-	113.4	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0
0	Phase II Lost Products Impacts	-	-	-	-	-	-	30.7	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
p	Total (Phase I Costs) - including Administration Costs	-	-	-	193.0	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6
q	Total (Phase II Costs) - excluding Administration Costs	-	-	-	-	-	-	144.1	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3
r	Total (All Costs)	-	-	-	193.0	102.6	102.6	246.7	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9	168.9
s	Discounted Total Costs	-	-	-	165.0	84.3	81.1	187.5	123.4	118.6	114.1	109.7	105.5	101.4	97.5	93.8	90.2	86.7	83.4	80.2	77.1	74.1	71.3	68.5
	Net Present Value of Total Costs			2,013.2	Net P	resent Va	lue of Ph	ase I Tota	l Costs						1,316.8									
	Economic benefits																							
t	Phase I (excluding mortality benefits)	-	-	-	14.8	29.6	44.5	59.3	74.1	88.9	103.8	118.6	133.4	148.2	163.1	177.9	192.7	207.5	222.4	222.4	222.4	222.4	222.4	222.4
u	Phase II (excluding mortality benefits)	-	-	-	-	-	-	10.7	21.3	32.0	42.6	53.3	64.0	74.6	85.3	95.9	106.6	117.3	127.9	138.6	149.2	159.9	159.9	159.9
v	Phase I (mortality benefits)	-	-	-	54.5	109.1	163.6	218.1	272.7	327.2	381.7	436.3	490.8	545.3	599.8	654.4	708.9	763.4	818.0	818.0	818.0	818.0	818.0	818.0
w	Phase II (mortality benefits)	-	-	-	-	-	-	39.2	78.4	117.6	156.9	196.1	235.3	274.5	313.7	352.9	392.1	431.4	470.6	509.8	549.0	588.2	588.2	588.2
x	Phase I Benefits (including mortality benefits)	-	-	-	69.4	138.7	208.1	277.4	346.8	416.1	485.5	554.8	624.2	693.5	762.9	832.3	901.6	971.0	1040.3	1040.3	1040.3	1040.3	1040.3	1040.3
у	Phase II Benefits (including mortality benefits)	-	-	-	-	-	-	49.9	99.7	149.6	199.5	249.4	299.2	349.1	399.0	448.9	498.7	548.6	598.5	648.4	698.2	748.1	748.1	748.1
z	Total Benefits (excluding mortality benefits)	-	-	-	14.8	29.6	44.5	70.0	95.4	120.9	146.4	171.9	197.4	222.9	248.3	273.8	299.3	324.8	350.3	360.9	371.6	382.2	382.2	382.2
aa	Discounted Total Benefits (excluding mortality benefits)	-	-	-	12.7	24.4	35.1	53.2	69.7	85.0	98.9	111.7	123.3	133.8	143.4	152.0	159.8	166.7	172.9	171.3	169.6	167.7	161.3	155.1
ab	Total Benefits (including mortality benefits)	-	-	-	69.4	138.7	208.1	327.3	446.5	565.8	685.0	804.2	923.4	1042.7	1161.9	1281.1	1400.4	1519.6	1638.8	1688.7	1738.6	1788.4	1788.4	1788.4
ac	Discounted Total Benefits (including mortality benefits)	-	-	-	59.3	114.0	164.4	248.7	326.3	397.5	462.7	522.4	576.8	626.2	671.0	711.4	747.7	780.1	809.0	801.5	793.5	784.8	754.6	725.6
	Net Present Value of Total Benefits (excluding mortality benef	its)		2,367.6	Net P	resent Va	lue of Ph	ase I Bene	efits (excl	uding mo	ortality be	enefits)			1,554.1									
	Net Present Value of Total Benefits (including mortality benef	its)		11,077.4	Net P	resent Va	lue of Ph	ase I Bene	efits (inclu	uding mo	rtality be	nefits)			7,271.3									
ad	Phase I Net Repetits (excluding mortality henefits)			-	-178 2	-72.9	-58 1	-43.3	-28.5	-137	12	16.0	30.8	45.6	60 5	75 3	90.1	104 9	1198	1198	1198	1198	119.8	1198
ae	Phase II Net Benefits (excluding mortality benefits)	-	_	-	-	-	-	-133 5	-45.0	-34.3	-23.6	-13.0	-2.3	83	19.0	297	40.3	51.0	61.6	79 3	83.0	93.6	93.6	93.6
af	Total Net Benefits (excluding mortality henefits)	-	-	-	-1789	-72.9	-58 1	-176 8	-73 4	-48.0	-22.5	3.0	28 5	54 0	79.5	104.9	130 4	155.9	181 4	192.1	202.7	213 4	213 4	213 4
ao	Discounted Total Net Benefits (excluding mortality benefits)	-		-	-152.3	-60.0	-45.9	-134.3	-53 7	-33 7	-15.2	2.0	17.8	32.4	45.9	58.3	69.6	80.0	89.5	91.2	92.5	93.6	90.0	86.6
ah	Phase I Net Benefits (including mortality benefits)				-123 7	36 1	105 5	174.8	944 9	313 5	382 9	452 2	521 6	591.0	660 3	799 7	799.0	868 4	937 7	937 7	937 7	037 7	037 7	037 7
ai	Phase II Not Benefits (including mortality benefits)		_	_	120.7	50.1	100.0	-01 3	22 5	82.2	122.9	182.2	933.0	282.8	339 7	389 6	139 5	189 3	539.9	589 1	639.0	681.8	691 9	691 9
ai	Total Net Benefits (including mortality benefits)		-		-1937	36 1	105 5	-34.3 80 6	977 7	396 9	5161	635 3	253.0 754.6	873.8	993.0	1119 3	1931 5	1350 7	1469 9	1510 8	1560 7	1610 F	1610 G	1610 G
uj ak	Discounted Total Net Benefits (including mortality benefits)	-	-	-	-105 7	29.7	83.4	61.2	202.9	278.8	348 7	412.7	471.3	524.8	573.4	617.6	657.5	693 4	725.6	7214	7164	710 7	683.4	657 1
	Net Present Value of Total Net Benefits (excluding mortality)			354.4	Net P	resent Va	lue of Pha	ase I Net	Benefits ((excludin)	g mortali	ty)			237.3									00711
	Benefit to Cost Ratio (excluding mortality)			1.2	Benef	it to Cost	Ratio				-				1.2									
	Net Present Value of Total Net Benefits (including mortality)			9,064.2	Net P	resent Va	lue of Pha	ase I Net	Benefits ((including	g mortalit	y)			5,954.4									
	Benefit to Cost Ratio (including mortality)			5.5	Benef	it to Cost	Ratio				·				5.5									
	Key Data:																							
	General						<u>Ben</u> efits	HK\$ mil	lions)							Trade Co	osts (cont.)						
	Discount Rate			4%			Phase I M	laximum	Benefits	(excludir	ng mortali	ity)		222.4		One-off I	Phase I Te	sting Cos	ts (HK\$ 1	millions)			48.6	
	Household Expenditure on Pre-packaged Food (HK\$ millions)			23,000			Phase I N	fortality	Benefits		-	-		818.0		One-off I	Phase II T	esting Co	sts (HK\$	millions)			70.6	
	Years to accrue maximum benefits			15			Phase II	Maximun	n Benefits	s (excludi	ng mortal	lity)		159.9		New Pro	ducts Per	Annum		-,			14%	
	Value of Statistical Life (HK\$ millions)			10			Phase II	Mortality	Benefits					588.2		Phase I T	esting Co	st Discou	nt (Adju	sted)			3.4%	
	Government Costs (HK\$ millions)				Trade Costs									Phase II '	Testing C	ost Disco	unt (Adju	isted)			15.3%			
	Enforcement Costs			3.0			Annual I	Phase I Re	elabelling	Costs (H	K\$ millio	ons)		83.5		Phase I L	ost Prod	ict Costs	(HK\$ mil	lions)			58.2	
	Promotion Costs			1.4			Annual I	Phase II R	elabelling	g Costs (I	HK\$ milli	ons)		53.6		Phase II	Lost Prod	uct Costs	(HK\$ mi	illions)			30.7	

Table D6: Cost Benefit Analysis of Option VI

	Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
-	Revenue Impacts to Trade (HKS millions)					Phase I										Phase II								
а	Phase I Relabelling Costs	-	-	_	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	82.3	823	823	823
h h	Phase II Relabelling Costs	-	-	_	-	-	-	53 7	53 7	53 7	53.7	53.7	53 7	53 7	53 7	53 7	53 7	53.7	53.7	53.7	53.7	53 7	53 7	53.7
c	Phase I Testing Costs (including discount)	-	-	-	35.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
d	Phase II Testing Costs (including discount)	-	-	-	-	-	-	50.5	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
e	Total (Phase I Trade Costs)	-	-	-	117.8	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2
f	Total (Phase II Trade Costs)	-	-	-	-	-	-	104.2	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7
ø	Total (All Trade Costs)	-	-	-	117.8	87.2	87.2	191.4	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0
ə h	% of Applicable Household Expenditure (Phase I Trade Costs)	-	_	-	0.51%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%	0.38%
i	% of Applicable Household Expenditure (Total Trade Costs)	-	-	-	0.51%	0.38%	0.38%	0.83%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%
i	Discounted Total Trade Costs	-	_	-	100 7	71 7	68.9	145.5	108 1	103.9	100.0	96.1	92.4	88.9	85.4	82.2	79.0	76.0	73.0	70.2	67.5	64.9	62.4	60.0
,	Net Present Value of Total Trade Costs			1 696 8	Net P	resent Va	lue of Ph	se I Tra	le Costs						1 079 9									
	Max. % of Applicable Household Expenditure			0.83%	Max.	% of App	licable He	ousehold	Expenditi	ure (Phas	e I Trade	Costs)			0.51%									
	Economic Impacts (HK\$ millions)								1															
	Fronomic Costs																							
k	Administration Costs			-	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	4 2	19	19
1	Phase I Relabelling and Testing Costs	-	-	_	117.8	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2	87.2
m	Phase L Lost Products Impacts	-	-	_	55.6	78	78	7.8	78	78	78	7.8	78	78	78	78	78	7.8	78	7.8	7.8	7.8	7.8	7.8
n	Phase II Relabelling and Testing Costs	-	-	-	-	-	-	104.2	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7	60.7
0	Phase II Lost Products Impacts	-	-	-	-	-	-	30.7	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
D	Total (Phase I Costs) - including Administration Costs	-	-	-	177.6	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3	99.3
a	Total (Phase II Costs) - excluding Administration Costs	-	-	-	-	-	-	134.9	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
r r	Total (All Costs)	-	-	-	177.6	99.3	99.3	234.2	164.3	164.3	164.3	164.3	164.3	164.3	164.3	164.3	164.3	164.3	164.3	164.3	164.3	164.3	164.3	164.3
s	Discounted Total Costs	-	-	-	151.8	81.6	78.4	178.0	120.0	115.4	111.0	106.7	102.6	98.7	94.9	91.2	87.7	84.3	81.1	78.0	75.0	72.1	69.3	66.7
	Net Present Value of Total Costs			1,944.5	Net P	resent Va	lue of Ph	ase I Tota	al Costs						1,266.1									
	Economic benefits																							
t	Phase I (excluding mortality benefits)	-	-	-	5.3	10.6	15.9	21.2	26.5	31.8	37.1	42.4	47.7	53.0	58.3	63.7	69.0	74.3	79.6	79.6	79.6	79.6	79.6	79.6
u	Phase II (excluding mortality benefits)	-	-	-	-	-	-	4.3	8.5	12.8	17.1	21.3	25.6	29.9	34.1	38.4	42.7	46.9	51.2	55.4	59.7	64.0	64.0	64.0
v	Phase I (mortality benefits)	-	-	-	39.6	79.2	118.8	158.3	197.9	237.5	277.1	316.7	356.3	395.9	435.4	475.0	514.6	554.2	593.8	593.8	593.8	593.8	593.8	593.8
w	Phase II (mortality benefits)	-	-	-	-	-	-	31.8	63.7	95.5	127.3	159.2	191.0	222.8	254.6	286.5	318.3	350.1	382.0	413.8	445.6	477.5	477.5	477.5
х	Phase I Benefits (including mortality benefits)	-	-	-	44.9	89.8	134.7	179.6	224.4	269.3	314.2	359.1	404.0	448.9	493.8	538.7	583.6	628.5	673.3	673.3	673.3	673.3	673.3	673.3
у	Phase II Benefits (including mortality benefits)	-	-	-	-	-	-	36.1	72.2	108.3	144.4	180.5	216.6	252.7	288.8	324.9	361.0	397.1	433.2	469.2	505.3	541.4	541.4	541.4
z	Total Benefits (excluding mortality benefits)	-	-	-	5.3	10.6	15.9	25.5	35.1	44.6	54.2	63.8	73.3	82.9	92.5	102.0	111.6	121.2	130.7	135.0	139.3	143.5	143.5	143.5
aa	Discounted Total Benefits (excluding mortality benefits)	-	-	-	4.5	8.7	12.6	19.4	25.6	31.3	36.6	41.4	45.8	49.8	53.4	56.7	59.6	62.2	64.5	64.1	63.6	63.0	60.6	58.2
ab	Total Benefits (including mortality benefits)	-	-	-	44.9	89.8	134.7	215.7	296.6	377.6	458.6	539.6	620.6	701.6	782.6	863.5	944.5	1025.5	1106.5	1142.6	1178.7	1214.8	1214.8	1214.8
ac	Discounted Total Benefits (including mortality benefits)	-	-	-	38.4	73.8	106.4	163.9	216.8	265.3	309.8	350.5	387.6	421.3	451.9	479.5	504.3	526.5	546.2	542.3	537.9	533.1	512.6	492.9
	Net Present Value of Total Benefits (excluding mortality benef	its)		881.6	Net P	resent Va	lue of Ph	ase I Ben	efits (excl	uding mo	ortality be	enefits)			556.1									
	Net Present Value of Total Benefits (including mortality benef	its)		7,461.0	Net P	resent Va	lue of Pha	ase I Ben	efits (inclu	uding mo	rtality be	enefits)			4,706.3									
ad	Phase I Net Benefits (excluding mortality benefits)	-	-	-	-172.3	-88.6	-83.3	-78.0	-72.7	-67.4	-62.1	-56.8	-51.5	-46.2	-40.9	-35.6	-30.3	-25.0	-19.7	-19.7	-19.7	-19.7	-19.7	-19.7
ae	Phase II Net Benefits (excluding mortality benefits)	-	-	-	-	-	-	-130.7	-56.5	-52.2	-48.0	-43.7	-39.4	-35.2	-30.9	-26.6	-22.4	-18.1	-13.8	-9.6	-5.3	-1.1	-1.1	-1.1
af	Total Net Benefits (excluding mortality benefits)	-	-	-	-172.3	-88.6	-83.3	-208.7	-129.2	-119.7	-110.1	-100.5	-91.0	-81.4	-71.8	-62.2	-52.7	-43.1	-33.5	-29.3	-25.0	-20.7	-20.7	-20.7
ag	Discounted Total Net Benefits (excluding mortality benefits)	-	-	-	-147.3	-72.9	-65.9	-158.6	-94.4	-84.1	-74.4	-65.3	-56.8	-48.9	-41.5	-34.6	-28.1	-22.1	-16.6	-13.9	-11.4	-9.1	-8.8	-8.4
ah	Phase I Net Benefits (including mortality benefits)	-	-	-	-132.8	-9.5	35.4	80.3	125.2	170.1	215.0	259.9	304.8	349.6	394.5	439.4	484.3	<i>529.2</i>	574.1	574.1	574.1	574.1	574.1	574.1
ai	Phase II Net Benefits (including mortality benefits)	-	-	-	-	-	-	-98.8	7.2	43.3	79.4	115.4	151.5	187.6	223.7	259.8	295.9	332.0	368.1	404.2	440.3	476.4	476.4	476.4
aj	Total Net Benefits (including mortality benefits)	-	-	-	-132.8	-9.5	35.4	-18.5	132.4	213.3	294.3	375.3	456.3	537.3	618.3	699.3	780.2	861.2	942.2	978.3	1014.4	1050.5	1050.5	1050.5
ak	Discounted Total Net Benefits (including mortality benefits)	-	-	-	-113.5	-7.8	28.0	-14.1	96.7	149.9	198.8	243.8	285.0	322.7	357.0	388.3	416.6	442.1	465.1	464.3	463.0	461.0	443.3	426.2
	Net Present Value of Total Net Benefits (excluding mortality)			-1.062.9	Net P	resent Va	lue of Ph	ase I Net	Benefits (excludin	g mortali	tv)			-710.0									
	Benefit to Cost Ratio (excluding mortality)			0.5	Benefi	it to Cost	Ratio				,				0.4									
	Net Present Value of Total Net Benefits (including mortality)			5.516.5	Net P	resent Va	lue of Ph	ase I Net	Benefits (including	g mortalit	tv)			3.440.2									
	Benefit to Cost Ratio (including mortality)			3.8	Benefi	it to Cost	Ratio		(,	-57			3.7									
-	Key Data.																							
	Conoral						Bonofite	HKSmil	lions)							Trado Co	oste (cont	,						
	Discount Rate			1%			Phase I M	laximum	Benefite	(excludin	no mortali	itv)		79 R		One-off 1	Phase I Tr	± sting Cos	sts (HKS)	nillions)			26 2	
	Household Expenditure on Pre-packaged Food (HKS millions)			23 000			Phase I M	fortality	Benefite	(cactuull	-8 montal			593.8		One-off 1	hase П Т	esting Cos	sts (HK¢	millione			55 R	
	Vears to accrue maximum benefits			15			Phase II	Maximur	n Benefits	: (excludi	ng morta	lity)		64.0		New Pro	ducts Per	· Annum	5.5 (r mộ				14%	
	Value of Statistical Life (HKS millions)			10			Phase II	Mortality	Benefits	, caciudi				477.5		Phase I T	Cesting Co	ost Discou	unt (Adiu	sted)			2.0%	
	Government Costs (HKS millions)			10			Trade Co	sts	Serients							Phase II	Testing C	ost Disco	unt (Adiu	isted)			9.1%	
	Enforcement Costs			28			Annual I	Phase I Re	elabelling	Costs (H	KS millio	ons)		82.3		Phase I I	ost Produ	act Costs	(HKS mil	lions)			55.6	
	Promotion Costs			1.4			Annual I	Phase II R	elabelling	g Costs (I	HK\$ milli	ons)		53.7		Phase II	Lost Prod	luct Costs	(HK\$ mi	llions)			30.7	

Table D7: Cost Benefit Analysis of Option VII

	Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Revenue Impacts to Trade (HKS millions)					Phase I										Phase II								
a	Phase I Relabelling Costs	-	-	-	674	67.4	67.4	674	674	674	67.4	674	674	674	674	674	674	674	674	674	674	67.4	674	67.4
b	Phase II Relabelling Costs	-	-	-	-	-	-	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7
с	Phase I Testing Costs (including discount)	-	-	-	21.2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
d	Phase II Testing Costs (including discount)	-	-	-	-	-	-	34.6	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
e	Total (Phase I Trade Costs)	-	-	-	88.6	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4
f	Total (Phase II Trade Costs)	-	-	-	-	-	-	88.3	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5
g	Total (All Trade Costs)	-	-	-	88.6	70.4	70.4	158.7	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9	128.9
h	% of Applicable Household Expenditure (Phase I Trade Costs)	-	-	-	0.39%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%	0.31%
i	% of Applicable Household Expenditure (Total Trade Costs)	-	-	-	0.39%	0.31%	0.31%	0.69%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%	0 56%	0.56%	0.56%	0.56%
i	Discounted Total Trade Costs	-	_	-	75.7	57.8	55.6	120.6	94.2	90.6	87 1	83 7	80.5	77.4	74 4	71.6	68.8	66.2	63.6	61.2	58.8	56.6	54 4	52.3
J	Net Present Value of Total Trade Costs			1 451 0	Net P	resent Va	lue of Ph	i Solo	le Costs	00.0	07.1	00.7	00.0	,,,,	865.8	/ 1.0	00.0	0012	00.0	01.2	00.0	00.0	01.1	02.0
	Max. % of Applicable Household Expenditure			0.69%	Max.	% of App	licable He	ousehold	Expenditi	ure (Phas	e I Trade	Costs)			0.39%									
	Fconomic Impacts (HKS millions)					11			1															
	Franchic Costs																							
k	Administration Costs				41	41	4 1	41	4 1	41	4 1	41	41	4 1	41	41	41	4 1	4 1	4 1	4 1	4.1	4.1	4.1
1	Phase I Relabelling and Testing Costs	-	-	-	88.6	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4
m	Phase I Lost Products Impacts	-	-	-	45.2	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	63	63	63	63	63	63
n	Phase II Relabelling and Testing Costs	-	-	-	-	-	-	88.3	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5	58.5
0	Phase II Lost Products Impacts	-	-	-	-	-	-	30.7	4.3	4.3	4.3	4.3	4.3	4.3	4 3	4.3	4 3	4.3	4 3	4.3	4.3	4 3	4 3	4.3
n	Total (Phase I Costs) - including Administration Costs	-	-	-	137.9	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8	80.8
a	Total (Phase II Costs) - excluding Administration Costs	-	-	-	_	-	-	119.0	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.8
ч r	Total (All Costs)	-	-	-	137 9	80.8	80.8	199.8	143 6	143.6	143.6	143.6	143.6	143.6	143.6	143.6	143.6	1436	1436	143 6	1436	143.6	1436	1436
s	Discounted Total Costs	-	_	_	117.8	66 4	63.8	151.8	104.9	100.9	97.0	93.3	89 7	86.2	82.9	79 7	76 7	73 7	70.9	68 1	65 5	63.0	60.6	58 3
-	Net Present Value of Total Costs			1.671.2	Net P	resent Va	lue of Ph	ase I Tota	al Costs						1.024.5						00.0	00.0	00.0	00.0
	Economic benefits																							
t	Phase I (excluding mortality benefits)	-	-	-	4.1	8.3	12.4	16.6	20.7	24.9	29.0	33.2	37.3	41.5	45.6	49.8	53.9	58.1	62.2	62.2	62.2	62.2	62.2	62.2
u	Phase II (excluding mortality benefits)	-	-	-	-	-	-	4.5	8.9	13.4	17.8	22.3	26.8	31.2	35.7	40.1	44.6	49.1	53.5	58.0	62.4	66.9	66.9	66.9
v	Phase I (mortality benefits)	-	-	-	29.9	59.8	89.6	119.5	149.4	179.3	209.2	239.0	268.9	298.8	328.7	358.6	388.4	418.3	448.2	448.2	448.2	448.2	448.2	448.2
w	Phase II (mortality benefits)	-	-	-	-	-	-	32.1	64.2	96.4	128.5	160.6	192.7	224.9	257.0	289.1	321.2	353.4	385.5	417.6	449.7	481.9	481.9	481.9
x	Phase I Benefits (including mortality benefits)	-	-	-	34.0	68.1	102.1	136.1	170.1	204.2	238.2	272.2	306.3	340.3	374.3	408.3	442.4	476.4	510.4	510.4	510.4	510.4	510.4	510.4
v	Phase II Benefits (including mortality benefits)	-	-	-	-	-	-	36.6	73.2	109.8	146.3	182.9	219.5	256.1	292.7	329.3	365.8	402.4	439.0	475.6	512.2	548.8	548.8	548.8
z	Total Benefits (excluding mortality benefits)	-	-	-	4.1	8.3	12.4	21.1	29.7	38.3	46.9	55.5	64.1	72.7	81.3	89.9	98.5	107.1	115.7	120.2	124.7	129.1	129.1	129.1
aa	Discounted Total Benefits (excluding mortality benefits)	-	-	-	3.5	6.8	9.8	16.0	21.7	26.9	31.7	36.0	40.0	43.7	47.0	49.9	52.6	55.0	57.1	57.0	56.9	56.7	54.5	52.4
ab	Total Benefits (including mortality benefits)	-	-	-	34.0	68.1	102.1	172.7	243.3	313.9	384.5	455.1	525.8	596.4	667.0	737.6	808.2	878.8	949.4	986.0	1022.6	1059.2	1059.2	1059.2
ac	Discounted Total Benefits (including mortality benefits)	-	-	-	29.1	55.9	80.7	131.2	177.8	220.6	259.8	295.7	328.4	358.2	385.2	409.6	431.5	451.2	468.7	468.0	466.7	464.8	446.9	429.7
	Net Present Value of Total Benefits (excluding mortality benef	its)		775.2	Net P	resent Va	lue of Ph	ase I Ben	efits (excl	uding ma	ortality be	enefits)			434.9									
	Net Present Value of Total Benefits (including mortality benefit	its)		6,359.5	Net P	resent Va	lue of Ph	ase I Ben	efits (inch	uding mo	rtality be	nefits)			3,567.6									
ad	Phase I Net Repetits (excluding mortality benefits)	_	_		-1337	-72 5	-68 3	-64 2	-60.0	- 55 9	-51.7	-47.6	-434	- 39 3	-35.1	-31.0	-96 8	-99 7	-18 5	-18 5	-18 5	-185	-18 5	-18 5
20	Phase II Net Benefits (excluding mortality benefits)		-		-	-	-	-114 6	-53.9	-494	-45 0	-40 5	-36 1	-31.6	-971	-99 7	-18 2	-13.8	-93	-18	- 4	10.0	10.0	10.0
af	Total Net Benefits (excluding mortality benefits)		-		-133 7	-72 5	-68 3	-178 7	-113.9	-105 3	-96 7	-88 1	-79.5	-70.9	-62 3	-537	-45.1	-364	-278	-934	-189	-14 5	-14 5	-14.5
an	Discounted Total Net Benefits (excluding mortality benefits)				-114 3	-59.6	-54.0	-135.8	-83.2	-74.0	-65 3	-57.2	-49.6	-42.6	-36.0	-29.8	-24.1	-18 7	-13.7	-11.1	-8.6	-6.3	-6.1	-14.5
ug ah	Phase I Net Benefits (including mortality benefits)		_	_	-103.8	-197	91 3	55 4	80 1	193 4	157 4	101 5	995 5	250 5	203 B	297 B	261.6	-10.7 205 B	-13.7 190 7	-11.1 190 7	-0.0 190 7	-0.5 190 7	490.7	-3.5 190 7
a11 01	Phase II Net Denefits (including mortality benefits)	-	-	-	-105.0	-12.7	21.5	09 A	10 4	120.4	925	190.1	158 7	102.2	200.0	966 A	202.0	220 E	276 9	419 0	120.7	425.7	425.7	425.7
ai 01	Total Not Panafita (including mortality banafita)	-	-	-	102.0	- 197	91.9	-02.4	10.4	40.5	03.J 941.0	120.1 211 B	209.9	155.5	223.3 592 A	200.4	303.0 664.6	725 2	905 0	412.0	445.4 070.0	405.5	403.5	403.3
aj	Discounted Total Net Benefits (including mortality benefits)	-	-	-	-103.0	-12.7	21.5	-27.1	99.7 79.0	110.4	241.0	311.0	304.4	432.0	323.4 209.2	394.0	254.0	133.3	207.9	842.4	8/9.U	913.0	913.0	915.6
ак	Not Discounted Total Net Benefits (including mortality benefits)	-	-	-	-00.0	-10.4	10.9	-20.0	72.9 D	119.7	102.0	202.4	238.7	271.9	502.5	329.0	554.9	377.3	397.0	399.9	401.2	401.0	300.3	371.5
	Net Present value of 1 otal Net Benefits (excluding mortality)			-896.0	Net P	resent va	Detie	ise I Net	Benents (exciuainį	g mortain	(y)			-389.0									
	Benefit to Cost Ratio (excluding mortality)			0.5	Bener	it to Cost	Ratio		n						0.4									
	Net Present Value of Total Net Benefits (including mortality)			4,688.4	Net P	resent Va	lue of Pha	ase I Net	Benefits (including	g mortalit	y)			2,543.1									
	Benefit to Cost Ratio (including mortality)			3.8	Benef	it to Cost	Ratio								3.5									
	Key Data:																							
	General						Benefits	HK\$ mil	lions)							Trade Co	osts (cont.)						
	Discount Rate			4%			Phase I M	laximum	Benefits	(excludir	ng mortali	ity)		62.2		One-off	Phase I Te	esting Cos	ts (HK\$ 1	nillions)			21.6	
	Household Expenditure on Pre-packaged Food (HK\$ millions)			23,000			Phase I M	fortality	Benefits					448.2		One-off l	Phase II T	esting Co	sts (HK\$	millions)			37.9	
	Years to accrue maximum benefits			15			Phase II	Maximur	n Benefits	s (excludi	ng morta	lity)		66.9		New Pro	ducts Per	Annum					14%	
	Value of Statistical Life (HK\$ millions)			10			Phase II	Mortality	Benefits					481.9		Phase I 7	esting Co	ost Discou	ınt (Adju	sted)			1.9%	
	Government Costs (HK\$ millions)						Trade Co	osts		_						Phase II	Testing C	ost Disco	unt (Adju	isted)			8.6%	
	Enforcement Costs			2.7			Annual I	hase I Re	elabelling	Costs (H	K\$ millio	ons)		67.4		Phase I I	lost Produ	uct Costs	(HK\$ mil	lions)			45.2	
	Promotion Costs			1.4			Annual I	'hase II R	elabelling	g Costs (I	HK\$ milli	ons)		53.7		Phase II	Lost Prod	luct Costs	(HK\$ mi	llions)			30.7	

Table D8: Cost Benefit Analysis of Option VIII

	Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Revenue Impacts to Trade (HKS millions)					Phase I										Phase II								
а	Phase I Relabelling Costs	-	-	-	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9
h	Phase II Relabelling Costs	-	-	-	-	-	-	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6	53.6
c	Phase I Testing Costs (including discount)	-	-	-	9.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
d	Phase II Testing Costs (including discount)	-	-	-	-	-	-	20.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
e	Total (Phase I Trade Costs)	-	-	-	66.5	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3
f	Total (Phase II Trade Costs)	-	_	-	-	-	-	74 4	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56 5	56.5	56.5
а	Total (All Trade Costs)				66 5	58 3	58 3	139 7	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	114.8	1118
ъ h	% of Applicable Household Expenditure (Phase I Trade Costs)	-		-	0 29%	0 25%	0 25%	0 25%	0 25%	0 25%	0 25%	0 25%	0 25%	0 25%	0 25%	0 25%	0 25%	0.25%	0 25%	0 25%	0 25%	0 25%	0.25%	0 25%
	% of Applicable Household Expenditure (Total Trade Costs)				0 29%	0 25%	0 25%	0.58%	0.20%	0 50%	0.50%	0 50%	0.20%	0.20%	0 50%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%
	Discounted Total Trade Costs				56.8	47.9	46.0	100.8	83.9	80.7	77.6	74.6	71 7	68.9	66 3	63 7	61 3	58.9	56 7	54 5	52 4	50 4	48 4	46.6
J	Net Present Value of Total Trade Costs			1 968 1	Not P	recent Va	lue of Ph	100.0	la Coste	00.7	77.0	74.0	/1./	00.0	710 0	00.7	01.0	50.5	50.7	04.0	02.1	50.4	10.1	10.0
	Max % of Applicable Household Expenditure			0.58%	Max	% of Ann	licable H	usehold	Expenditi	ure (Phas	e I Trade	Costs)			0 29%									
	Feonomic Impacts (HKS millions)			0.0070		,	incubic in	Justinoid	Expendite	are (r nus	e i muue	00000)			0.2070									
	Economic Costs																							
ı	Administration Costs				3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0
1	Phase I Pelabelling and Testing Costs				66.5	583	58.3	58.3	58.3	58.3	58.3	58.3	583	58.3	583	58.3	583	58.3	58.3	583	583	58 3	583	583
m	Phase L Lost Products Impacts	-	-	_	35.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
n	Phase II Relabelling and Testing Costs	-	-	-	-	-	-	74.4	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56.5	56 5	56.5
0	Phase II Lost Products Impacts			-	-	_	-	30.7	43	4.3	4.3	4.3	43	4.3	43	43	43	43	43	43	43	43	43	43
n	Total (Phase I Costs) - including Administration Costs	-	-	-	105.9	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1	671	671	67 1	67.1
r a	Total (Phase II Costs) - excluding Administration Costs	-	_	-	-	-	-	105.1	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8	60.8
ч r	Total (All Costs)	-	_	-	105.9	67.1	67.1	172.3	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	127.9	1279	127.9	127.9	127.9
s	Discounted Total Costs	-	-	-	90.5	55.2	53.0	130.9	93.5	89.9	86.4	83.1	79.9	76.8	73.9	71.0	68.3	65.7	63.2	60.7	58.4	56 1	54.0	51.9
-	Net Present Value of Total Costs			1.462.6	Net P	resent Va	lue of Ph	ase I Tota	l Costs						843.9							00.1	0 1.0	0110
	Economic benefits																							
t	Phase I (excluding mortality benefits)	-	-	-	1.0	2.0	3.1	4.1	5.1	6.1	7.2	8.2	9.2	10.2	11.2	12.3	13.3	14.3	15.3	15.3	15.3	15.3	15.3	15.3
u	Phase II (excluding mortality benefits)	-	-	-	-	-	-	1.9	3.8	5.6	7.5	9.4	11.3	13.1	15.0	16.9	18.8	20.6	22.5	24.4	26.3	28.1	28.1	28.1
v	Phase I (mortality benefits)	-	-	-	2.5	5.1	7.6	10.2	12.7	15.3	17.8	20.3	22.9	25.4	28.0	30.5	33.0	35.6	38.1	38.1	38.1	38.1	38.1	38.1
w	Phase II (mortality benefits)	-	-	-	-	-	-	4.7	9.3	14.0	18.7	23.3	28.0	32.7	37.3	42.0	46.7	51.3	56.0	60.7	65.3	70.0	70.0	70.0
x	Phase I Benefits (including mortality benefits)	-	-	-	3.6	7.1	10.7	14.3	17.8	21.4	24.9	28.5	32.1	35.6	39.2	42.8	46.3	49.9	53.5	53.5	53.5	53.5	53.5	53.5
v	Phase II Benefits (including mortality benefits)	-	-	-	-	-	-	6.5	13.1	19.6	26.2	32.7	39.3	45.8	52.3	58.9	65.4	72.0	78.5	85.0	91.6	98.1	98.1	98.1
z	Total Benefits (excluding mortality benefits)	-	-	-	1.0	2.0	3.1	6.0	8.9	11.8	14.7	17.6	20.4	23.3	26.2	29.1	32.0	34.9	37.8	39.7	41.6	43.5	43.5	43.5
aa	Discounted Total Benefits (excluding mortality benefits)	-	-	-	0.9	1.7	2.4	4.5	6.5	8.3	9.9	11.4	12.8	14.0	15.2	16.2	17.1	17.9	18.7	18.8	19.0	19.1	18.3	17.6
ab	Total Benefits (including mortality benefits)	-	-	-	3.6	7.1	10.7	20.8	30.9	41.0	51.1	61.2	71.3	81.4	91.5	101.6	111.7	121.9	132.0	138.5	145.0	151.6	151.6	151.6
ac	Discounted Total Benefits (including mortality benefits)	-	-	-	3.0	5.9	8.4	15.8	22.6	28.8	34.5	39.8	44.6	48.9	52.9	56.4	59.7	62.6	65.1	65.7	66.2	66.5	64.0	61.5
	Net Present Value of Total Benefits (excluding mortality benef	its)		250.2	Net P	resent Va	lue of Ph	ase I Bene	efits (excl	uding ma	ortality be	enefits)			107.1									
	Net Present Value of Total Benefits (including mortality benef	its)		872.9	Net P	resent Va	lue of Pha	ase I Bene	efits (inclu	uding mo	rtality be	enefits)			373.6									
ad	Phase I Not Repetits (evoluting mortality benefits)	_	_		-104 9	-65 1	-64.0	-63.0	-62 0	-61.0	-60.0	-58 9	-579	-56 9	-55.0	-54.8	-53.8	-598	-51 8	-51.8	-51.8	-51.8	-51.8	-51.8
ae	Phase II Net Benefits (excluding mortality benefits)	-	_	-	-	-	-	-103.3	-571	-55.2	-53.3	-51.5	-49.6	-47 7	-45.8	-44 0	-42.1	-40.2	-38.3	-36.5	-34.6	-39 7	-327	-39 7
af	Total Net Benefits (excluding mortality henefits)	-	-	_	-104.9	-65 1	-64 0	-166.3	-119.1	-116 9	-113.3	-110.4	-107.5	-104 B	-101 7	-98.8	-95 9	-93 0	-90 1	-88 2	-86 4	-84 5	-84.5	-84 5
ao	Discounted Total Net Benefits (excluding mortality benefits)	-		-	-89.6	-53.5	-50.6	-126.4	-87.0	-81.6	-76.5	-71 7	-67 1	-62.8	-58 7	-54.9	-51.2	-47.8	-44 5	-41.9	-39 4	-37.1	-35 7	-34 3
-b ah	Phase I Net Benefits (including mortality benefits)	-	-	-	-102.3	-60.0	-56.4	-52.9	-49.3	-45.7	-42.2	-38.6	-35.0	-31.5	-27.9	-24.3	-20.8	-17.2	-13.7	-13.7	-13.7	-13.7	-137	-13 7
ai	Phase II Net Benefits (including mortality benefits)	-	_	-	-	-	-	-98.6	-47.8	-41 2	-34 7	-28 1	-21.6	-15.0	-8.5	-2.0	46	11.1	17.7	24.2	30 7	37.3	37.3	37.3
ai	Total Net Benefits (including mortality benefits)	-	_	-	-102.3	-60 0	-564	-151 5	-97.0	-86.9	-76.8	-66 7	-56.6	-46.5	-36 4	-26.3	-16 2	-61	40	106	171	23.6	23.6	23.6
ak	Discounted Total Net Benefits (including mortality benefits)	-	-	-	-87.5	-49.3	-44 6	-115.1	-70.9	-61.1	-51.9	-43.3	-35.4	-27.9	-21.0	-14.6	-8.6	-3.1	2.0	5.0	78	10.4	10.0	9.6
un	Net Present Value of Total Net Benefits (excluding mortality)			-1 212 3	Net P	resent Va	lue of Ph	ise I Net	Renefits ((excludin	ø mortali	tv)	00.1	2710	-736 8	1	0.0	0.1	2.0	0.0	7.0	10.1	10.0	0.0
	Benefit to Cost Ratio (excluding mortality)			0.2	Benef	it to Cost	Ratio					-57			0.1									
	Net Present Value of Total Net Benefits (including mortality)			-589.7	Net P	resent Va	lue of Ph	ase I Net	Benefits ((including	o mortalit	tv)			-470.3									
	Benefit to Cost Ratio (including mortality)			0.6	Benef	it to Cost	Ratio		Denenits (,	,	-57			0.4									
	Kan Data				Dener	10 0001	mano								0/1									
	Conorol						Popofita	LIKe mil	lions)							Trada C	ete (cort	,						
	<u>General</u> Discount Rate			10/			Phase I N	avimum	Benefite	(exclude	ng mortali	itv)		15.9		One-off1	base I Te	1 sting Cov	sts (HK ? .	millione			0.6	
	Household Expenditure on Pre-packaged Food (HKS millions)			11/0 93 000			Phase IN	Aortality	Ronofite	CALIUUII	ig mortal	ny)		13.3		One-off1	hase I T	esting Co	sts (HK¢	millions)			9.0 90 0	
	Years to accrue maximum benefits			23,000			Phase II	Maximum	n Benefite	exclude	ng morta	lity)		98.1		New Pro	ducts Por	· Annum	565 (1 H Q	minoits)			14%	
	Value of Statistical Life (HKS millions)			10			Phase II	Mortality	Benefits	, (caciudi		y)		70.0		Phase I 1	esting Co	ost Discor	ınt (Adiu	sted)			0.0%	
	Government Costs (HKS millions)			10			Trade Co	sts	Serieino					70.0		Phase II	Testing C	ost Disco	unt (Adii	isted)			0.0%	
	Enforcement Costs			25			Annual I	Phase I Re	elabelling	Costs (F	KS millio	ons)		56.9		Phase I I	ost Produ	act Costs	(HKS mi	llions)			35.5	
	Promotion Costs			1.4			Annual I	Phase II R	elabelling	g Costs (I	HK\$ milli	ons)		53.6		Phase II	Lost Prod	luct Costs	(HK\$ m	illions)			30.7	

Footnotes to Tables D1-8

- a Costs associated with products which require relabelling in Phase I derived from market survey results in Table C1.
- b Costs associated with products which require relabelling in Phase II derived from market survey results in Table C1.
- c Costs associated with products which require testing in Phase I derived from market survey results in Table C1.
- d Costs associated with products which require testing in Phase II derived from market survey results in Table C1.
- e =a+c
- f =b+d
- g =e+f
- h Percentage of Household Expenditure on pre-packaged Food in Phase I trade costs. Source: Household Expenditure Survey and the Rebasing of the Consumer Price Indices 1999/2000, C&SD, HKSAR Government.
- i Percentage of Household Expenditure on pre-packaged Food in all trade costs. Source: Household Expenditure Survey and the Rebasing of the Consumer Price Indices 1999/2000, C&SD, HKSAR Government.
- Total trade costs (row g) discounted. Present Value (in 2005 prices) = Future Value (ie row g) / (1+r)n, where r=discount rate 4% and n=numer of years counting from 2005.
- j Net Present Values (NPV) below represent the stream of cashflow discounted at 2005
- k Administrative costs include enforcement costs and promotion costs, which are assumed to be incurred with products requiring testing and relabelling in Phase I.
- l =e
- m Costs implied by the lost of product in Phase I (HK\$millions)
- n =f
- o Costs implied by the lost of product in Phase II (HK\$millions)
- p =k+l
- q =m
- r =n+o
- s Total costs (row p) discounted to present value in 2005 at a 4% discount rate.
- t Benefits associated with Phase I implementation excluding mortality benefits.
- u Benefits associated with Phase II implementation excluding mortality benefits.
- v Benefits associated with Phase I implementation including mortality benefits.
- w Benefits associated with Phase II implementation including mortality benefits.
- x = r+t
- y =s+u
- z = r + s
- aa Total benefits excluding mortality benefits (row x) discounted to present value in 2005 at a 4% discount rate.
- ab =v+w
- ac Total benefits including mortality benefits (row z) discounted to present value in 2005 at a 4% discount rate.
- ad =r-n
- ae =s-o
- af =ab+ac
- ag Total net benefits excluding mortality benefits (row ad) discounted to present value in 2005 at a 4% discount rate.
- ah =v-n
- ai =w-o
- aj =af+ag
- ak Total net benefits including mortality benefits (row ah) discounted to present value in 2005 at a 4% discount rate.

COSTS AND BENEFITS EXCLUDING MORTALITY BENEFITS

Option	NPV of Phase I Benefits (HK\$	NPV of Phase I Net Benefits	Phase I Benefit to	Year in which Benefits	Max Annual Net Benefit
	millions)	(HK\$ millions)	Cost Ratio	Exceed Costs(1)	(HK\$ millions) ⁽²⁾
Ι	732	169	1.3	2021	62
II	268	-273	0.5	-	-
III	212	-206	0.5	-	-
IV	62	-313	0.2	-	-
V	1,554	237	1.2	2022	120
VI	556	-710	0.4	-	-
VII	435	-590	0.4	-	-
VIII	107	-737	0.1	-	-

Table D9 Phase I Economic Benefits and Net Benefits (excluding Mortality Benefits)

Note: (1) This column shows the year in which the *cumulative* benefits of the scheme exceed the cumulative costs.

(2) This column shows the maximum annual net benefit once the scheme has achieved full benefits.

Table D10Total Economic Benefits and Net Benefits (excluding Mortality Benefits)When Phase II is Implemented 3 Years after Phase I

Option	NPV of Total Benefits (HK\$	NPV of Total Net Benefits	Total Benefit to Cost Ratio	Year in which Benefits Exceed	Max Annual Net Benefit
	millions)	(HK\$ millions)		Costs ⁽¹⁾	(HK\$ millions) (2)
Ι	2,144	286	1.2	2024	214
II	803	-995	0.4	-	-
III	715	-834	0.5	-	-
IV	238	-1,130	0.2	-	-
V	2,368	354	1.2	2023	213
VI	882	-1,063	0.5	-	-
VII	775	-896	0.5	-	-
VIII	250	-1,212	0.2	-	-

Note: (1) This column shows the year in which the *cumulative* benefits of the scheme exceed the cumulative costs.

(2) This column shows the maximum annual net benefit once the scheme has achieved full benefits.

Table D11Total Economic Benefits and Net Benefits (excluding Mortality Benefits)When Phase II is Implemented 5 Years after Phase I

Option	NPV of Total Benefits (HK\$ millions)	NPV of Total Net Benefits (HK\$ millions)	Total Benefit to Cost Ratio	Year in which Benefits Exceed Costs ⁽¹⁾	Max Annual Net Benefit (HK\$ millions) (2)
Ι	1,825	161	1.1	2025	214
II	682	-927	0.4	-	-
III	601	-777	0.4	-	-
IV	198	-1,019	0.2	-	-
V	2,184	274	1.1	2024	213
VI	808	-1,035	0.4	-	-
VII	698	-876	0.4	-	-
VIII	218	-1,151	0.2	-	-

Note: (1) This column shows the year in which the *cumulative* benefits of the scheme exceed the cumulative costs.

(2) This column shows the maximum annual net benefit once the scheme has achieved full benefits.

Table D12Total Economic Benefits and Net Benefits (excluding Mortality Benefits)When Phase II is Implemented 10 Years after Phase I

Option	NPV of Total	NPV of Total	Total Benefit	Year in which	Max Annual Net
	Benefits (HK\$	Net Benefits	to Cost Ratio	Benefits	Benefit
	millions)	(HK\$ millions)		Exceed Costs(1)	(HK\$ millions) ⁽²⁾
Ι	1,199	-43	1.0	2028	121
II	445	-753	0.4	-	-
III	378	-628	0.4	-	-
IV	120	-769	0.1	-	-
V	1,823	138	1.1	2024	160
VI	664	-960	0.4	-	-
VII	547	-816	0.4	-	-
VIII	154	-1,011	0.1	-	-

Note: (1) This column shows the year in which the *cumulative* benefits of the scheme exceed the cumulative costs.

(2) This column shows the maximum annual net benefit once the scheme has achieved full benefits.

Annex E

Economic Costs Due to Product Losses
The principal drivers of any decision to drop a product are likely to be whether or not the costs of testing and labelling exceed the profit associated with that product and/or the ability of the market to absorb any price increases. Many of these products are likely therefore to be low volume, low profit products that are sold to consumers by niche retailers, both large and small. Thus, impacts on these niche retailers, and their importers/suppliers, are likely to be a consequence of any decision to stop exporting these products to Hong Kong. While large niche retailers and importers/suppliers may be able to absorb these impacts, *significant* financial impacts are likely to be felt by any small retailers or importers who have to drop a significant proportion of their product range. The economic cost due to the possible loss of products under each option/phase has been estimated by considering the value added ⁽¹⁾ that such small importers and retailers provide to the economy.

Table E1 provides an illustration of the likely cost impacts on individual imported product lines. This analysis focuses on low volume items and uses the average testing and relabelling costs presented in *Table 4.4* in the Main Report. The analysis shows that for low volume items, the cost of complying with the labelling requirements could be very significant, particularly if both profit margins and sales turnover are low (eg profit per product is less than the cost incurred).

Table E1Impact on Low Volume Imported Items

Retail Price of Product (HK\$)	5	5	50	50
Annual Sales (Units)	10,000	50,000	10,000	50,000
Sales Revenue (HK\$)	50,000	250,000	500,000	2,500,000
Average Costs as % of Sales Revenue				
Options I&V	19.2%	11.2%	1.9%	1.1%
Options II&VI	18.2%	11.0%	1.8%	1.1%
Options III&VII	15.5%	10.5%	1.6%	1.0%
Options IV&VIII	13.3%	10.0%	1.3%	1.0%

Based upon this analysis it can be assumed that some products would be dropped from the market, with a corresponding potential for impact on the importers of these products. As noted above, lack of data and the difficulty in predicting market responses, prevents a detailed estimation of this impact to be developed. However, in order to provide an indication of the possible economic impact on Hong Kong, ERM developed a number of scenarios based around the following data sets:

- Wellcome (sales distributions of pre-packaged food products);
- Park'n Shop (average pricing of different product categories);
- Small importers and retailers (profitability and product variation);

^(!) Value added represents the additional value to the economy that a business creates. For food retailers and importers it is equal to their sales and other receipts, interest payments and changes in stocks minus income from other sources, the value of the purchases of goods for sale and non-salary related operating expenses.

- Census and Statistics Department (average profitability of small importers);
- The market survey (the likely number of imported products that will require relabelling and/or testing); and
- Industry sources (eg testing and relabelling costs as presented in *Table 4.4* in the Main Report).

These scenarios were then modelled using a Monte Carlo analysis in Crystal Ball ® which suggested that the *maximum* number of products that could be lost is around 5-10% of pre-packaged food products on the market. This value is derived through the assumptions that small importers with products of low sales turnover (eg less than HK\$ 250,000 per annum as identified in *Table E1*) have only limited market power such that their customers /consumers will only accept minimal price increases (eg 5 to 15% price increase).

The majority of these products are likely to be sold to consumers by niche retailers, both large and small. Thus, impacts on these niche retailers, and their importers/suppliers, are likely to be a consequence of any decision to stop exporting these products to Hong Kong. While large niche retailers and importers/suppliers may be able to absorb these impacts, *significant* financial impacts are likely to be felt by any small retailers or importers who has to drop a number of products from their product range.

In order to incorporate this impact into the main analysis, ERM has used the estimate of 5-10% of products lost to identify the possible economic impact of the various options. While this number of lost products was identified as a maximum probably loss it has been used to estimate the resulting economic impacts within the main analysis as the combination of welfare concerns for SMEs and the uncertainty surrounding the estimate suggests a conservative approach to ensure they are not being under-estimated. This number of lost products was modelled to apply to the most stringent options (Option I&V), and is therefore scaled according to the number of low volume imported products requiring action in Phase I and Phase II under each of the options.

Table E2Percentage of Low Volume Imported Products Requiring Action

Opti	on 1	Opti	ion 2	Opti	on 3	Opti	on 4
Phase I	Phase II	Phase I	Phase II	Phase I	Phase II	Phase I	Phase II
32%	68 %	31%	66%	25%	60%	22%	53%
Opti	on 5	Opti	on 6	Opti	on 7	Opti	on 8
Phase I	Phase II	Phase I	Phase II	Phase I	Phase II	Phase I	Phase II
65%	35%	63%	35%	51%	35%	40%	35%

Source: Market Survey, ERM 2004

The economic cost due to the possible loss of products under each option/phase has been quantified by considering the value added that small importers and retailers provide to the economy.

Table E3Value Added of Small & Medium Sized Retailers and Importers

Number of Employees	Number of establishments	Value Added (HK\$)
Small & Medium Sized Retailer		
<10	15,852	1,915,090,000
10 - 49	202	420,650,000
Sub Total	16,054	2,335,740,000
Value Added Per Small Retailer (HK\$)		145,493
Small & Medium Sized Importers		
<10	3,316	1,532,034,000
10 - 49	341	2,939,188,000
Sub Total	3,657	4,471,222,000
Value Added Per Small Importer (HK\$)		1,222,648

Source: Census and Statistics Department, 2002 Annual Survey of Wholesale, Retailer & Import & Export Trades, Restaurants & Hotels

To estimate the likely lost value associated with product losses it was assumed that the loss of products would have significant impacts on a number of retailers and importers such that their value-added to the economy is lost. For the purpose of the analysis, for retailers it was estimated that the loss of thirty products could significantly impact one or two small retailers in this manner. For importers, ERM estimated that for every fifty products lost, between one and four importers could be significantly impacted. These ratios of products to retailers and importers were developed to be representative of niche SMEs based upon data identified in interviewing SMEs ⁽¹⁾ and considering that it is likely that the loss of products would be distributed across a number of different niche retailers or importers of such products and that low volume, low priced products are likely to constitute a relatively small proportion of their total turnover. In quantifying the economic impact of these product losses, the main analysis takes the mid point of these ratios, while the sensitivity analysis examines the extremes. The significant impact on a small retailer or importer is cost by multiplying it by the value added of the corresponding small business to the economy.

ENVIRONMENTAL RESOURCES MANAGEMENT

⁽¹⁾ ERM's discussions with small retailers identified a niche Indonesian retailer selling about 150 products with a profit margin of less than 10% - the loss of over 10% of their product could therefore be considered significant in terms of loss revenue and hence profit. In addition, ERM identified a small importer, importing around 12 products from Mainland China – not being able to import any of these products would be significant.

Annex F

SME Case Studies

F1.1 COMPANY DESCRIPTION

Company D is a local manufacturer producing about 20 different types of dim-sum products. Their clients are distributors, small stalls and small restaurants. 20% of their dim-sum products fall within the scope of this RIA Study, ie prepackaged, sold to distributors and then sold to supermarkets and retail stores. Company D has one establishment in Hong Kong and employs less than 15 people.

F1.2 OPINION ON NUTRITION LABELING SCHEME

The interviewee, Ms D, had only heard about nutrition labelling from the news and TV programmes but she had not received any formal information disseminated from the HKSAR Government. She expressed her concern regarding the proposed nutrition labelling scheme during the discussion with the ERM. A lot of questions were asked, for example, about which products are covered in the scheme, what nutrients to be labeled and the validity of laboratory testing results, eg whether the nutrition information needs to be updated periodically over time. She believed that her business would be impacted significantly if the nutritional labelling scheme is launched. There is currently no nutrition information on the dim-sum products manufactured by Company D.

F1.3 REACTION TO THE PROPOSED LEGISLATION

Ms D said that the competition with companies from the Mainland China or Hong Kong companies with factories in Mainland China have been very keen. Company D's costs have been higher than those competitors because of its location of factory in Hong Kong.

When the testing/relabelling costs are to be incurred, their profit margin gets even smaller. She was not sure of the one-off and ongoing costs associated with laboratory testing, repackaging, relabelling of products and she had not had plans on doing so. However, she expected that the cost of laboratory testing will be approximately 10% of the costs of products depending on the valid period of laboratory testing results and what type of nutrients required to be listed.

She has a lot of concern regarding fairness. She raised the point that if her company pays the laboratory testing fees and print the nutrition information on packages, other companies producing similar products might copy her nutrition information without performing laboratory testing. She considered it a grey area and is unfair to companies who provide valid nutrition information.

F1.4 AFFORDABILITY

Annual turnover of prepackaged dim-sum (which counts for approximately 20% of Company D's business operation) was estimated to be HK\$360,000 to HK\$480,000. Net profit margin is 10%-30% depending on the season. Sales decrease significantly in summer.

F2.1 COMPANY DESCRIPTION

F2

Company B is a local manufacturer producing about 20 different bean-related drinks products such as soy bean milk, soy bean milk with black sesame, soy bean pudding and red/green/purple/mixed bean soup.

Mr and Mrs B owned this factory after they moved to Hong Kong from the United States a few decades ago. This is the only establishment of this company and the couple employs 3-9 staff depending on the season of the year.

The products are freshly made every day in the factory and transported to clients such as supermarkets (Wellcome, Park'n Shop and Dah Chong Hong), wet markets and other retail stores.

They sell, on average, 1,000 prepackaged products per day. Their turnover in 2003-04 financial year was about HK\$ 2.5 million and their profit margin was less than 10%. They could not give the Consultants the exact contribution of prepackaged food to the turnover but it should be close to 50%.

F2.2 **OPINION ON NUTRITION LABELING SCHEME**

Mrs B did not think that nutrition labels are essential. She believed that only educated people understand nutrition information and very few people actually read the labels. She thought only a small percentage of the population, such as patients, health professionals and parents are concerned with nutrition information on packages and would benefit from the scheme.

Mr B supported voluntary nutrition labeling in Hong Kong on the minimum number of core nutrients required, ie the status quo.

He thought that nutrition labeling is a trend in developed countries, but the situation is different in Hong Kong. For instance in the U.S., where the food industry is monopolized by corporations, the Americans can do testing and nutrition labeling easily, yet in Hong Kong with a large number of SMEs, small business owners might not be able to cope with the labeling scheme.

Moreover, Mr B believed that it is meaningless and impractical if the HKSAR Government implements the nutrition labeling scheme very strictly and drives businesses to close down. He said that the kitchens of restaurants in the U.S. are not very clean and it was because the governor understands that if they the hygiene policies are strictly implemented, the businesses will be closed down, which is not the governor's intention. Mr B urged the HKSAR Government to consider whether small businesses can still survive under the scheme. If businesses are closed down, the Government will not receive profits tax and on top of that, they have to provide the business owners with unemployment benefits.

F2.3 REACTION TO THE PROPOSED LEGISLATION

Mr B said that the competition with companies from Mainland China has been very keen, Hong Kong industry people cannot easily transfer the operation costs to customers. When the testing/relabelling costs are to be incurred, their profit margin gets smaller and smaller, which may threaten them to close down their businesses. If the HKSAR Government develops a demanding scheme, implements the scheme too strictly and does not provide a leeway for companies, they have no alternatives but to close the business or to move to Mainland China. The social welfare in Hong Kong is not bad, thus it is quite attractive for entrepreneurs in Hong Kong to close the existing business and to live on unemployment benefits.

Mr B said that they will comply with what the government requires, but if the testing costs for each product line is too high, they might need to reduce the number of product lines manufactured, which is unhealthy for the company and provides less choices to customers.

F2.4 NUTRITION CLAIMS

4 out of 20 product lines are labeled with nutrition and health claims like "high protein", "no sugar" and "清熱". The owners said that it is a fact that yellow beans contain high protein, black sesame can "清熱" and they do not use sugar in the product lines stated "no sugar", thus there is no need to perform formal testing to substantiate the claims.

F2.5 AFFORDABILITY

Annual turnover during the Financial Year 2003-04 was reported to be HK\$2,500,000. Net profit margin is less than 10%, ie less than HK\$ 250,000. The profit margin is small due to the high cost of raw material (such as yellow beans and plastics bottles), electricity, water and water discharge costs charged by the HKSAR Government.

Mr B believed that the highest costs associated with the nutrition labeling scheme is the testing costs. He suggested that the HKSAR Government should have laboratories to help testing the nutrition values for them, in this case he does not mind how many nutrients the nutrition labeling scheme require them to list.

Below are the costs associated with label redesign and relabelling provided by the Company B:

Label redesign involves a one-off cost of HK\$900 per color per product line and an average label has 3-5 colors, ie HK\$2,700-4,500. It could actually be cheaper if order labels from China, approximately HK\$ 500 per colour, but they generally stick to the Hong Kong suppliers to help boosting the Hong Kong economy. This implies that if 20 product lines have to be relabeled, assuming that all labels are in 4 colors to be printed in Hong Kong, the one-off label redesign costs will be HK\$ 72,000.

Printing of labels is about \$0.30-\$0.50 per label if they do not print in bulk. The printing costs could be 30% less for printing over 200,000 labels at a time, but this might take more than several years for them to finish using the labels. If the labels need to be changed due to the nutrition labeling scheme, these labels will be wasted.

There are product lines with claims like "no sugar" which involved sticking of labels on top of the original packages. Mrs B said that a Hong Kong worker whom they pay HK\$20 per hour can stick labels at a rate of approximately 3 boxes or 72 packages per hour. This implies that if all of the products in Company B have to be relabeled in the short run, they need to incur HK\$278 per day or HK\$100,556 per year solely on labor costs for sticking nutrition labels on 1,000 packages per day.

F2.6 LIFE-CYCLES OF PRE-PACKAGED FOOD

Life cycles of pre-packaged food range from a week for fresh products to a year for some products sterilized at high temperature.

F3.1 COMPANY DESCRIPTION

Company F is a "Front shop-back factory" bakery shop selling different kinds of bread and cakes, mostly in Japanese style. The company has only one establishment with 6 workers. Clients are mainly residents and commuters in the residential neighbourhood. Company F has made a claim on their bread by printing a Cantonese slogan outside the shop, "Our breads and cakes are naturally made and good for health. Made from natural yeast, rich in dietary fibre, no preservatives, artificial colourings and animal fat."

Bread are freshly baked and sold on trays. There are about 50 product lines of prepackaged bread and 50 product lines of bread without package. Prepackaged bread accounts for 70% of the total sales volume. The prices of prepackaged bread and non-prepackaged bread are on average \$9 and \$4.50 respectively. They reportedly sold about 550 prepackaged bread and 235 non-prepackaged bread a day; while 82.5% of the business by sales value involved in prepackaged products.

F3.2 OPINION ON NUTRITION LABELING SCHEME

The Managing Director, Mr F, thought that nutrition labeling is now a global trend and the implementation of the nutrition labeling scheme in Hong Kong is just a matter of time. Mr F agreed that Hong Kong should implement a voluntary scheme providing nutrition information of core 4 nutrients. Yet the owner emphasized the need for government to provide SMEs with subsidies on testing and re-packaging.

The products sold in this bakery did not carry out any testing before making the nutrition-related claims, instead, the director got the nutrition information from their suppliers of raw materials and several other sources to make the conclusion.

F3.3 REACTION TO THE PROPOSED LEGISLATION

Company F had bread tested in university laboratories for calories and fat content at \$300 per product line. Mr F did it once and thought it was not worthwhile to do it again.

The director of this bakery said he will "comply" with the regulation and put labels on the products if mandatory nutrition labeling is implemented. However, he plans to simply calculate the nutrition information himself based on indicative nutrition information of ingredients, such as flour and eggs, rather than perform formal testing in accredited laboratories.

F3.4 AFFORDABILITY

Daily turnover of this bakery is about \$6,000 and annual turnover about HK\$2,172,000. Net profit margin is around 11% - 12%, ie about HK\$ 250,000.

Packages currently used cost \$0.90 each. Mr F foresaw that when the nutrition labeling scheme is implemented, the use of raw materials might be affected and the cost of packaging/labeling might increase. Old packages might not be used anymore and it could be a waste of resources. Mr F thought the impact of the labeling scheme on them would be quite significant, he hopes that SMEs could get subsidy from the HKSAR Government.

F3.5 LIFE-CYCLES OF PRE-PACKAGED FOOD

Company F has been developing new products every 3 – 4 months, new products are about 10 – 20 % of the total product lines.

F4.1 COMPANY DESCRIPTION

Company M is an importer/wholesaler sourcing prepackaged food from food suppliers in multiple Asian countries. Some of which have nutrition labelling scheme in place while some do not. The company has only one establishment with 10-15 staff. There are 250-300 prepackaged food products lines wholesaled by Company M, 95% of them are imported while the remaining 5% of them are printed with their own private labels. Clients are primarily supermarkets, convenient stores and schools in Hong Kong.

F4.2 OPINION ON NUTRITION LABELING SCHEME

The marketing director, Ms M, is generally in favor of nutrition labelling in general. She believed that there has been a growing awareness of nutrition information not only because it is a global trend, but also due to its popularity as a marketing strategy.

In Ms M's opinion, the drawback of the scheme is the increase in costs and burden on small manufacturers. Loads of printed and unused packages might be wasted and extra workers might be employed to relabel or repackage the products.

The prices of food products might be affected by the proposed nutrition labelling scheme. However, the extent to which the price of food products to be affected by the nutrition labelling scheme depends on the sales volume of the item. Low volume products are more likely to have the price increased.

Ms M said the HKSAR Government needs to consider if it is necessary to carry out the nutrition labelling scheme. If they decide to implement such scheme, they should give adequate guidelines to importers and there should be twoway communication between the industry and the Government. She said that she called relevant Government departments sometimes to ensure that the labels of the products she handled comply with food labelling regulations. Ms M mentioned the possibility that large chain stores like Wellcome and Park'n Shop would use nutrition labelling as an excuse to penalize importers for inappropriate food labels.

Ms M said that the Government should set different grace periods for different products. For those with faster turnover, the re-labeling job can be done rather quickly. Regarding the proposed timeframe, Ms M said 2 - 5 years would be acceptable to allow suppliers to prepare for the nutrition labels. However, Ms M foresaw that importers would still be left with limited time to adapt to the nutrition labelling guidelines due to a lack of information or communication from the Government.

F4.3 REACTION TO THE PROPOSED LEGISLATION

If the proposed nutrition labelling regulation has been passed, Ms M said from her experience, there should not be problems for her to ask suppliers to repackage their products according to the labeling requirements, except those from China. Ms M said it is too costly to relabel products themselves and she will shift the responsibility to her suppliers. If the suppliers cannot provide necessary nutrition labels on the packages, she would import only those products with such information, such as Japanese products.

F4.4 AFFORDABILITY

Annual sales turnover is over HK\$10 million, but exact amount is kept confidential. With the price of products approx \$3-10/package, ie their sales volume is approximately 1-3 million per year.

Gross profit margin ranges from 2% to 20% depends on the level of competition of individual product category or product lines. Top 10% food product lines occupy over 50% of total turnover.

F4.5 LIFE-CYCLES OF PRE-PACKAGED FOOD

Stock turnover ranges from 1 week to 3 months. The company keeps buffer stock and the average lead-time is 3 weeks.

CASE STUDY COMPANY L – IMPORTER SOURCING PREPACKAGED FOOD FROM FOOD SUPPLIERS IN VERY LIMITED NUMBER OF COUNTRIES

F5.1 COMPANY DESCRIPTION

Company L is an importer/wholesaler sourcing prepackaged fresh fruit juice and soy bean milk from suppliers in Mainland China. The company has only one establishment with less than 50 staff. Company L imports about 10 different kinds of fruit juice and 2 kinds of soy bean milk. Their clients are supermarkets and food stalls in Hong Kong. There is currently no nutrition information shown on packages of the products sold by Company L.

F5.2 **OPINION ON NUTRITION LABELING SCHEME**

The interviewee, Mr L, had only heard about nutrition labelling from the news and TV programmes but he had not received any formal information disseminated from the HKSAR Government. He was not familiar with the details of the nutrition labelling scheme proposed by the HKSAR Government, for example, what kinds of nutrients required on food and drinks labels, when the Consultants explained to him the details of the proposed scheme.

Mr L opposed any regulations on nutrition labels. He did not think it is necessary to provide nutrition information on food and drink packages. He doubted if nutrition values on the package are accurate and the majority of the Hong Kong people could understand nutrition information and its relationship to their health.

F5.3 REACTION TO THE PROPOSED LEGISLATION

In Mr L's opinion, Company L's business will not be affected by the nutrition labelling scheme because it is the manufacturers' responsibility to do the testing and relabelling and all costs will be covered by them. In other words, he is not prepared to perform testing and relabelling or bear any cost associated with nutrition labelling. He will request the manufacturers to change the packages in accordance with the Hong Kong nutrition labelling requirements. From his experience, if he allows the manufacturers a three months' notice in advance, the manufacturers could provide him with revised drinks packages accordingly.

F5.4 AFFORDABILITY

Company L sells, on average, 200,000 bottles of soy bean milk at HK\$5 each and 200,000 bottles of fresh fruit juice at HK\$10 each per month, thus sales turnover is estimated to be HK\$36,000,000 per year. With their profit margin of 30%, their gross profits is estimated to be HK\$10,800,000.

F5.5 LIFE-CYCLES OF PRE-PACKAGED FOOD

Soy bean milk and fresh fruit juice have to be consumed within two days. Company L sources products from Mainland China and transports them directly to the clients every day. There is no lead time for storage with the importer.

F6 CASE STUDY COMPANY S – A LOCAL ORDINARY FOOD PROVISION STORE

F6.1 COMPANY DESCRIPTION

Company S is a small provisional store located near a wet market, selling about 500 different types of food and drinks products⁽¹⁾. It is owned and operated by a couple, Mr and Mrs S. Customers are primarily residents in the neighbourhood. This store only has one establishment and no other staff is employed.

The company sources food products from wholesalers and agents. Food/drinks products are stored on shelves ranging from a day to a month. Unsold stock is replaced before the expiry dates. There have been little changes in terms of product lines sold in Company S throughout the years.

F6.2 OPINION ON NUTRITION LABELING SCHEME

Generally speaking, Mr S opposed the regulation of nutrition labels and he was not interested in discussing different options regarding labeling format and required nutrients on the label.

Mr S said nutrition labeling is a waste of time and resources because few people pay attention to the nutrition information on food packages. The cost of testing is likely to be substantial for small manufacturers. Although Government officers will check food labels regularly, he queried the accuracy of nutrition information on labels and thought that customers are often cheated by false information. Similar to the information of expiry dates on food products, he doubted how the Government verified that the food would not go bad before the expiry dates stated. He concluded that the process of deriving nutrition values for food products is complicated and is not necessary.

F6.3 REACTION TO THE PROPOSED LEGISLATION

Mr. S did not believe that retailers should be responsible to put nutrition labels on food products. If mandatory nutrition labeling scheme is to be implemented, he would ask his suppliers to provide nutrition information and relabel the products. He would not expect to relabel the products himself or bear the cost of testing and relabelling. If the suppliers refuse to provide nutrition labels according to the regulation, he would switch to products which necessary nutrition information is readily available, for example, American products. If the costs of products would be increased due to

(1) Very few products (approximately less than 10%) in the store are not food/drinks or food/drinks which are exempted from labelling, eg alcohol, cigarettes, distilled water, confectioneries wrapped in a fancy form, lighters and tissue paper.

labeling requirements, Mr S would transfer the additional cost of to his customers.

F6.4 AFFORDABILITY

Company S's turnover on food/drinks products was about HK\$1,500 per day. Assuming that the average price of products is \$5, the annual sales turnover is estimated to be 100,000 items.

Company S had a low profit margin for their products, cost of goods sold was about 80% – 90% of the selling price and net profit margin was less than 10%. As the store opens every day throughout the year, its annual turnover was approximately HK\$547,500 and net profit was below HK\$ 54,750.

F7.1 COMPANY DESCRIPTION

F7

Company I is a very small retail store sourcing different types of Indonesian food products, mainly snacks, near a middle-class residential area. It is owned by a sole proprietor, Ms I, and operated by her family members. The company sources food products from suppliers in Indonesia. Her clients are primarily residents and Indonesian maids in the neighborhood. This store only has one establishment and no other staff is employed.

F7.2 OPINION ON NUTRITION LABELING SCHEME

The prepackaged food products sold in Company I do not bear any nutrition information. Ms I believed that people of lower social level usually do not pay attention to labels on the packages, only educated people might read the labels. Regarding the health benefits derived from the better nutrition information, the owner believed that only a limited proportion of sick people would look at the nutrition values of food and would benefit from the scheme.

Ms I showed little interest on the discussion on nutrition labeling scheme because she believed that food retailers like them are too small to have any influence on the Government regulations. She was indifferent with various proposed options on nutrition labeling, ie she had no preference on whether it is a mandatory or voluntary scheme, the number of nutrients required on labels, and the implementation timeframe.

F7.3 REACTION TO THE PROPOSED LEGISLATION

Ms I said she would simply comply with nutrition labelling regulations which the HKSAR Government requires retailers to do, yet the owner did not foresee any impact of the legislation on her business. As the profit made has barely been enough to keep the business going, she was not able to afford any responsibility of testing, relabelling or repackaging. From her experience most suppliers would follow labelling requirements, she would leave the work and cost of testing, repacking and relabelling to the suppliers and only take products which comply with the future nutrition labeling requirements proposed by the HKSAR Government.

F7.4 AFFORDABILITY

Turnover is around a few hundreds, maximum around \$1,000 per day. The gross profit margin is less than 10% but the rent is about HK\$ 9,000 per month on top of other expenses.

Annex G

Data on the Hong Kong Food and Beverage Industry, 2002

Industry Group Code	Industry Group	Number of Establishments	Number of Persons Engaged
3112	Dairy products	13	1.584
3113	Canning, and preserving of fruits and vegetables	4	179
3114	Canning, preserving and processing of fish and crustaceans	28	197
3115	Vegetable and imitation of animal oils and fats	1	209
3116	Grain mill products	11	429
3117	Bakery Products	114	5,344
3118	Vermicelli, noodles and similar farinaceous products	139	1,390
3121	Sugar factories and refineries	1	4
3122	Cocoa, chocolate and sugar confectionery	6	147
3129	Food products, n.e.c	228	13,021
3133	Soft drinks and carbonated waters industries	16	3,637

Table G1Breakdown of Food and Beverage Manufacturing Sector in Hong Kong, 2002

Source: Census and Statistics Department, HKSAR Government.

Table G2Food and Beverage Manufacturers, by Number of Employees, 2002

Number of Employees	Number of Establishments	Total Employees in Each Group	Total Sales and Other Receipts in Each Group (HK\$ millions)	Profit % ⁽¹⁾
Food Industr	ies (311-312)			
1 - 9	385	1,444	1,005	45%
10 - 19	85	1,131	632	19%
20 - 49	54	1,738	923	13%
50-99	43	3,125	2,011	28%
>100	66	17,415	*	*
Total	633	24,853	16,099	25%
Beverage Ind	ustries (313)			
1 - 9	2	12	*	*
10 - 19	7	93	20	15%
20 - 49	4	112	*	*
50 - 99	2	184	*	*
>100	7	3,611	*	*
Total	22	4,011	*	*

Source: Census and Statistics Department, HKSAR Government.

Notes:

(*) Data are suppressed in order to safeguard the confidentiality of individual establishments (1) Profit is the total sales and other receipts minus total costs expressed as a percentage of sales and other receipts.

Table G3Food and Beverage Manufacturers, by Sales and Other Receipts, 2002

Sales and Other	Number of	Total Employees	Profits (HK\$	Profit % ⁽¹⁾
Receipts (HK\$	Establishments	in Each Group	million)	
thousand)				
Food Industries (3	11-312)			
< 1,500	242	763	37	18%
1,500 - 14,999	222	2,416	200	18%
15,000 - 39,999	63	3,228	136	9%
40,000 - 119,999	82	9,596	1,630	26%
120,000 - 199,999	5	572	263	33%
> 200,000	18	8,278	2,238	28%
Total	632	24,853	4,504	25%
Beverage Industrie	es (313)			
< 15,000	13	217	5	7%
15,000 - 39,999	2	216	*	*
40,000 - 119,999	2	224	*	*
> 200,000	5	3,354	801	23%
Total	22	4,011	*	*

Source: Census and Statistics Department, HKSAR Government. **Notes**:

(*) Data are suppressed in order to safeguard the confidentiality of individual establishments(1) Profit is the total sales and other receipts minus total costs expressed as a percentage of sales and other receipts.

Table G4Food and Beverage Importers and Exporters, by Number of Employees, 2002

Number of Employees	Number of Establishments	Total Employees in Each Group	Total Sales and Other Receipts in Each Group (HK\$ million)	Profit % ⁽¹⁾
<10	3,316	7,659	31,080	2.13%
10 - 49	341	5,487	18,160	7.51%
>50	53	4,474	12,815	*
Total	3,709	17,619	66,362	4.68 %

Source: Census and Statistics Department, HKSAR Government. **Notes**:

(*) Data are suppressed in order to safeguard the confidentiality of individual establishments (1) Profit is the total sales and other receipts minus total costs expressed as a percentage of sales and other receipts.

Table G5Food and Beverage Importers and Exporters, by Sales and Other Receipts,
2002

Sales and Other Receipts (HK\$ million)	Number of Establishments	Total Employees in Each Group	Total Sales and Other Receipts in Each Group (HK\$ million)	Profit % ⁽¹⁾
< 100	349	371	10,599	-132.55%
100 - 499	503	642	117,455	2.06%
500 - 999	193	291	117,355	-22.69%
1,000 - 4,999	1,108	2,913	2,778,933	0.29%
5,000 - 9,999	341	1,104	2,166,736	5.06%
10,000 - 19,999	529	2,564	7,027,426	4.62%
20,000 - 49,999	303	1,838	9,056,259	1.84%
50,000 - 99,999	284	2,181	18,027,090	1.64%
>100,000	98	5,717	27,059,798	8.28%
Total	3,709	17,619	66,361,651	4.68%

Source: Census and Statistics Department, HKSAR Government.

Notes:

(*) Data are suppressed in order to safeguard the confidentiality of individual establishments (1) Profit is the total sales and other receipts minus total costs expressed as a percentage of sales and other receipts.

Table G6Food and Beverage Retailers, by Number of Employees, 2002

Number of Employees	Number of Establishments	Total Employees in Each Group	Total Sales and Other Receipts in Each Group (HK\$ million)	Profit % ⁽¹⁾
<10	15,852	32,596	31,080	7.79%
10 - 49	202	3,362	18,160	1.73%
>50	37	26,337	12,815	*
Sub Total	16,091	62,293	66,362	6.50%

Source: Census and Statistics Department, HKSAR Government. **Notes**:

(*) Data are suppressed in order to safeguard the confidentiality of individual establishments (1) Profit is the total sales and other receipts minus total costs expressed as a percentage of sales and other receipts.

Table G7Food and Beverage Retailers, by Sales and Other Receipts, 2002

Sales and Other Receipts (HK\$ million)	Number of Establishments	Total Employees in Each Group	Total Sales and Other Receipts in Each Group (HK\$ million)	Profit % ⁽¹⁾
< 100	1,524	*	*	*
100 - 499	4,439	6,805	1,271,511	10.69%
500 - 999	3,991	7,776	2,568,682	6.47%
1,000 - 4,999	5,894	16,931	10,437,910	7.79%
5,000 - 9,999	156	1,859	1,080,870	3.46%
10,000 - 19,999	35	*	*	*
20,000 - 49,999	20	*	*	*
50,000 - 99,999	12	*	*	*
>100,000	20	*	*	*
Sub-total	16,091	62,293	47,583,514	6.50 %

Source: Census and Statistics Department, HKSAR Government.

Notes:

(*) Data are suppressed in order to safeguard the confidentiality of individual establishments (1) Profit is the total sales and other receipts minus total costs expressed as a percentage of sales and other receipts.