Health status of the Irish population 1994

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Health Status of the Irish Population 1994

National Nutrition Surveillance Centre,
University College Galway.

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National Nutrition Surveillance Centre
University College Galway

Centre for Health Promotion Studies
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The principal authors are :-

Ms. Sharon Friel BSc. - Data Co-ordinator
Ms. Geraldine Nolan BSc., Dip Nutrition & Dietetics - Nutrition Researcher
Professor Cecily Kelleher MD FRCPI MPH MFPHM MFPHMI - Director

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Summary

Anthropometric relationships

Height and weight are tending to increase worldwide, including in Ireland. Both transnational studies and various studies conducted in the United Kingdom confirm these secular trends. Obesity is increasingly a problem however as demonstrated in a number of studies such as the Kilkenny Health Project. On the other hand early childhood nutrition and its influence on final attained height in particular may be associated with reduced risk of coronary heart disease in adult life and this is a source of current epidemiological research. Most anthropometric information comes from ad hoc studies while commercial sources of this type of data, although a major pool of information, cannot be used in their present form for surveillance purposes. The monitoring of standardised instructions for routine measurement of height and weight in childhood through community care services and its systematic collation is recommended.

Food Consumption Patterns

We report on four Irish based studies on food consumption, the Kilkenny Health Project surveys of 1985 and 1990, Happy Heart Survey 1992 and Health Works 1993. These surveys indicate some changes over time, if the Kilkenny baseline survey can be interpreted as indicative of patterns in the mid 80s. Though two surveys were confined to one county and one to the workforce, all four agreed on the relatively low consumption of fish and continuing high consumption of whole milk, with indications of change in relation to chicken and spreadable fats. We also report on international data compiled by Nutriscan with input from national nutrition surveys around Europe. Compared to our European neighbours we continue to be relatively low consumers of fruit and vegetables and fish. The evidence supports the view that people are tending to decrease their fat content from a variety of traditional animal sources though not necessarily tackling sources of hidden fats. The current Department of Health campaign to increase the consumption of fruit and vegetables is timely and needed.

Morbidity Data

In our first report we highlighted lack of data available in this area. This report examines this issue in more detail. Although collected on a continuous basis and useful for indicating trends morbidity indicators are largely not available in systematic, collated form. Analysis of HIPE data confirm both its usefulness and its limitations. The data showed increased admission rates over time for cancers, cardiovascular diseases and osteoporosis which would tend to support a true increase in incidence in these conditions. However changes in treatment patterns of these disorders and

hospital service provision have an influence as well. The incidence data on cancers come from the National Cancer Registry who report the most recent Southern Tumour Registry figures. Periodic surveillance of the population for risk factors and incidence of cardiovascular diseases is also needed. At present we rely on data provided by regional surveys such as that provided by the Kilkenny Health Project. It is extremely important to monitor incidence rates particularly across generations because the long term experience of one cohort of people may differ from another.

Mortality Data

Life expectancy in Ireland continues to improve in the case of both men and women although it remains lower than most of our European neighbours. Mortality rates are still contributed to in the main by cancers and cardiovascular disease, in which diet can have a contributory aetiological role. In 1993 alone 48% of all deaths resulted from disease of the circulatory system. Trends are downwards for cardiovascular disease mortality (a finding which tends to be supported by the morbidity data in the previous chapter) but upwards for cancers. Over the last few years Ireland has had one of the highest death rates in Europe due to both cardiovascular diseases and cancers. Epidemiological data on intermediate markers and on dietary risk factors are needed from prospective ad hoc surveys.

Introduction

The first annual report published by the National Nutrition Surveillance Centre entitled "Nutritional Surveillance in Ireland 1993" covered the whole spectrum of nutrition surveillance. Topics included were the history of the Irish diet, health status of the population and the food chain, in which Irish production, distribution, retail and supply were discussed. It is intended to produce one comprehensive report every 5 years and a short report annually.

This is our first short report and will look specifically at measures of morbidity and health status. A subsequent short report focusing on the food chain is planned for 1995. Morbidity data were derived from many different sources. We present anthropometric information, morbidity data based on available databases in the health sector and updated mortality figures. The overwhelming problem found when compiling this report was the lack of standardised, comprehensive data readily available on these issues and recommendations are made in this report. Food consumption patterns in Ireland were monitored and compared to other European countries and four Irish surveys are also summarised.

The NNSC has reported this year on the community nutritionist programme set up by the Department of Health which has been piloted in the Western Health Board. An evaluation has been conducted through this department and will be made available in report form (Series III) in the coming months.

In 1948 the World Health Organisation defined, as part of its constitution, health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The Health Strategy for the 90s by the Department of Health 'Shaping A Healthier Future' puts strong emphasis on measures of good health and targets towards their achievement. A more detailed health promotion strategy is awaited and should be available this year. The support for the NNSC in that document together with the specific measures in relation to diet is welcomed. Shaping a Healthier Future deals with the important issue of health promotion as the starting point for refocusing the health services towards improving the health status of the population. Mortality statistics in Ireland are available and relatively reliable. Measurement of morbidity is a much more difficult problem and the difficulties encountered with data collection are discussed at a later stage in this report.

One of the main aims of the government's strategy is to improve life expectancy and to achieve this the causes of premature mortality must be tackled. Two of three main causes of premature death have been identified as Cardiovascular disease and Cancer in the strategy. The associated risk factors; smoking • alcohol • nutrition and diet • exercise • cholesterol • blood pressure are at this stage well established and are prioritised for intervention in the document. Numerous preventative and intervention programmes have been implemented in both Ireland and internationally to combat these problems. Our report provides further information for the planning of targeted programmes.

Anthropometric Relationships

Brief History

An aim of this report was to determine current heights, weights and body shapes in Ireland and to ascertain whether there had been any changes over the past years. Body size relates to nutritional status and is also, based on extensive epidemiological evidence, believed to be related to health status. There are little data pertaining specifically to Ireland as will be discused below, but we have included relevant data from other countries. International and UK studies were used to identify any trends that had occurred. In addition occasional Irish studies were identified to establish heights and weights in Ireland and changes which have occurred since 1948.

Interest in human growth is longstanding and has given rise to observations of a non-scientific nature, as well as to scientific, anthropometric research. For instance, ancient descriptions of the impressive heights of Germans and Gauls may be explained by the fact that historians had a tendency to depict enemies as taller than they actually were, a factor which could be used as mitigation in the case of defeat and as evidence for even greater triumph in case of victory (Kiil 1939).

However, there has been consistent scientific interest in the relationship of health status with height in itself, with body weight and with height as a function of weight, for many years. The indicators may have different meanings in different clinical contexts. Body weight itself is not a measure of adiposity but is used along with height to calculate the body mass index, BMI. There is interest however in the measurement of height in its own right due to a number of epidemiological studies which have shown an inverse relationship between height and mortality. It has been suggested that trends in adult height provide evidence for changes in health status and health inequalities. Clearly there are differences in average height between men and women, but it is the relative distribution of height within each sex which is of interest.

Back in 1808, Villermé studied statistical data on conscripts of the 1800-1810 military drafts as to heights and percentages of rejections on account of ill health. He also related these data to descriptions of living conditions and environments. Villermé found that when the standard for minimum height was lowered the percentages of rejections on account of ill health increased, thus indicating that small persons tended to be less healthy than tall persons.

Further evidence of a close interrelationship existing between shifts in growth and in patterns of morbidity and mortality was established in other studies (Habicht et al., 1974). Analysis of historical data on height and weight of Dutch conscripts over the 1851 to 1975 drafts implied that attained height is of importance for the assessment of a population's nutritional status. It was found that a) socio-economic and socio-hygienic changes were closely followed by changes in secular growth b) The negative influences of times of recession and war appear to inhibit the growth of groups with small stature more than those of tall stature c) As a result of changes in living

conditions, secular changes may occur at all ages (Falkner F. and Tanner J.M. 1978). Abraham et al.(1971) suggest that an increase in the weight-height relationship at an advanced age, especially where it concerns persons having had a comparatively low weight in childhood, may to be associated with the occurrence of certain diseases in adults such as coronary heart disease and diabetes mellitus.

In epidemiological terms it must be noted that a difficulty arises when trying to compare growth patterns between populations with different economic systems, nutritional habits and cultural patterns, amongst other factors. These associations may be due to mutual predictive factors, may be markers for relative ill-health or may be directly causal. This is presently a field of intense scientific interest.

Mortality - How Is It Related To Heights And Weights?

In more recent years, epidemiological findings have suggested that important causes of adult health, including ischaemic heart disease, stroke and bronchitis are partly determined by influences which act during early childhood (Barker and Osmond 1987). Tanner et al. realised in 1956 that the height of a person is determined by growth in childhood and so relationships between adult diseases and childhood influences can be studied through associations between the diseases and height. It has been suggested that trends in adult height provide evidence for changes in health status and health inequalities (Carr-Hill R. 1988). A number of studies have shown an inverse relationship between height and mortality which encourages measurement of height in its own right (Marmot MG 1984).
Average heights of adults in the counties of England and Wales were examined using national samples of people born between 1920 and 1970 (Barker et al 1990). The average height was observed to have increased over this 50 year period but differences continued to be maintained between the counties. It was found that counties with taller populations on average had lower mortality rates from chronic bronchitis, rheumatic heart disease, ischaemic heart disease and stroke, whereas they had higher mortality from three hormone related cancers i.e. breast, prostrate and ovary. The inverse geographical relation of height with chronic bronchitis and cardiovascular disease is consistent with other risk factors for these diseases acting in childhood.

Three other large scale prospective studies repeat the observation of an inverse relation between height and cardiovascular disease. These concerned 1.8 million people in Norway (Waaler 1984), 1700 men in Finland (Notkola 1985) and 17,000 male civil servants in London (Marmot 1984).

The association between obesity and mortality and morbidity among adult men and women has been well documented. Body fat distribution has been shown to be associated with cardiovascular risk factors such as hypertension (Blair D., et al 1984) and diabetes (Kissebah A. H., et al 1988). But how, if at all, is it associated in childhood? A study carried out on Texas schoolchildren aged 6-14 investigated the association between cardiovascular risk factors and body fat distribution BFD, (Sangi et al 1992). From the study it appears that 'size' or 'fatness' is more associated with risk factors than BFD which contrasts with the results found for sexually mature adults.

Are We Growing Taller And Heavier?

International Studies - Height And Weight Records

Careful measurements of bones exhumed from British cemeteries revealed that the height of the average Englishman between the eleventh and fourteenth centuries was 5 feet 6 inches. In 1976 the average adult male was 3 inches taller at 5 feet 9 inches (Hamill P., et al 1976). National differences are evident however. In Holland, the secular trend toward increased height and weight is continuing, regardless of socioeconomic level, while in Japan, England and Norway the increase in stature had apparently plateaued by the mid-seventies (Roche A.F. 1979). Not only are people growing taller, but their feet are growing proportionately longer as well, due to the fact that they are growing taller. In America each generation gains on average 1/3 inch in foot length.

A recently registered computer package *'People Size'* (Friendly Systems Ltd 1994) collates the most up to date published anthropometric data from various selected countries. It must be noted that the age categories for each country are not the same. Britain and USA cover 18 to 64 year olds whereas Japan only quotes figures for 18 to 39 years old for both males and females. Of the three exemplar countries shown in Table 1 it appears that the USA has the tallest population in the case of both males and females, whereas Japan's males and females are the smallest of the three countries. Similarly the same observations are found for foot length, with the USA having the largest foot size and Japan the smallest.

Table 1 : 'People Size' Data (cm)

STATURE	**USA (18-64 years)**	**Britain (18-64 years)**	**Japan (18-39 years)**
Male	1.88 metres	1.86 metres	1.78 metres
Female	1.73	1.71	1.65
FOOT LENGTH	**USA (18-64 years)**	**Britain (18-64 years)**	**Japan (18-39 years)**
Male	291 mm	287 mm	270 mm
Female	260	257	244

In 1991 and 92 a national health survey was carried out entitled ***'Health Survey For England 1992'*** (Office of Population Censuses and Surveys in England) to monitor trends in the nation's health. Over the two years a total of 7260 people aged 16 and over participated. Within the survey, weight, body shape and heights of a sample of the population were measured. Height measurements were included in the survey, primarily for the calculation of body mass index. On average, men in that survey were 13cm taller than women, with the mean height for all men in the sample being 174 cm compared with 161 cm for all women. Among both sexes it was found that height tended to decrease at the upper end of the age range. This is a widely expected observation.

Table 2 :Summary of Mean Heights from the Health Survey for England 1992 (cm)

	16-34 years	*65-74 years*	*75 or over*
Male	176.3	172.0	168.5
Female	163.4	157.2	156.0

The mean height of men in the youngest age group (16-34) was about 176.3 cm, which was 4.3 cm and 7.8 cm taller than the two older age groups respectively. In the case of women there was a marked decrease in height above the age of 65; the mean decreased from 163.4 cm for women aged 16-34 to 156.0 cm for women aged 75 or over.
The observed decrease in height across the age range may reflect a true loss of height with age, which has been shown to occur particularly after the age of 60. It may also reflect a secular trend to increased height in younger generations, which may in turn be due to differences in nutrition and lifestyle in successive generations.

There is a "U" shaped relationship between body mass index and mortality which has been shown in the British Regional Heart Study (Wannamathee and Sharper 1989) and in Eastern Finland (Tuomilehto et al. 1987). In other words, the group with lowest BMI were at relatively greater risk than average, though the risk increased proportionately thereafter. Body mass indices greater than 31 kg/m^2 in males and 29 kg/m^2 in females were illustrated to be a marker of coronary heart disease and a predictor of acute myocardial infarction.

The weights of 1401 men and 1567 women were also obtained in the ***Health Survey For England 1992*** (Office of Population Censuses and Surveys in England). Body weight in itself is not a predictor of fat and is highly correlated with height, though from correlation coefficients calculated in the study it was found that height was not as important a predictor of female weight as it was of male weight.

Since the start of the 80s the average weight of men and women in the 16-64 age group has increased steadily. In the ***Heights and Weights of Adults in Great Britain*** (Knight I. 1984) the mean weight recorded for men in England was 73.7 kg compared with 76.2 kg in the ***Dietary and Nutritional Survey of British Adults*** (Gregory J. et al 1990) and with 78.3 kg in the ***1991 Health Survey*** (OPCS). Similarly for women, an increase from 62.2 kg in 1980 to 66.2 kg in 1991 has taken place. Part of this observed increase may be attributed in part to the increase in average heights over this period.

It was found, from the two combined years of the health surveys 1991 and 92, that 12% of men and 16% of women were obese (BMI greater than 30) with each gender having a similar average BMI - 25.7 for men and 25.4 for women. BMI tended to increase with age up to 65 years. Almost one in five men (19%) aged 55-64 had a BMI over 30. The average BMI among women increased from 23.0 for ages 16-24 to 27.2 among those aged 55-64. In the age group 55-64, 25% could be classified as obese.

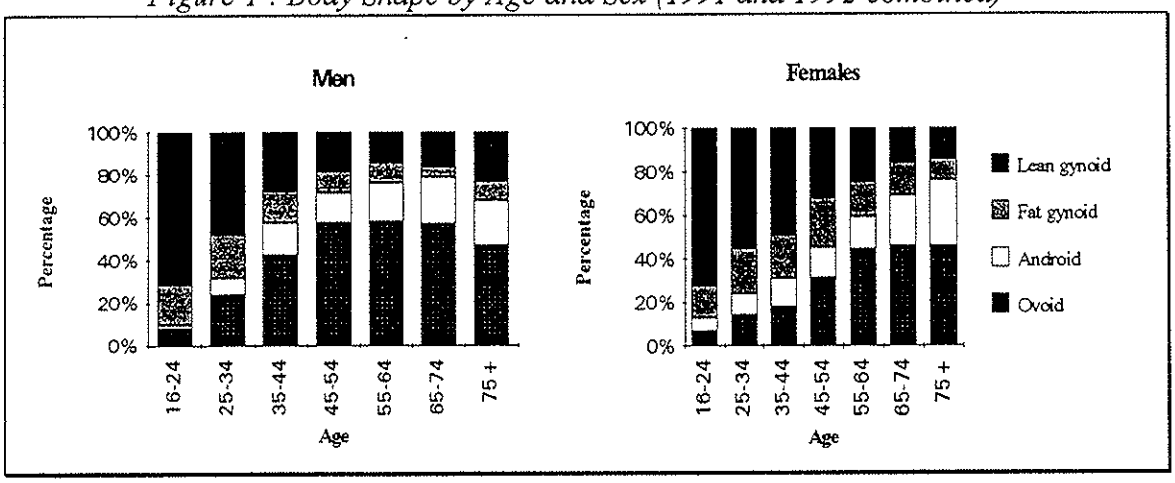
Body mass index and waist-hip ratio are often used separately as measures of obesity and body fat distribution. Combination of the two variables into a single measure,

which describes weight relative to height and also describes body shape, resulted in the following classification :

Lean Gynoid (apple shaped)	low BMI and low waist-hip ratio
Fat Gynoid	high BMI and low waist-hip ratio
Lean Android	low BMI and high waist-hip ratio
Ovoid (pear shaped)	high BMI and high waist-hip ratio

In terms of risk of cardiovascular disease, those overweight individuals with centrally deposited body fat (apple shaped ovoid) are known to be more at risk than those with gluteally deposited fat (pear-shaped, gynoid). From the figure below, it can be seen that women start changing to apple shape in the 45-64 age group which correspondingly is the age bracket in which increased cardiovascular disease begins to occur.

Figure 1 : Body Shape by Age and Sex (1991 and 1992 combined)



The ***Allied Dunbar National Fitness Survey 1992*** (Activity and Health Research 1992) which focused on the adult population in England, surveyed 2765 people of the ages 16-74. The average height of men in the age group 16-34 was about 177 cm and 171 cm in the age group 65-74.
Women were found to be smaller than men in all age groups; in the 16-34 age bracket they were around 163.5 cm and 157 cm in the 65-74 age group. It was observed for both sexes that from the age of 35 years the average height was progressively smaller. This follows the same trend as that found in the ***Health Survey for England 1992*** (OPCS)

One of the questions addressed by the Allied Dunbar National Fitness Survey 1992 was whether English men and women were overweight. Weights of the respondents in the survey were therefore recorded. The average weight for men was 77.2 kg compared with 65.4 kg for women. This shows a 3.6 kg and 3.4 kg increase respectively compared to the 1980 OPCS Height and Weight Survey.
It was found from the BMI that 49% of the men and 56% of the women fell into an overweight category. The age groups with most overweight subjects were the men aged 55-64 and women aged 65-74. Approximately 8% of men and 19% of women could be categorised as obese.

In 1992 the ***Northern Ireland Health And Activity Survey*** (MacAuley D. et al 1994) was carried out on people aged 16 and over. The objective was to study the determinants of physical activity and fitness in relation to health with particular emphasis on coronary heart disease. The sample population of 474 males and 546 females was comparable to the population distribution of the 1991 Northern Ireland Census by age and sex. A sub-set of the total numbers attended the physical appraisal, 275 males and 287 females, all of whom had their height and weight recorded.

In the 16-34 age group, the average height for men was 174.3 cm and was 171.1 cm in the older 65-74 group. Women were generally smaller, as expected. An average height of 159.8 cm was observed in the age bracket 16-34 and 157.7 cm in the 65-74 group.

The average male weight in the Northern Ireland Health and Activity Survey 1992 was 78.1 kg, slightly greater than that found in the English surveys mentioned. However, the women's mean weight, 64.3 kg was less than the English female average. Among males, 16% were classified as obese compared with only 8% in the ADNFS 1992 and 21% females were found to be obese (cf. 19% in the ADNFS).

Irish Studies - Height And Weight Records

The Irish National Nutrition Survey 1990' (Irish Nutrition and Dietetic Institute) aimed to provide detailed information on the eating habits of a representative sample (n = 676) of the Irish population over 18 years of age in order to assess their nutrient intake. The survey was also conducted on a representative sample of school-going children from 8 to 18 years (n = 538).

Table 3 : Anthropometric Measurements conducted in the National Nutrition Survey 1990

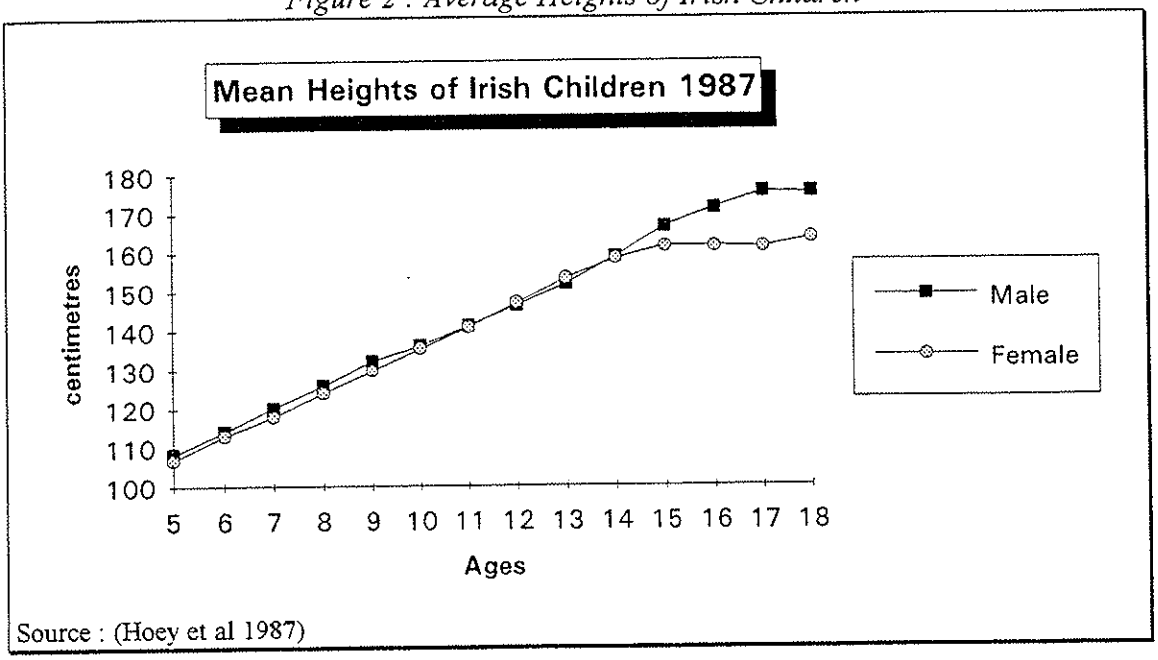
	Male		Female	
	18-60	60+	18-60	60+
Height	174.3	170.5	161.7	157.1
Weight	77.4	74.7	64.5	65.4
% Overweight	53%		33%	
% Obese	10%		15%	

Body Mass Index was reported in two other Irish studies : ***The Kilkenny Health Project 1990*** (Kilkenny Health Project 1992) ***and Report on Health Behaviour in Ireland*** (Happy Heart National Survey 1994). The Kilkenny Health Project consisted of an intervention programme which commenced in 1986 in the County of Kilkenny with Offaly as the control county. The post intervention survey in 1990 found fewer people had become obese in Kilkenny compared to Offaly - there was a change upwards in rates of 2.0% males and 3.6% females in Kilkenny compared to 10.5% males and 5.7% females in Offaly. Overall in 1990, 26.5% of the people in Offaly were obese compared to only 19.4% in Kilkenny. A much smaller percentage of people in the Happy Heart survey were reported as obese, 9.9%. Note however that this was a

self reported figure. Slightly more men than women were found to be obese with 10.3% compared to 9.5%.

A study carried out in Ireland measured the weight and height of a representative sample of 3509 Irish children aged 5 to 19 years '***Clinical Growth Standards For Irish Children***' (Hoey et al 1987).

Figure 2 : Average Heights of Irish Children



Source : (Hoey et al 1987)

When compared to United Kingdom standards, the Irish boys had a slightly lower pre-pubertal height. However, older Irish boys (16.5 to 18 years) were slightly taller. The Irish boys were significantly shorter than their USA counterparts up to the age of 16, after which there was no significant difference. Up until puberty Irish girls were shorter than their UK counterparts, but then went on to show a slightly greater adult height. In comparison with the USA, the Irish were significantly smaller up to the age of 15 years, after which the difference in height was not significant.

A comparison of these results and those of the INDI National Nutrition Survey of 1990 (conducted on a representative sample of school children n = 538) shows both males and females in the latter survey to be taller. This applied in all age groups, except for females in the 15-18 group. The Irish National Nutrition Survey was also conducted in 1948 on schoolchildren between the ages of 5 and 14, (n = 14,835). The present day data are not completely comparable with this survey since all age groups are not covered by the older study but some observations may be made. Data are available for the age group 8 - 12 years for both males and females (see Table 4).
Measurements were recorded in the same manner in both the National Nutrition Survey (1990) and Hoey et al (1987). Height was recorded to the last millimeter by standing up straight in bare feet with the head in the Frankfurt plane. Weights wre measured using electronic scales and were recorded to the last 0.1 kg. In the Hoey study the children wore only underpants whereas in the nutrition survey only shoes, heavy clothing and pocket contents were removed. The 1948 nutritional survey did not

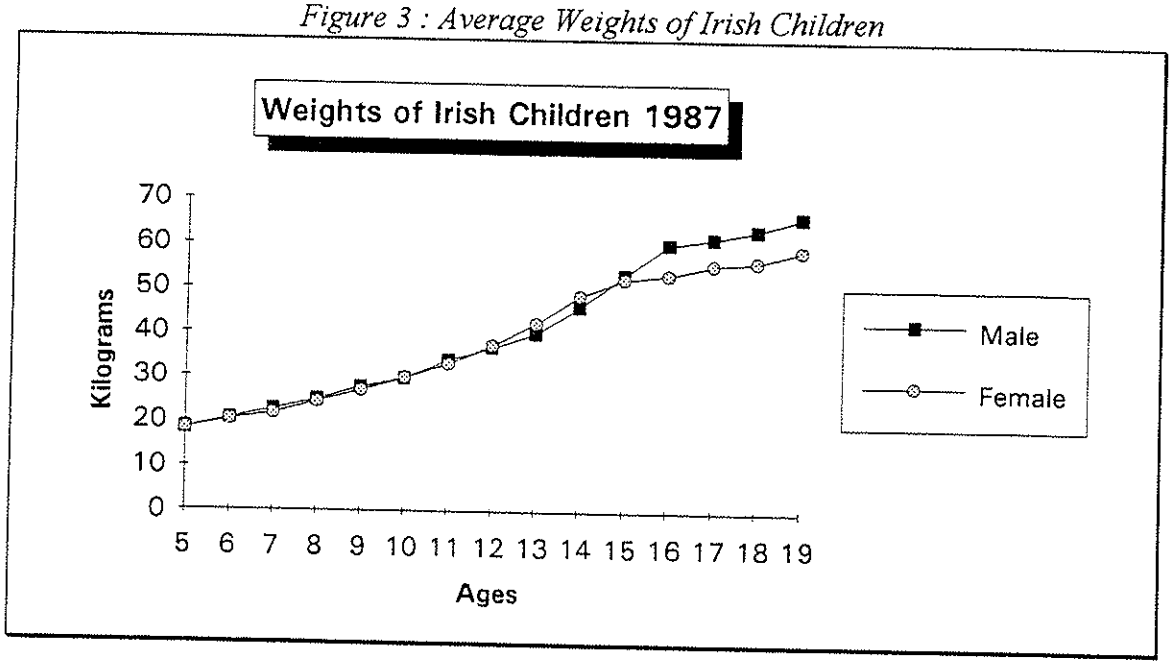
specify the techniques used for height or weight measurements, just that the boys were weighed wearing trousers and stockings and the girls wearing vests, knickers and stockings.

Table 4 : INNS 1948, 1990 and Hoey et al 1987 comparison of Average Heights of Schoolchildren (cm)

Age Groups	Male			Female		
	National Nutrition Surveys		Hoey	National Nutrition Surveys		Hoey
	1948	*1990*		*1948*	*1990*	
8 - 12	132	140	135	131	139	134
12 - 15	NA	159	154	NA	158	154
15 - 18	NA	173	173	NA	162	163

Hoey et al (1987) also measured the weight of 3509 Irish children aged 5 to 19 years.

Figure 3 : Average Weights of Irish Children



The Irish boys' weights were similar to those of the UK standards, except at the ages of 13 and 14 when the Irish boys were significantly lighter. In comparison with the USA, the Irish boys were lighter. Irish girls, in general, weighed less than those in the UK. and in the USA.

The National Nutrition Surveys of 1948 and 1990 also recorded the weights of the school children. Again the 1948 data are not complete, so that only the 8-12 age group can be compared. A comparison between the 1990 figures and those of Hoey et al show some discrepancy, the children in the 1990 survey being much heavier. Accordingly, although the 1948 nutritional survey shows the children, both male and

female to be much lighter than in the 1990 survey, the 1948 weights are almost identical to those recorded by Hoey et al 1987.

Table 5 : INNS 1948, 1990 and Hoey et al 1987 comparison of Average Weights of Schoolchildren (Kg)

Age Groups	Male			Female		
	National Nutrition Surveys		Hoey	National Nutrition Surveys		Hoey
	1948	*1990*		*1948*	*1990*	
8 - 12	29.1	34.1	29.1	28.2	34.7	28.6
12 - 15	NA	49.3	40.9	NA	51.7	42.7
15 - 18	NA	63.9	61.0	NA	57.2	55.2

Comparison of the British and Irish Anthropometric Measurements

In the younger age group (16-34 years) the English men and women appear to be taller than their Northern Ireland and Irish counterparts by a maximum of 2 cm. The studies show Irish males and females to be the next tallest with people from Northern Ireland being the smallest.
Similar trends are observed in the older 65-74 age group but not as markedly. Irish males and English females were found to be the smallest in this age group.

Table 6 : Summary of Heights for the Four National Surveys (cm)

	16 - 34 Age Group		**65 - 74 Age Group**	
	Male	Female	Male	Female
Health Survey 91/92	176.3	163.4	172.0	157.2
ADNFS 1992	177.0	163.5	171.0	157.0
NIHAS 1992	174.3	159.8	171.1	157.7
INNS 1990*	175.3	162.4	170.5	157.1

England Health Survey 91 and 92
ADNFS - Allied Dunbar National Fitness Survey 1992
NIHAS - Northern Ireland Health and Activity Survey 1992
INNS - Irish National Nutrition Survey 1990
* the Irish National Nutrition Survey age categories for height were actually 18-40 and 60+

An age breakdown within the four surveys carried out in the UK and Ireland show Irish males to be the heaviest in three of the age brackets; 25-34 years, 45-54 years and 55-64 years. Females were lighter overall as would be expected. Weights ranged from just under 60 kilograms to 70 kilograms. Northern Ireland females were the lightest in the younger age group from 16 - 34 and in the older group 55 - 74. Irish females were relatively light for all ages compared to the English counterparts.

Figure 4 : Summary of the Male Mean Weights found in the four surveys in the UK and Ireland

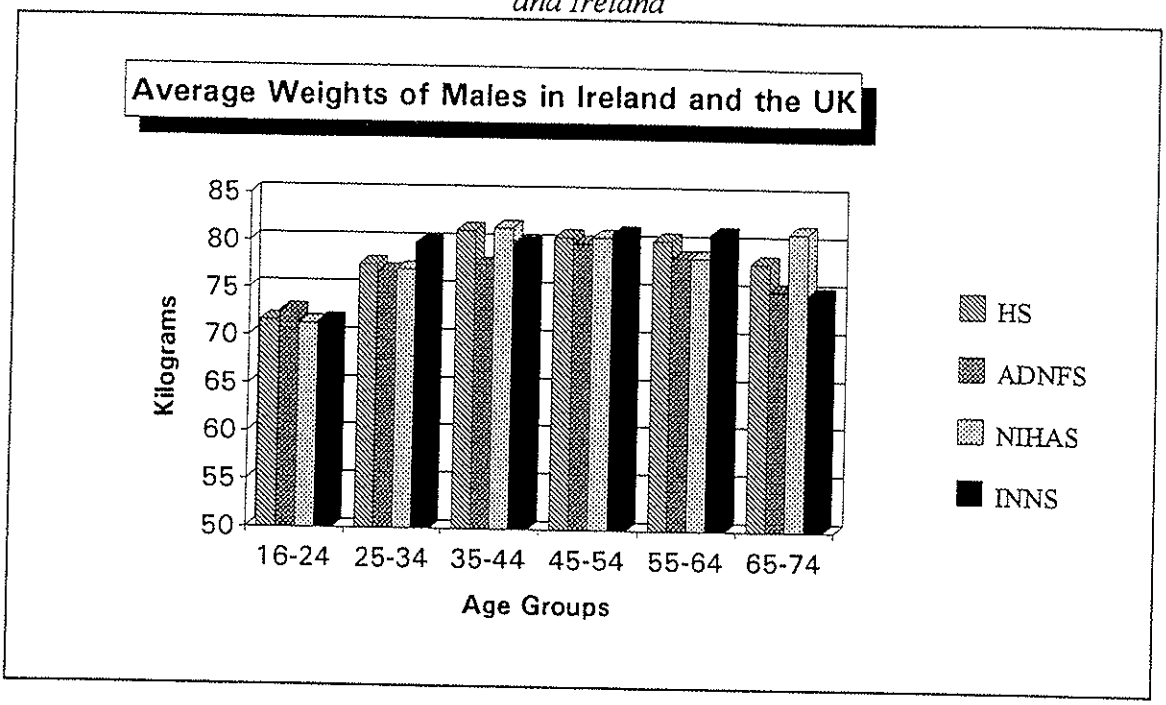
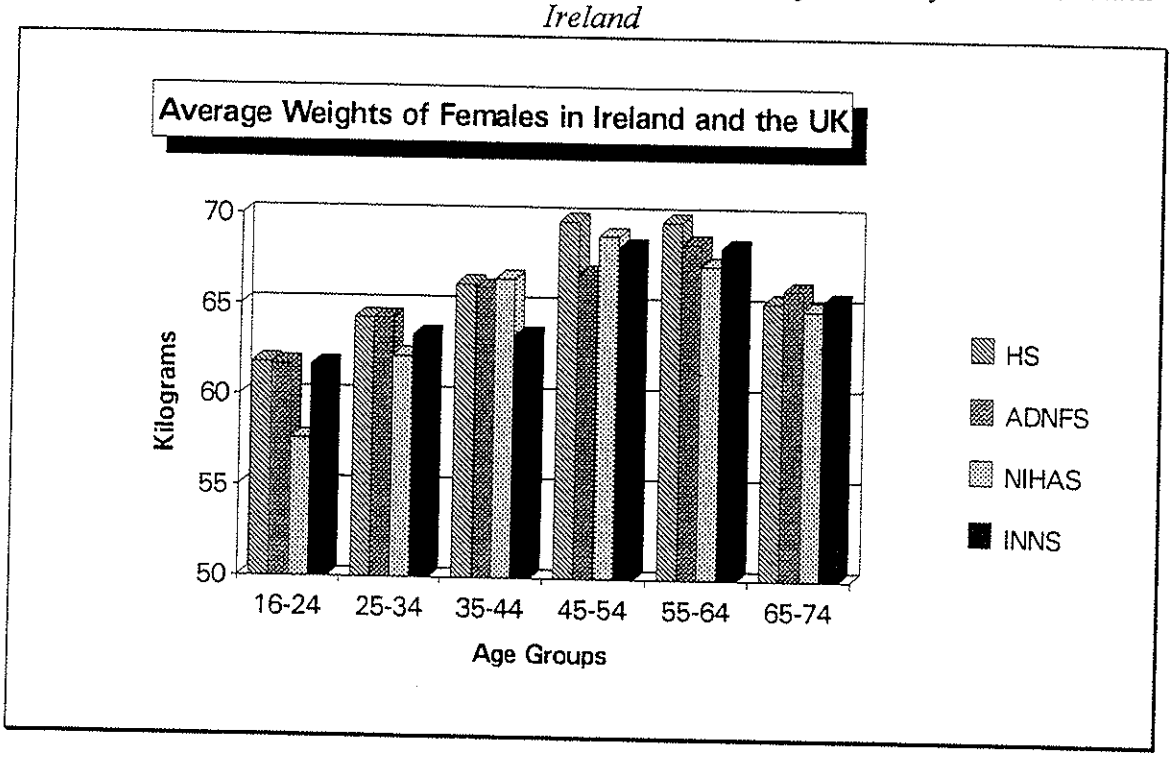


Figure 5 : Summary of Female Mean Weights found in the four surveys in the UK and Ireland



Commercial Sources of Anthropometric Data

Apart from the scientific and medical communities, data on height and weight are routinely, if not necessarily systematically collected by other groups. This includes particularly the clothing and insurance industries and large scale public sector employers where such measures form part of entry requirements. Clothes are retailed in standard sizes off the peg and so must constitute a reasonable indicator of people's size and shape. For the purposes of this report we approached a variety of retail organisations to ascertain how they derived their standard sizes and whether any observable trends had occurred over time. All the Irish manufacturers approached indicated that they used standards from the United Kingdom. Designers and clothing manufacturers nationwide were contacted. The perception of the designers approached was that their clients had become "bigger" over the past decade. It is not merely opinion which determines the size to which the manufacturers cut the clothes. The Irish clothing industry cuts to size following the British Standards Institute Textiles and Clothing Standards Policy Committee guidelines. These constitute tables of standard size charts for the use of garment manufacturers which result from body size surveys. An example of such anthropometric research resulting in a British Standard guideline is the four body measurement surveys which were conducted in Britain in recent years by the Department of Human Sciences, Loughborough University and backed by many clothing organisations. A representative sample of the population of boys and girls in Britain were measured ; Body measurements of boys aged 5 to 16 year, girls aged 5 to 16.9 years and children up to the age of 4.9 years were taken. These data are not yet generally available. From such body measurement studies clothing manufacturers in Britain and Ireland have introduced selective ranges. An example of this is the 'Petite' range which accomodates the increasing number of broad, rounded people but who are not necessarily any taller.

Another source of anthropometric measurements is insurance companies' data. Clients of such establishments have their height and weight recorded when taking out policies. This is a potential data source since there are large numbers of people but it is neither collated nor systematically recorded. There are also problems of confidentiality. Several companies declined to cooperate for this reason. Others considered were those occupational groups who wore uniforms. The army, the Gardaí, Bus Eireann and Iarnród Eireann were all contacted for such information. Both the army and the Gardaí measure these parameters but do not have the data from each individual file collated into a database. For this reason it was not feasible to acquire the data.

Food Consumption Patterns

Our first National Nutrition Surveillance Centre report gave a comprehensive overview of food consumption in Ireland. However since its publication results of two further large scale surveys have become available and together with the Kilkenny Health Project we have looked at these for purposes of comparison. These studies were chosen since they all used the method of food frequency questionnaire for the collection of dietary information. A further report envisaged in the spring of 1995 will deal in further detail with the food chain and the changes which have occurred in the various stages of it since the time of the famine in Ireland.

The 7 day weighed intake of food is widely regarded as the single best method for assessment of the habitual diet of an individual. However, the choice of method for an epidemiological survey, where the dietary data must be obtained on hundreds and maybe thousands of individuals, is influenced by several factors : the likely response rate, accuracy and cost of the method per subject. Generally the more accurate the method, the greater the cost, the greater the degree of co-operation required from the subject and the lower the likely response rate. In selecting a method for collection of dietary information a compromise may have to be reached between a high response rate and the collection of precise dietary information.

Food frequency questionnaires are widely used in epidemiological studies to obtain information on long term dietary intakes of individuals in order to examine the relationship of diet to the development of disease. Food frequency questionnaires are attractive for their simplicity and ease of administration but are generally less accurate than the food diary method. When compared to other methods however, they produce higher estimates of nutrients due to over estimation on the part of the respondent.

Four surveys are discussed, the baseline and follow-up surveys in Kilkenny, the national Happy Heart survey and the lifestyle in the workplace survey entitled Health Works undertaken by our own department of Health Promotion.

1. The Kilkenny Health Project commenced in 1985 as a 5 year pilot programme for cardiovascular disease prevention in Ireland. The main aim of the project was to reduce by 20% over 10 years the mortality rates of both coronary heart disease and cerebrovascular disease in those aged 35 to 64 years resident in County Kilkenny. The community programme was developed as a potential model for health promotion in the remainder of the country. A baseline dietary survey was undertaken in County Kilkenny in 1985, a similar survey being conducted in the control county of Offaly.

   Baseline Survey 1985

   A sample of the population of County Kilkenny was chosen by the Economic and Social Research Institute numbering 1378 people. The survey method used was similar to those used in the Monica Project (International Monitoring of Cardiovascular Disease). Participants were required to complete a food frequency questionnaire and to return it by post.

2. Post Programme Survey 1990
   A follow up post programme survey was carried out in both County Kilkenny and County Offaly in 1990/91 on a sample of 1428 people. The survey sample comprised 49.5% males and 50.5% females.

3. The Happy Heart National Survey was carried out by the Irish Heart Foundation in November 1992 to obtain more information about the lifestyles of Irish adults. The 1342 respondents comprised 50.5% women and 49.5% men. The people surveyed were all between the ages of 30 and 69 years old. Dietary information was collected by means of questions on food frequency.

4. A lifestyle intervention programme in the workplace 'Health Works' was established in the Department of Health Promotion, University College Galway in 1991 with the support of the Europe Against Cancer programme and the Health Promotion Unit. The Europe Against Cancer programme is a Europe wide initiative which has set as its target that by the year 2000 a significant drop in cancer levels will be achieved. The baseline survey for this study involved 2528 participants in three industrial, one hospital and one academic worksite plus third level students in the West of Ireland. 60% of the respondents were female and 40% male. It should be noted that the workplace study was particularly aimed at women workers and so does not necessarily represent the national demographic profile, whereas the other three studies were designed with the different purpose of reflecting the general population. This particular sub study looked at the people in employment which accounted for 1443 participants. The present results are based on a report submitted to the Health Research Board (Fleming 1993). Dietary information was collected by means of questions on food frequency.

Table 7 : Summary of the Age and Gender Breakdown within the Four Surveys

	Kilkenny 85	Kilkenny 90	Happy Heart	Health Works
Male	52.6%	49.6%	49.5%	44%
Female	47.4	50.4	50.5	56
Males				
35-49	57.7	59.7	60.1	49.9*
50-64	42.3	40.3	39.9	20.6*
Females				
35-49	61.9	64.2	59.9	50*
50-64	38.1	35.8	40.1	17.8*
Social Class	55.2	56.8	48.8	33% (1-2)
1-3				28% (3-4)
4-6	44.8	43.2	51.2	32% (5-6)
				5% (class 7)
Total N	1378	1428	1342	1443

* Health Works age breakdown was 28-41 and 42+

Each of the surveys assessed specific food items including fried foods. Examination of the data from all studies; the two Kilkenny studies, the Happy Heart and Health Works

showed that the categories of frequency consumption sometimes differed between studies. For example in the fruit and vegetable category the different studies categorised the consumption in the following manner :

Kilkenny Project	Happy Heart	Health Works
none	less than once per day	rarely or never
1 - 3 times per week	1 - 2 times per day	once or twice per month
4 - 7 times per week	2 - 4 times per day	about once per week
7 - 11 times per week	> 4 times per day	2 - 3 days per week
		4 - 5 days per week
		most days

When the categories of food frequency differed between the studies it was necessary to convert them into similar categories in order to be able to compare.

Ireland's daily intake of certain foods is also compared with intakes from other European countries. A nutritional database collated by Nutriscan 1993 contains National Diet Surveys from various countries across Europe. This allows comparison of food consumption within the European Union but it must be noted that discrepancies between different countries collection methods necessitate careful interpretation. The national survey in Ireland refers to the National Nutrition Survey conducted by the Irish Nutrition and Dietetic Institute in 1990.

FISH CONSUMPTION

After the Kilkenny intervention programme fewer people rarely ate fish and more actually began to eat it twice or more each week.

In the Happy Heart Study 1 in 4 of those people asked rarely ate fish.

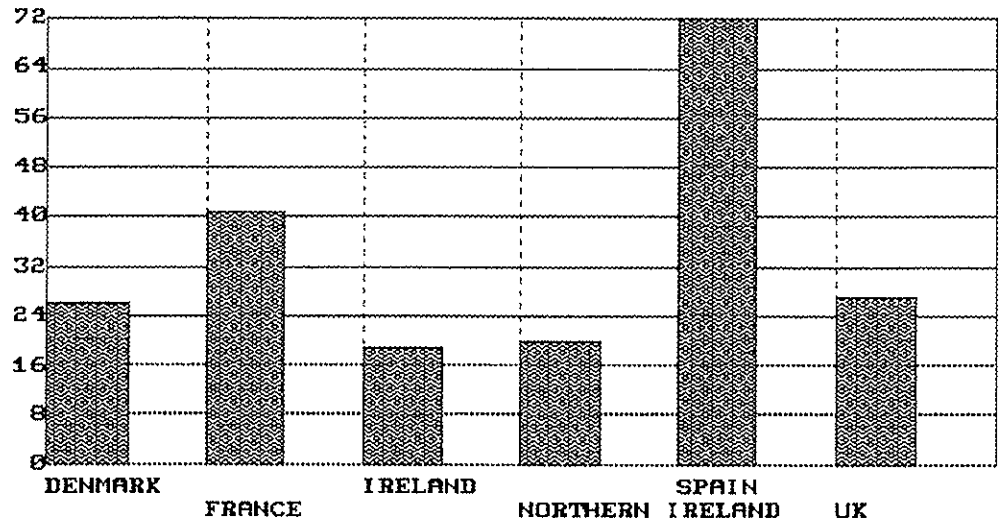
Table 8 : Irish Fish Consumption - Rarely Consummed

	All Fish (%)	**White Fish (%)**	**Oily Fish (%)**
Kilkenny (pre)	31	NA	NA
Kilkenny (post)	21	NA	NA
Happy Heart	25	NA	NA
Health Works	NA	16	51

All surveys indicate sizeable proportions of people who rarely eat fish, with less than 1 in 5 eating fish on two or more occasions per week.

In comparison to some of the other countries in the EU, Ireland has one of the lowest fish consumptions per day. Spain was observed to consume by far the largest amount of fish daily out of the six countries listed, over three times the amount eaten in Ireland.

Figure 6 : Daily European Fish Consumption (grams)



Source : Nutriscan 1993

RED MEAT CONSUMPTION

Relatively small percentages of people in all four studies were non meat eaters, around 4%, whereas about half the populations surveyed in the Kilkenny Project and the Happy Heart ate red meat 4 to 7 times per week.

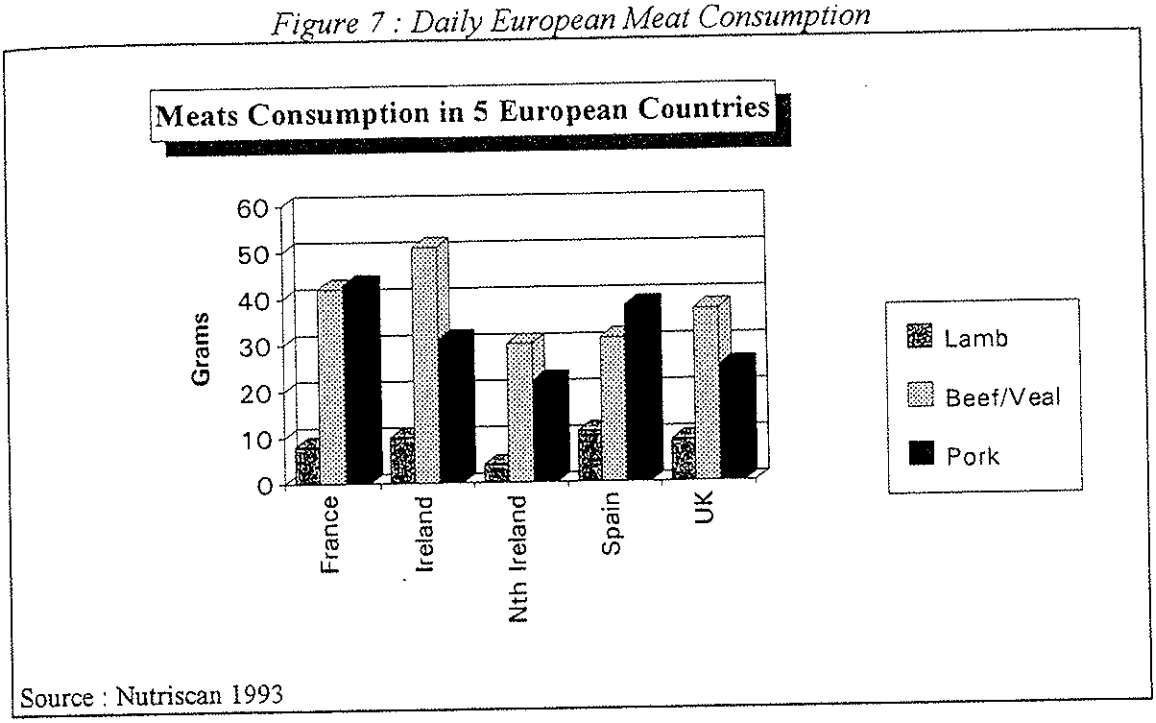
Table 9 : Irish Meat Consumption

	No Meat (%)
Kilkenny (pre)	NA
Kilkenny (post)	2
Happy Heart	4
Health Promotion in the Workplace	4

The recommended protein intake which includes meat, poultry and fish is 2 portions per day. These proteins could also come from eggs, cheese or pulses. The results from the studies suggest that around 50% of the people surveyed were meeting these recommendations with their meat, poultry and fish intakes.

Compared to other European countries Ireland was found to the largest consumer of beef. The main meat consumed by all countries was the Beef/Veal group. Pork was the second main meat eaten in the five countries with France consuming the largest amount. Ireland was found to be one of the main consumers of lamb, with only Spain consuming more at around 11 grams average per day.

Figure 7 : Daily European Meat Consumption



Source : Nutriscan 1993

CHICKEN CONSUMPTION

The frequency of chicken intake of more than twice a week was observed to have doubled over the Kilkenny project intervention period to about 31%. However, both the Happy Heart survey and the Health Works study found rates of 42 - 44% in their populations :

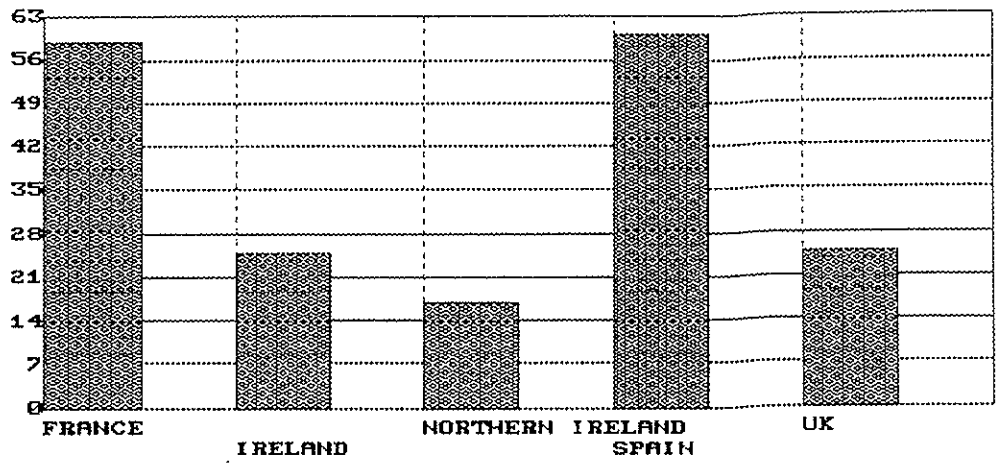
Table 10 : Irish Chicken Consumption

	> Twice per week (%)
Kilkenny (pre)	14
Kilkenny (post)	31
Happy Heart	42
Health Promotion in the Workplace	44

The total intake of meat, poultry and fish in each of the studies shows high percentages of people consuming 2 or more portions of each per week. This would suggest that people are getting adequate protein from the animal products meat, poultry and fish. However it is unknown to which extent other sources of protein contribute to their diet.

Compared to the rest of Europe Ireland has a low daily consumption of poultry, similar to that of the UK. Poultry consumption and selected chicken consumption must be differentiated for comparative purposes. The only countries which gave specific chicken consumption rates as well as for poultry as a whole were France and Spain, the remainder cited only all poultry.

Figure 8 : Selected EU countries All Poultry Consumed (grams)



Source : Nutriscan 1993

FRUIT & VEGETABLE CONSUMPTION

The methods of recording dietary intake of fruit and vegetables differed in the three Irish studies. The Health Works study broke the fruit/vegetable consumption down, using food frequency, into 'number of times eaten per week' whereas the other surveys used 'greater than so many portions per day'. 33% of the Health Works respondents recorded a fruit intake on most days. The figures quoted for Health Works show 33% of people surveyed ate fruit/vegetables most days. A large percentage ate fresh vegetables (47%) compared to only 4% reported eating tinned vegetables most days. In Kilkenny there was a substantial increase over time, but this was still considerably less than the Happy Heart survey.

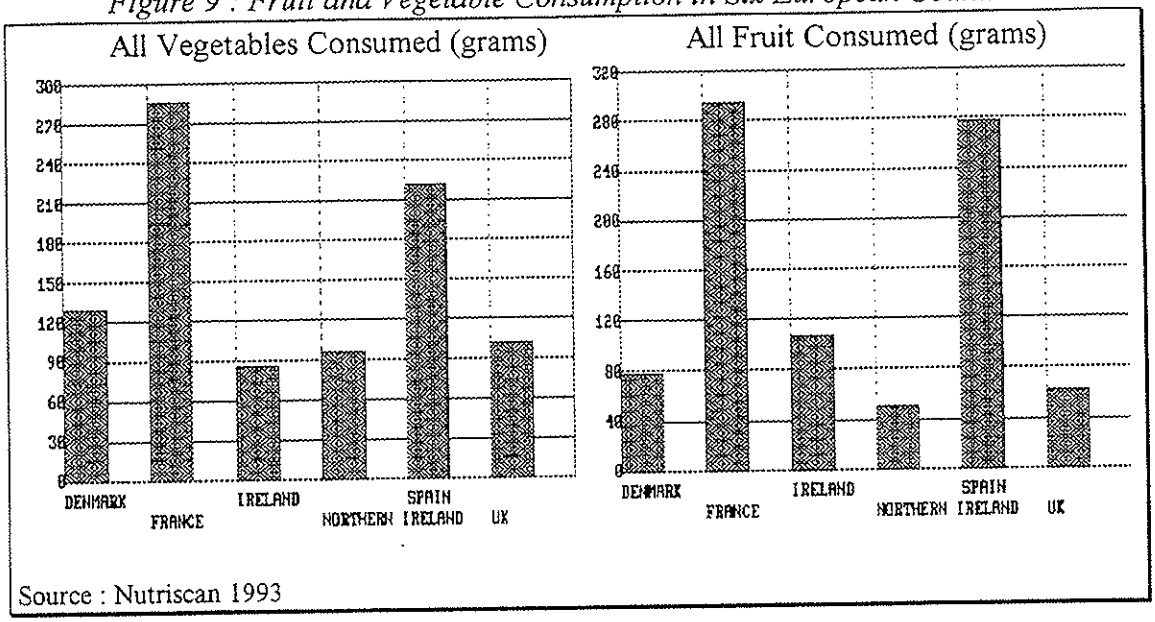
The recommendation from the Department of Health is to eat four or more servings from fruit and vegetable groups each day. Large differences in the percentages of people who ate the recommended amount of fruit and vegetables were observed between the pre and post Kilkenny studies and also in the Happy Heart survey.

Table 11 : Irish Fruit and Vegetable Consumption

	> 4 times per day (%)
Kilkenny (pre)	0.1
Kilkenny (post)	2.3
Happy Heart	13.7

Comparison of the five European countries reveal Ireland to have the lowest intake of vegetables and France the highest. Similarly, Ireland shows a relatively low consumption of fruit compared to France and Spain.

Figure 9 : Fruit and Vegetable Consumption in Six European Countries



Source : Nutriscan 1993

BUTTER CONSUMERS

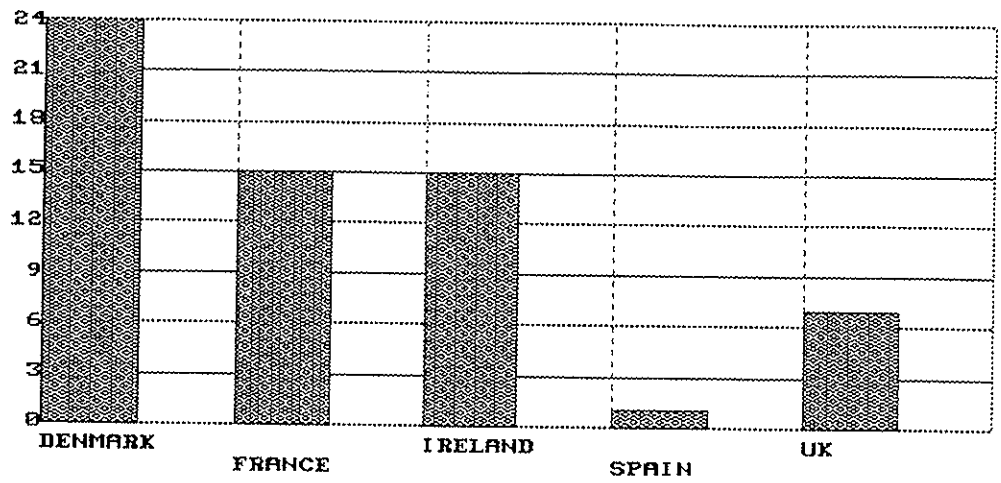
Large percentages of people in the Kilkenny baseline study used butter (66.8%) as opposed to lower fat spreads but this reduced notably over the period of the intervention programme. Large numbers of people surveyed in the Happy Heart Survey and Health Works also preferred butter although not to as great an extent. The Health Works survey shows a higher percentage of people using polyunsaturated margarine compared to low fat spreads. There was a problem in knowing which spreads were categorised as low fat and which as polyunsaturated in the Kilkenny and Happy Heart surveys. Some spreads can fit into both of these categories and without knowing the brand name it is impossible to know which spreads were named and how they were categorised. This problem did not arise with the Health Works study since it was carried out through this department. Such ambiguity may have led to the differences observed in consumption between those and the Health Works study.

Table 12 : Irish Butter Consumption

	Butter (%)	**Low Fat (%)**	**Poly. Marg (%)**
Kilkenny (pre)	67	0.9	13.1
Kilkenny (post)	28	27.5	22.4
Happy Heart	49	29.7	15.7
Health Works	36	19.4	28

From the six European national dietary surveys, Denmark was found to be the largest consumer of butter, with Ireland and France jointly second, consuming on average 15 grams of butter per day. There were no reported figures from the North of Ireland

Figure 10 : Selected European Daily Consumption of Butter (grams)



Source : Nutriscan 1993

FRIED FOOD CONSUMPTION

Consumption trends of fried foods were similar across the country. In the West of Ireland survey the low percentages in the rarely/never group may perhaps be explained by the fact that the population surveyed were the workforce, who were exposed to canteen food, which is potentially fried, five days of the week. This is an important issue for health promotion in the workplace which endeavours to include canteen auditing and formed part of the project intervention initiative.

Table 13 : Irish Fried Food Consumption

	Rarely/Never (%)	**> Twice per week (%)**
Kilkenny (pre)	34	44
Kilkenny (post)	42	38
Happy Heart	46	31
Health Works	13	36

MILK PREFERENCES

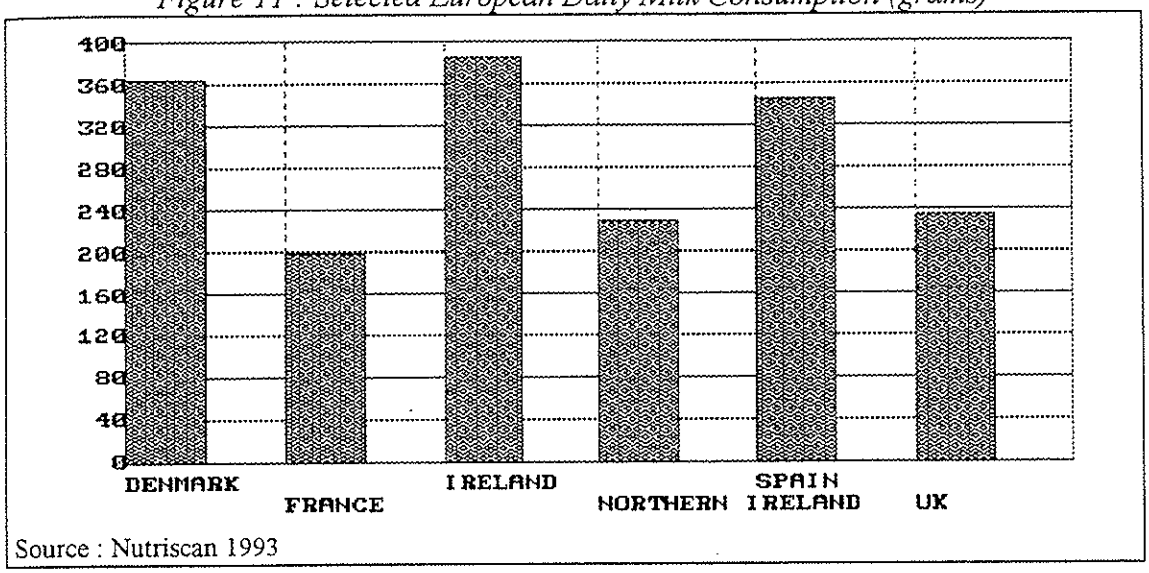
From the three surveys mentioned below there would appear to be a much greater preference across the board for whole milk as opposed to the lower fat, skimmed variety, rates being similar in all three studies :

Table 14 : Irish Milk Preferences

	Whole Milk (%)	**Skimmed or Light (%)**
Kilkenny (post)	66	21
Happy Heart	68	28
Health Works	68	31

The six European countries noted below, reported their daily average milk consumption in their national surveys. Ireland is the highest consumer with just over 380 grams, closely followed by Denmark and Spain.

Figure 11 : Selected European Daily Milk Consumption (grams)



Source : Nutriscan 1993

ALCOHOL CONSUMPTION

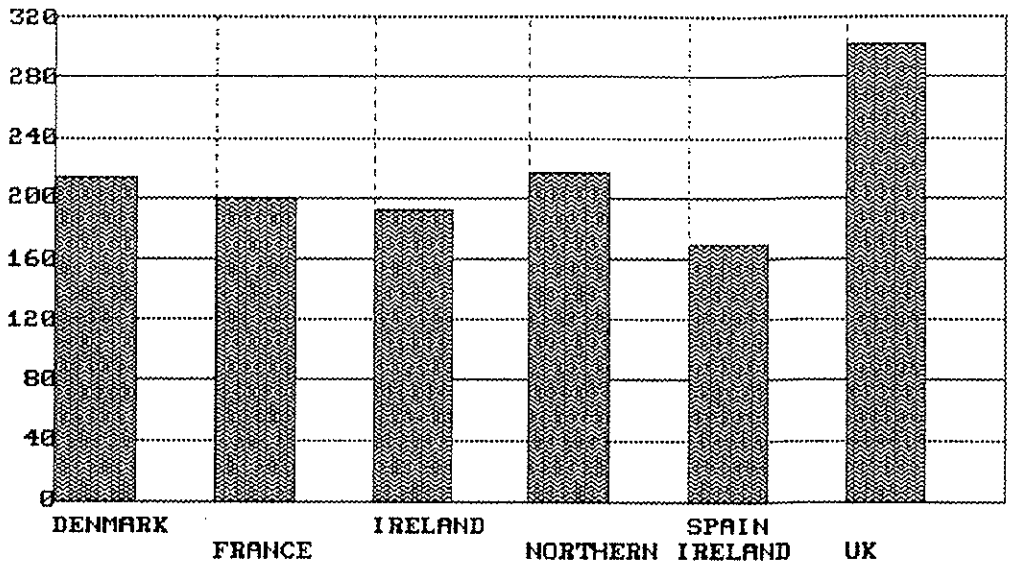
All three surveys, Kilkenny (post), Happy Heart and Health Works monitored the status of current drinkers of alcohol. Over 50% of the people surveyed were current moderate drinkers. Within each of the surveys the proportion of males to females currently drinking alcohol were very similar. Data are available only from the Happy Heart and Health Works surveys on the group of people who drank more than the recommended allowance. In the Happy Heart survey 17% of males drank more than is recommended compared to 4% of females. In the Health Works study only 5% of the people drank more than the recommended amount. Again, some of the differences may be accounted for by the demographics of the two populations being different.

Table 15 : Irish Alcohol Consumption

	Current Moderate Drinkers (%)
Kilkenny (post)	53
Happy Heart	64
Health Works	54

From the national dietary surveys reported by Nutriscan, the UK was by far the greatest consumer of alcoholic beverages of the five European countries surveyed. The remainder of the countries all drank similar amounts. These figures do not take into account drinking patterns e.g. 2 glasses of wine with a meal each day as opposed to large amounts of alcohol at weekends or differences in patterns of drinking by age, sex or social class.

Figure 12 : European Daily Alcohol Consumption (grams)



Source : Nutriscan 1993

Morbidity Data

Morbidity may be defined as the study of incidence (new cases) and prevalence (existing cases) of a disease. Since not all diseases are fatal, morbidity data are an essential indicator for many nutrition related diseases. Further, where diseases are chronic or longstanding in nature such information can be used for long term planning. Finally, knowledge of accurate incidence rates can give an idea of whether a disease in on the decline or increase. Mortality figures cannot necessarily do so since they are influenced by treatment regimens. For the purposes of nutritional surveillance accurate incidence and prevalence rates are therefore critical.

Monitoring the changes in people's health requires access to information and in Ireland at present there are few comprehensive databases developed. This renders data collection and interpretation difficult and often in scientific terms, misleading. Constant reference to and monitoring of new research studies in one approach but this should augment rather than substitute for a routine database.

Substantial data bases have now been set up are through the HIPE system and the National Cancer Registry and reference to these will be made in this chapter. Many other smaller databases are located across the country, particularly in association with research units. For example the Breast Cancer Clinic in University College Hospital Galway has a computerised system to record incidents of breast cancer. Accessibility and compatibility between databases remains a problem for a variety of reasons, many of them practical. Ireland does not have an adequate routine patient registration system which makes surveillance analysis very complex. Around one third of the Irish population are entitled to all medical services free and are registered with the general medical services. Public hospital admission is however free to everyone. The public hospital admission data are now classified using a diagnostic group system which is a way of grouping individual medical conditions classified according to a standardised system.

There are numerous problems with the collection of morbidity data. There may be lack of standardisation whereby different doctors, hospitals or even countries may report the same condition in different ways. Other problems which must be accounted for are validity (a true measure of the condition in question), reliability (the same diagnosis consistently made) and under reporting. International monitoring studies are in place e.g. the MONICA study which intends to recommend methods for complete comprehensive and standardised data collection between countries.

Besides hospital and general practice sources in Ireland there are the health insurance networks, principally the Voluntary Health Insurance scheme. The private insurance schemes cover 10% of all hospital activity but unfortunately due to the competitor sensitive nature of insurance schemes the data must remain confidential and apparently cannot be used for surveillance purposes.

A primary data source for acute hospital admissions is the Hospital In-Patient Enquiry Scheme (HIPE). The HIPE unit was established in 1972 by the Medico-Social

Research Board and has been run by the Department of Health since 1989. This scheme is a computer based health information system which is designed to collect medical and administrative data on discharges and deaths. Each HIPE record represents one episode of hospital care. It should be noted that patients may have been admitted to hospital more than once with the same or different diagnoses or that movement from one ward to another may be recorded as separate events. These records therefore cover hospital activity rather than incidence of disease. Apparent fluctuations in hospital participation rates are often due to budget constraints and the problems of adapting the system to include ICD classifications.

Before interpreting HIPE data its potential drawbacks must be acknowledged. HIPE recording relies on continuity within and between hospitals. Reports of diseases across hospitals should have the same format and detail to facilitate aggregation and comparisons. Another problem which arises for the HIPE data is for example the situation where a hospital gets a new unit to deal with a specific disease. Access to treatment is therefore increased for people with a particular problem and may cause the admissions figures to increase significantly in that year. This increase may be representative of a true change in disease pattern but it may also reflect a surge of latent problems, known as ascertainment bias.
HIPE is however a valuable, if not the only, source of information on the morbidity related to discharges from public hospitals. The fluctuation of the participation rates precludes absolute conclusions regarding various conditions but trends from year to year should be relatively reliable if the above factors can be taken into account. In this report the data used was categorised using the International Classification of Diseases system, currently revision 9 (ICD 9). Indicator diseases are broken down into age and gender distributions for each year of coverage. Comparisons across the years for certain diseases must be age specific to allow for the confounding effect of different age distributions. For example, if a disease becomes commoner with old age and the population surveyed contained a higher proportion of young people than average, this would result in the hospital admission figure for that disease being misleadingly low. It is important therefore to investigate the breakdown of ages in each year's figures.

While the HIPE unit deals with all types of disease, the National Tumour Registry in Cork, formerly the Southern Tumour Registry, is concerned only with cancers. This data source initially covered only the counties of Cork and Kerry but it has recently begun to record cancers from all regions in Ireland. Unlike the HIPE data, the Southern Tumour Registry records actual incidence of disease which is more reliable than hospital admissions. Reporting of the Southern Tumour Registry data in this series does not deal with environmental influences in the regions but reports purely incidence across the two counties. The Southern Tumour Registry reports age standardised incidence which allows for any significant age influences.

Diet Related Morbidity

Different categories of morbidity data have been identified through the HIPE data. It must be noted that each year different hospital coverage may exist as is shown below in

Table 4. For observational purposes the national coverage has been adjusted to 100% and these are the figures quoted in following charts. Adjustment to 100% coverage does not take into account any significant social or environmental changes which may have occurred in the respective years. Care must be taken when interpreting observations in the HIPE data, it does not account for true incidence of disease but hospital activity.

Table 16 : National Population figures for the referral years of HIPE coverage

Year	Population	Coverage (%)	Year	Population	Coverage (%)
1981	3443405	83	1986	3540643	76
1982	3469482	85	1991	3523401	62
1983	3491573	84	1992	3542000	69
1984	3511676	84	1993	3563300	80
1985	3528724	82			

Over the past few years the main cause of illness, recorded through the hospital activity data, has been disease of the circulatory system followed by cancers. These figures coincide with mortality figures for the corresponding years (see Mortality section). An increase in the admission rate for cardiovascular disease in Ireland has been observed over the time period 1981 to 1993. Data for 1987-1990 were not available due to excessive disparity between hospital coverages in those years. A further source of corroborative data on morbidity will be the findings of the ad hoc registry established for the purposes of the Kilkenny Health Project.

Cardiovascular Disease

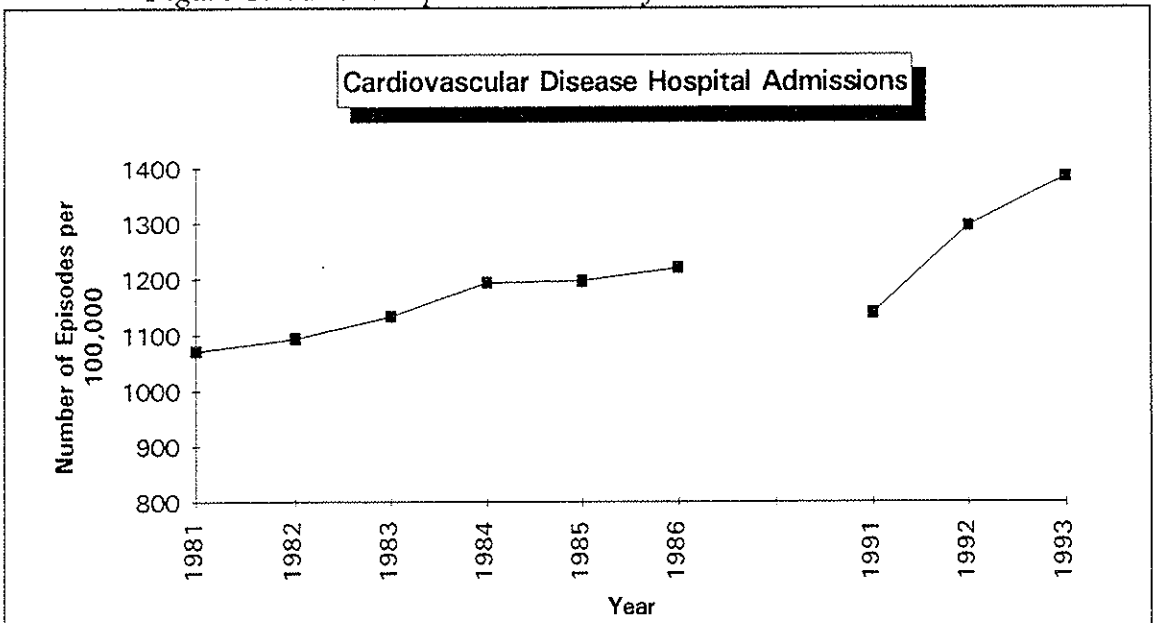
Our first report dealt in considerable detail with risk factors for coronary heart disease, including the role of diet (NNSC 1993). The World Health Organisation Expert Committee reported in 1982 that the major risk factors for coronary heart disease had been identified as: "an inappropriate national diet aggravated by physical inactivity and overweight (reflected in the mass raising of blood lipids and blood pressure), and widespread cigarette smoking". Modifications to diet and lifestyle can help to reduce high blood cholesterol and high blood pressure. Some risk factors cannot of course be changed such as genetic susceptibility, increasing age and gender.

Disease of the circulatory system is recorded through the HIPE registration system. There would appear to be an increase over the years in the number of records of the disease, which is not reflected in the mortality rates for disease of the circulatory system. This trend is experienced in many other northern European countries. Data from the Netherlands suggests that the fall in CVD mortality rates has been

accompanied by a rise in CVD morbidity - hospital admissions due to CVD have almost doubled in twenty years between 1972 to 1992. (Eurodata conference 1994)

Figure 13 shows the hospital admissions in Ireland for Cardiovascular diseases. A sharp fall was observed in 1991 but this is most likely to be an artefact in the coverage within hospitals rather than a decline in CVD prevalence.

Figure 13 : Irish Hospital Admissions for Cardiovascular Disease



Source : HIPE 1993

It is not sufficient to report the crude overall admission rate to hospital for cardiovascular disease since this disease is known to be pronounced in specific age groups. A true reflection of hospital admissions pattern for CVD each year is therefore dependant on the age distribution in the total population of the particular year. HIPE data are not age standardised but age specific admission rates were calculated.

Table 17 : Population Age Groups in the HIPE data by year

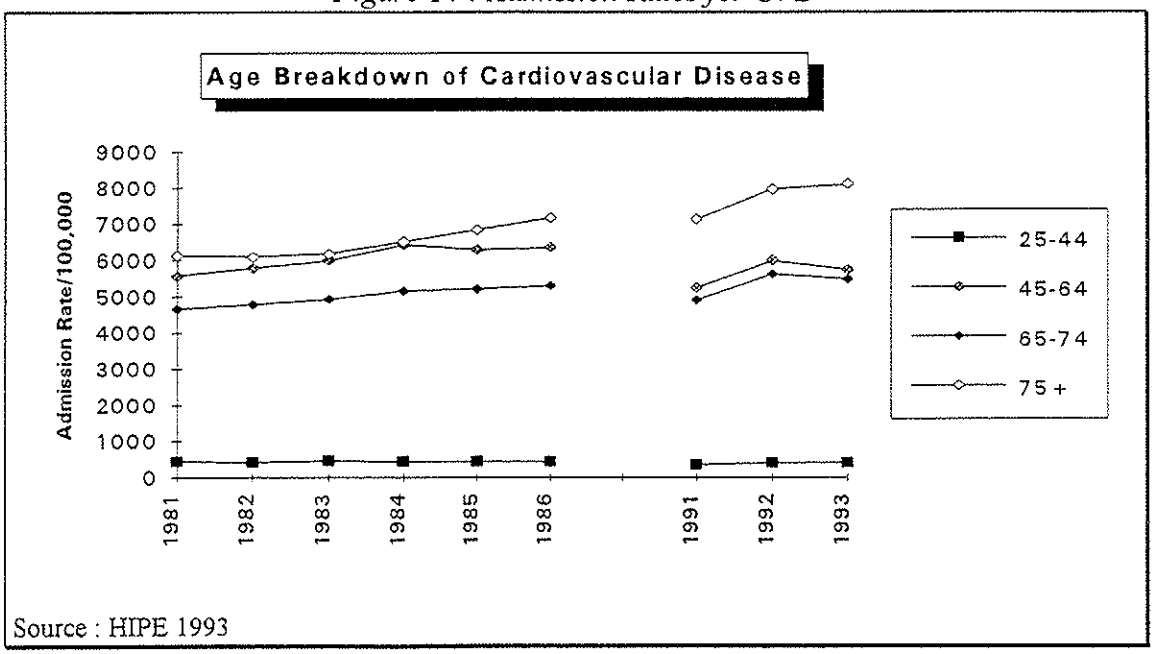
	Age Group Population expressed as % of Total Population				
Year	25 - 44	45 - 64	65 - 74	75 +	Total
81	24.3	17.1	6.9	3.8	3443405
82	24.7	17.1	6.9	3.9	3480000
83	25.0	17.0	6.8	3.9	3504000
84	25.4	16.9	6.8	4.0	3529000
85	25.7	16.8	6.8	4.0	3540000
86	26.1	16.7	6.8	4.1	3540643
91	27.1	17.6	6.8	4.6	3525719
92	27.2	17.9	6.8	4.7	3549100
93	27.2	18.4	6.7	4.7	3563300

In all of the above years, most people were in the 25-44 age category, followed by the 45-64 age group. In 1993 there were more people in both the younger age group and in the older 75+ bracket than in 1981. An increase of 1.3 % occurred in the population size of the age group 45-64 over the 12 year period.
The cohort experience of populations may be different to age specific experience. In other words it was necessary to look at cohorts of the population in order to compare the data from 1981 to 1993 since the figures of admission are those of different generations (people in the younger age group for 1981 data could have been born in 1957 whereas the older age group would have been born in 1906). Growing up through different social and environmental changes could influence their health status.

Age related cardiovascular admission rates, in all years from 1981-1986 and 1991-1993 were observed to be on the increase. Approximately 35% of all cardiovascular admissions were in the 45 - 64 age group from 1981 to 1986. This reduced in the Nineties to around 30% , with an increase in the % total of admissions for the 75+ age group from 20% to roughly 27%. However, age specific population admission rates for Cardiovascular disease were highest in the age group 75+ years old in all years, because the condition increases in incidence with age. This was followed closely by a high prevalence in the 45-64 years age group especially around 1983/84. The admission rates remained very level over this time period for the younger age group (Figure 14).

It should be noted that from 1981 to 1993 there was an increase in the absolute number of people in the 75+ and 45-64 years old population categories throughout the country by 28% and 11% respectively. These corresponded with hospital admission for Cardiovascular disease increases of 68% in the 75+ age group and 4% in the 45-64 category. The HIPE figures may therefore reflect a true change in the pattern of disease and its management in the older age group. In the 45-64 age range there are actually less admissions than might be expected, implying a reduction in the incidence of the disease in this age bracket, despite management policy.

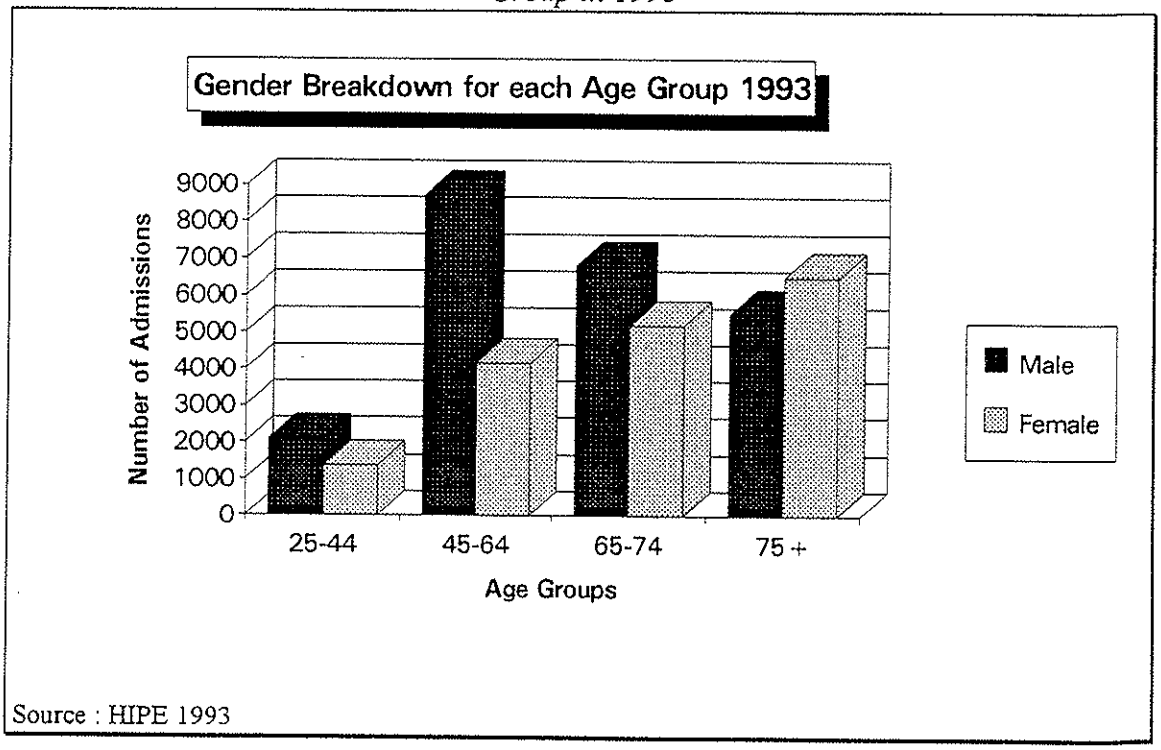
Figure 14 : Admission Rates for CVD



Source : HIPE 1993

From the gender breakdown within each of the age groups in the last year of reported hospital coverage, 1993, cardiovascular disease was found to be dominant in the male sex for all ages.

Figure 15 : Gender Breakdown of Cardiovascular Disease Admissions for Each Age Group in 1993



Source : HIPE 1993

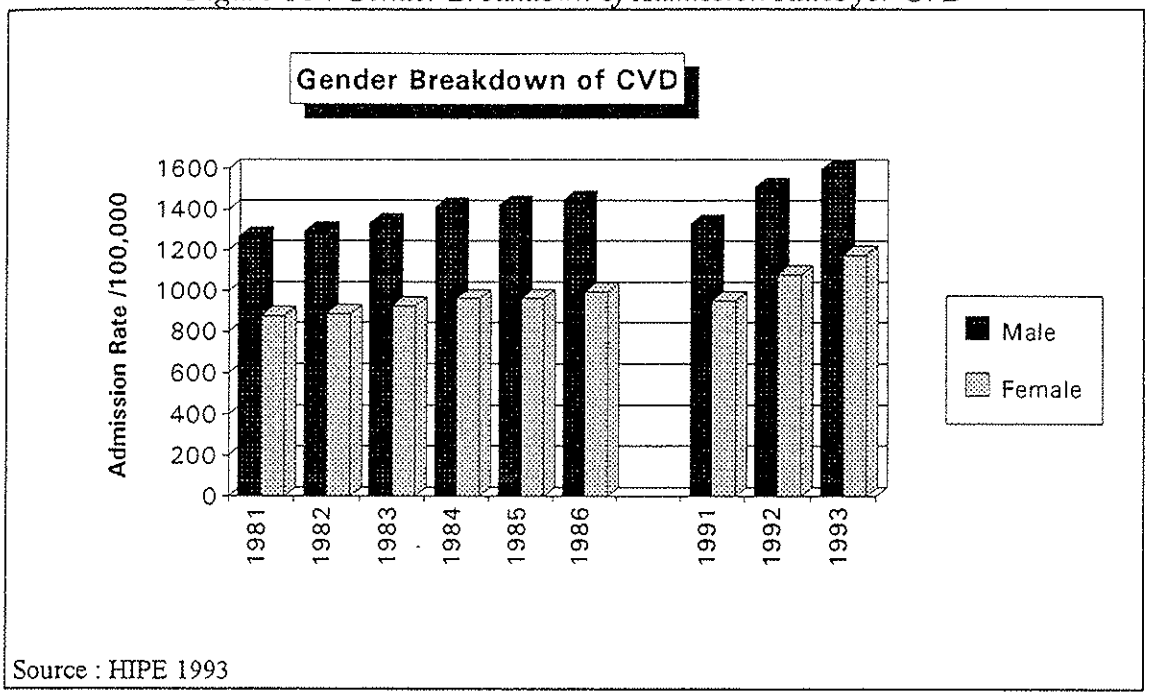
Roughly 60% of all CVD admissions each year were male with a slight shift in the ratio in the early nineties. (Table 18).

Table 18 : Gender Ratio of Cardiovascular Hospital Admissions (100% coverage)

Year	Male (%)	Female (%)	Year	Male (%)	Female (%)
1981	59	41	1986	59	41
1982	60	40	1991	58	42
1983	59	41	1992	58	42
1984	60	40	1993	57	43
1985	60	40			

Over each of the years, a steady increase was observed in both male and female populations for admissions to hospital from cardiovascular disease. (Figure 16)

Figure 16 : Gender Breakdown of Admission Rates for CVD

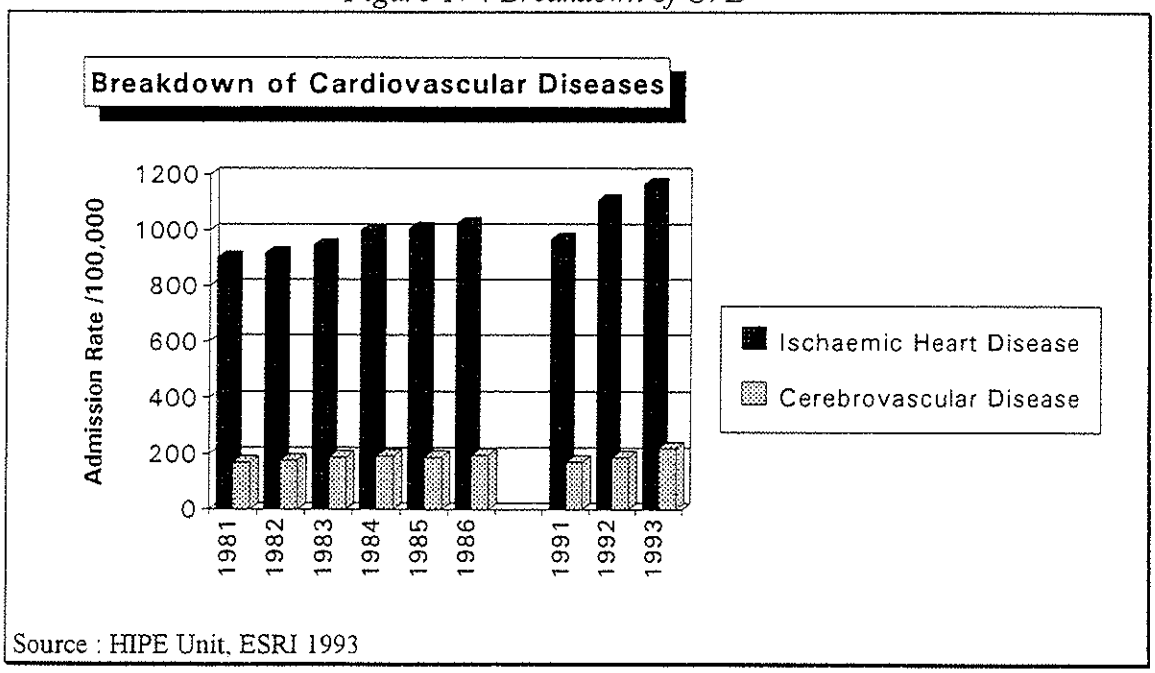


Source : HIPE 1993

Cardiovascular diseases can be broken down into ischaemic heart disease and cerebrovascular disease. It was found that ischaemic heart disease accounted for a high percentage (66% in 1981 and 84% in 1993) of the total admissions to hospital for cardiovascular related diseases.

A steady increase in the admission rate per 100,000 people in the population for ischaemic heart disease is observed over the recorded time period. As noted previously, the severe fall in admissions in 1991 is most plausibly explained by coverage fluctuations (Figure 17).

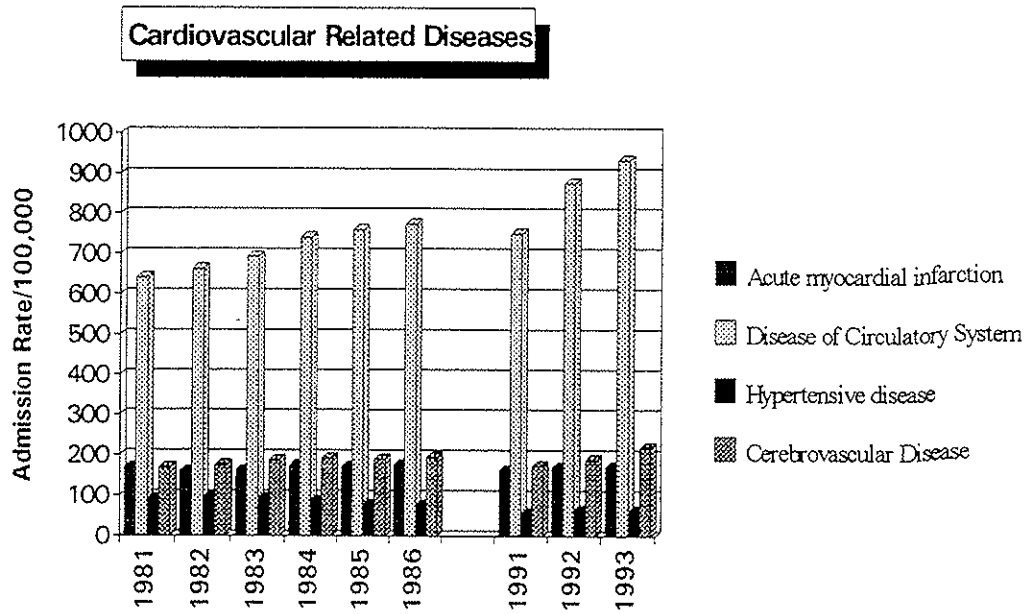
Figure 17 : Breakdown of CVD



Source : HIPE Unit, ESRI 1993

A further breakdown of ischaemic heart disease episodes reveal diseases of the circulatory system to be the most common category, with a steady increase in admission rates over the years 1981- 1986 and 1991 to 1993.

Figure 18 : Breakdown of Ischaemic Heart Disease



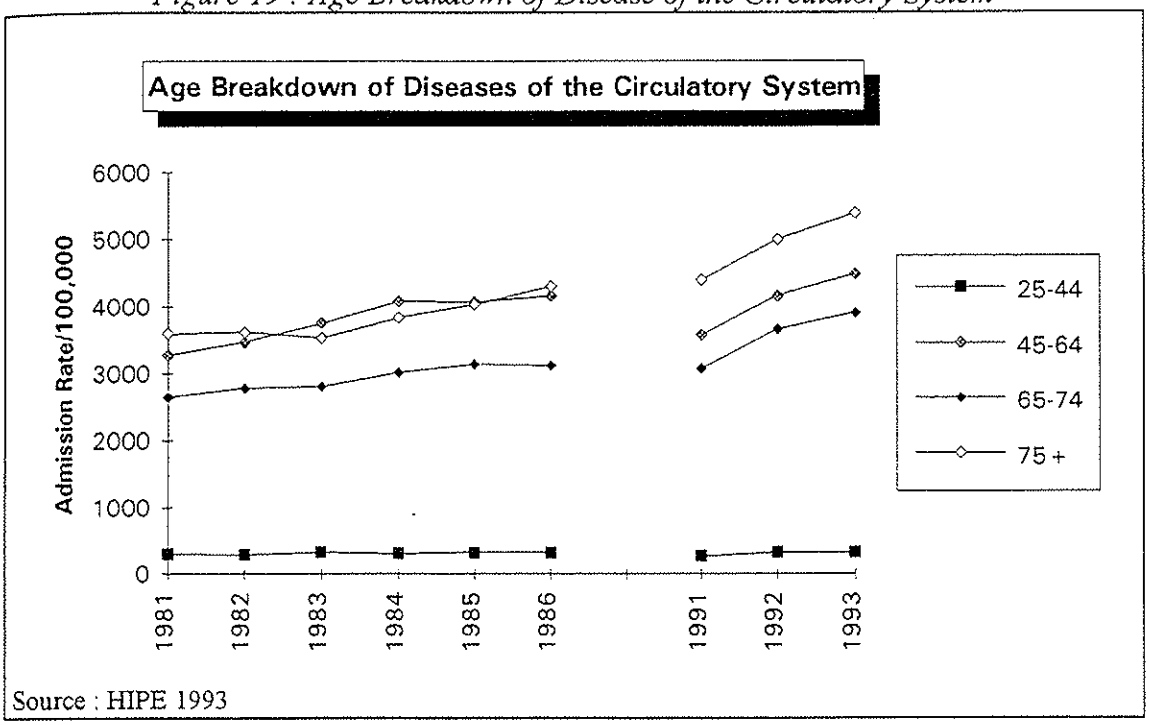
Source : HIPE 1993

Age specific admission rates were calculated for Diseases of the Circulatory System. Each year, out of all disease of the circulatory admissions, the highest percentage were in the 45 - 64 age group. However rates per 100,000 of that age group population were found to be very similar in the age groups 45 - 64 and 75+ in the eighties but the older age group dominated at the start of the nineties.

In all age groups except the younger 25-44 bracket, there was a steady increase in admissions rates over the years reported. Over those years there was a slight increase in the population within each age group but not to the same degree as the increase in admissions. This may therefore indicate a true reflection of a growth in diseases of the circulatory system.

Men in these age groups had a higher rate of hospital admission than women. Like the gender distribution for overall cardiovascular disease, men accounted for approximately 60% (58% -62% over the period 1981 to 1993) of all admissions due to diseases of the circulatory system.

Figure 19 : Age Breakdown of Disease of the Circulatory System



Source : HIPE 1993

Estimates of incidence and prevalence of coronary heart disease in Ireland are collected through specific studies, which compliment the data recorded through the Hospital In-Patient system.

A comprehensive survey was carried out under the direction of the Irish Heart Foundation, entitled ***"Happy Heart National Survey"***. This reports on the health behaviour of a representative sample of the Irish population, with a specific interest in the risk factors for heart disease. The 1,798 people surveyed had, in general, the same demographic characteristics representative of the national population.

- 5% of men and 2% of women had a history of coronary heart disease
- 5% of all the people surveyed had at some point been treated for raised cholesterol, but overall less than 40% had ever had a cholesterol check.

These results are in agreement with those found in an English study of cardiovascular risk and attitudes to lifestyle (Silagy et al 1993). Just under 6% of the men and 2% of the women surveyed had a history of cardiovascular disease. The survey highlights continuing high prevalence of the recognised risk factors for disease of the circulatory system : smoking (1 in 3 surveyed smoked) and excess alcohol intake (1 in 5 men drank more than the recommended weekly intake).

A comprehensive national CVD monitoring system is to be recommended as opposed to isolated risk factor studies. Comparability of data within and between countries is restricted due to differences in sampling methodology and the level of accuracy achieved. A 5% error in cholesterol measurement for instance, can lead to a 40% increase in the apparent number of people with high cholesterol levels. (Eurodata Conference 1994)

Cancers

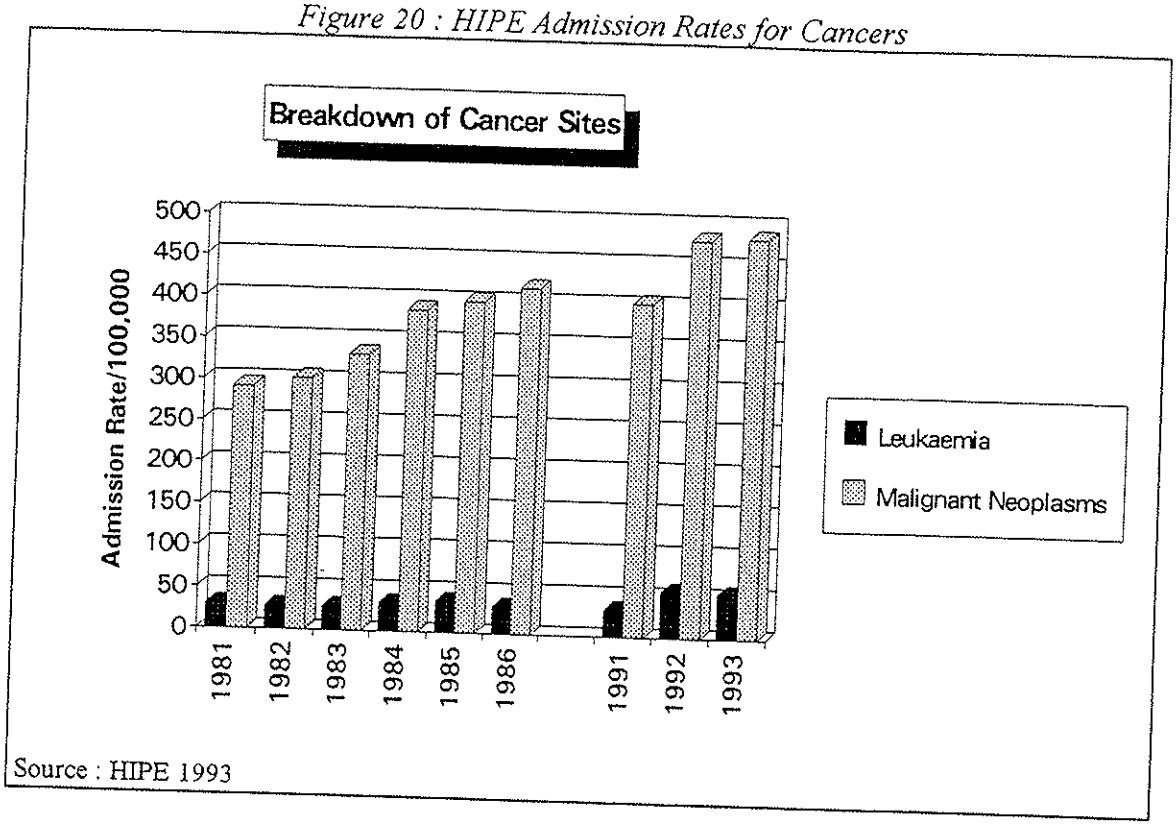
The European Union under the direction of the Europe Against Cancer programme has set the target that, by the year 2000, following the implementation of a variety of different lifestyle recommendations a fifteen per cent reduction in annual cancer mortality can result. Each year an estimated 730,000 people die from cancer throughout the European Union. The risk of dying from cancer as a collective category among men is highest in Luxembourg, Belgium and the Netherlands, while the lowest mortality is seen in Portugal, Greece, Spain and Ireland. Female incidence rates were observed to be highest in Luxembourg, the UK, Denmark and Ireland. (Moller Jensen O. et al 1990).
Although the risk of cancer mortality is relatively low compared to other European countries, cancer is the second biggest killer in Ireland and accounted for nearly a quarter of all deaths in 1993. This year alone, 1 in 277 people will develop cancer according to the Irish Cancer Society statistics. Lung cancer is one of the leading cause of cancer deaths among Irish men with the most important causal factor being cigarette smoking. Cancers of the breast, lung and digestive tract account for almost half of all cancer related deaths in women.

Diet is a known risk factor for several cancers but because there are no acceptable intermediary markers of risk, such as for instance LDL cholesterol in the case with coronary heart disease, it is more difficult to examine the association in the short to intermediate term and to establish a causal chain of risk. Cancer can affect all organs and tissues and those cancers with the highest incidence are not always associated with the highest mortality.

Information is readily available on mortality rates for all EC countries but incidence data proves more difficult. Throughout Europe, only Denmark and Scotland have nationwide cancer incidence rates readily available (Moller Jensen O. et al, 1990). Ireland has recently set up a national cancer registration system which will release nationwide cancer incidence rates in the forthcoming years. Well functioning cancer registration exists to a smaller or larger extent in other European member states with only Luxembourg having attempted no registration. Up until 1991 the only comprehensive cancer specific registration system in operation in Ireland was the Southern Tumour Registry which covered the counties of Cork and Kerry. In 1991 the National Cancer Registry was established by the Minister for Health and is based in Cork. It intends to produce completely reliable national statistics for cancer within a few years.

The Southern Tumour Registry records all types of cancer incidence whereas the HIPE unit groups cancers using the ICD9 classifications into Malignant Neoplasms and Leukaemia. Figure 20 shows the increase over the past twelve years in the number of hospital admissions due to these diseases.

Figure 20 : HIPE Admission Rates for Cancers



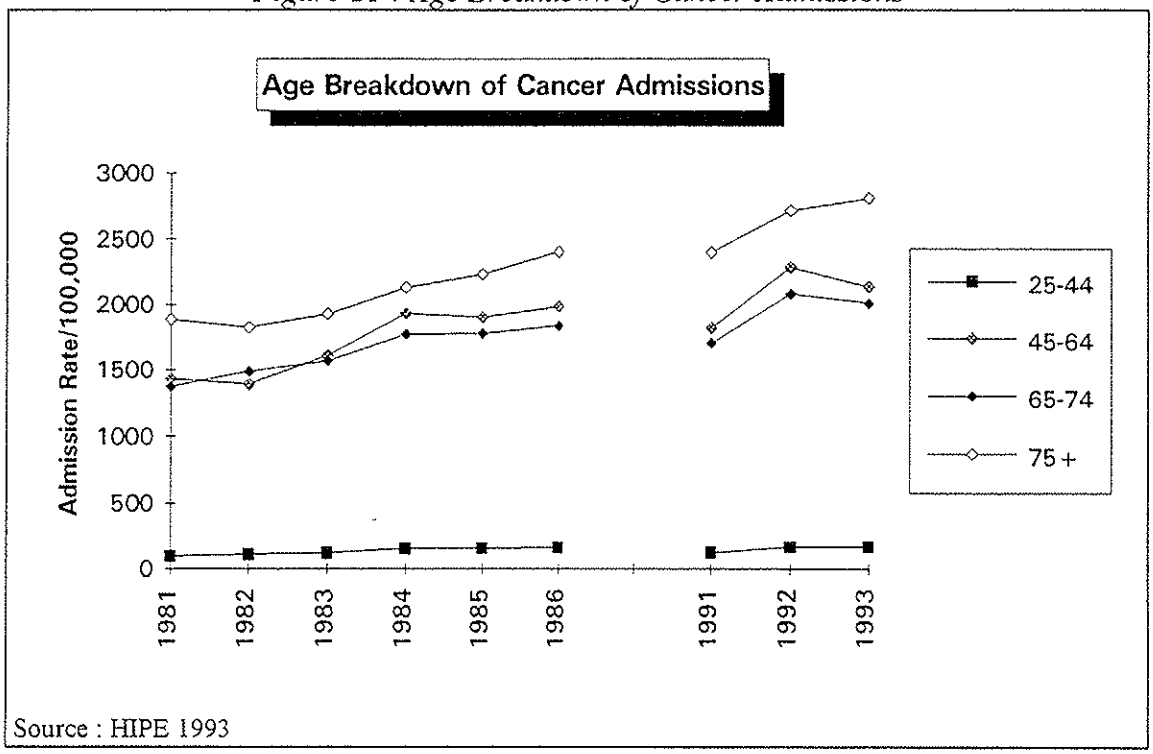
Source : HIPE 1993

Like Cardiovascular disease, the risk of cancer is age specific and this factor must be taken into account when assessing cancer incidence levels.

The age specific admission rates for each of the age groups were shown to increase over the time period although decreases in the last year rates were observed for the 45-64 and 65-74 age groups (Figure 21). From the HIPE unit data in each of the years, around 35% of cancer episodes occur in the 45-64 age bracket, followed closely by the 65-74 group. The national distribution of the population across these age groups was shown earlier to be almost the same in each year.

From 1981 to 1993 the absolute number of people in the 45-64 age group increased in size by 11%. This corresponded with a 51% increase in hospital admissions for cancer in that specific age group. This indicates that the HIPE data may reflect a genuine increase in the level of malignant tumours in the 45 - 64 age group.

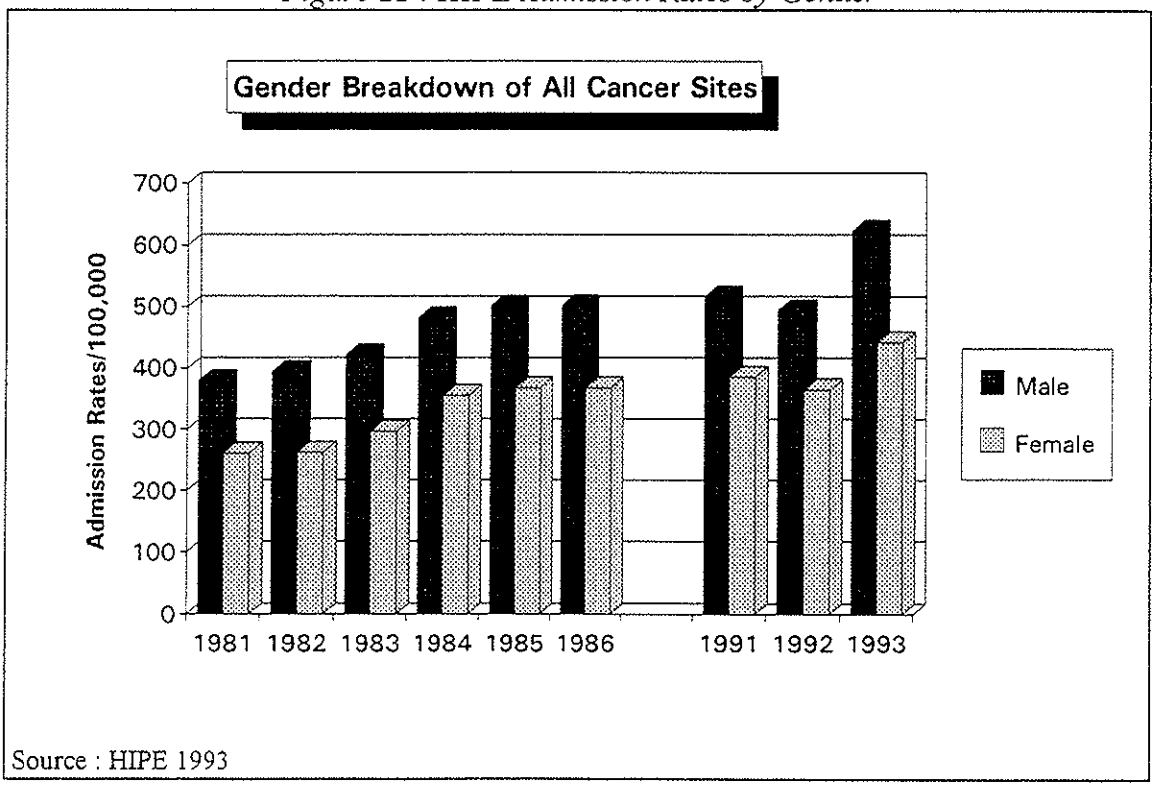
Figure 21 : Age Breakdown of Cancer Admissions



Source : HIPE 1993

Gender specific rates show rates in both males and females to be on the increase (Figure 22). Cancer in all sites collectively, was found to be more prevalent in the male sex for each of the years.

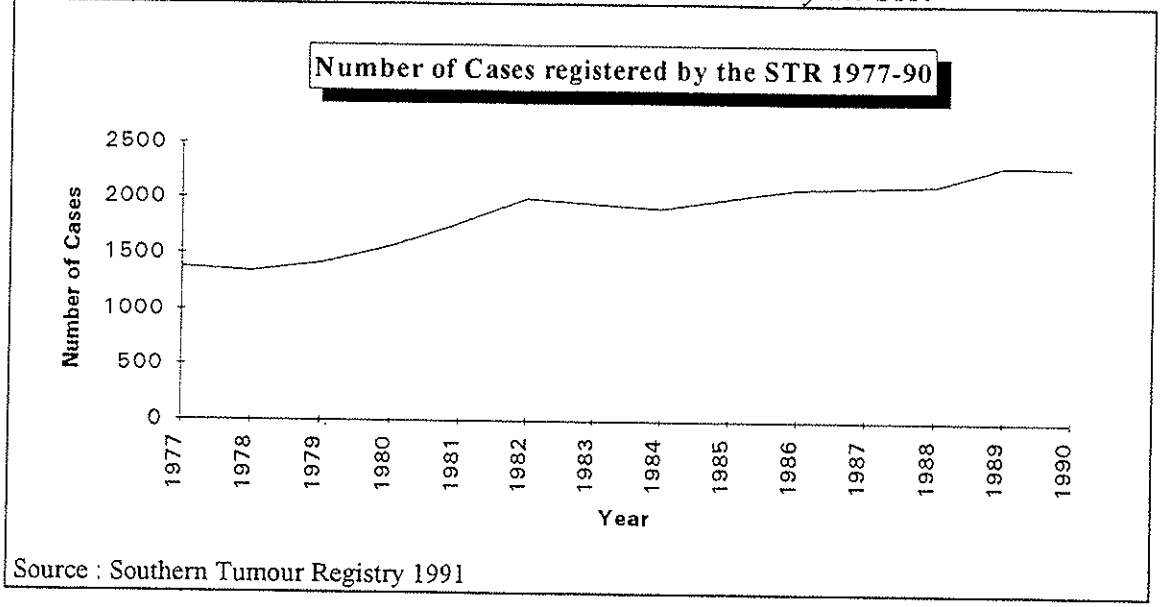
Figure 22 : HIPE Admission Rates by Gender



Source : HIPE 1993

Over the fourteen year period from January 1977 to December 1990 there was a total of 26,330 newly diagnosed cases of cancer recorded by the Southern Tumour Registry.

Figure 23 : Total Cancer Cases Recorded by the STR

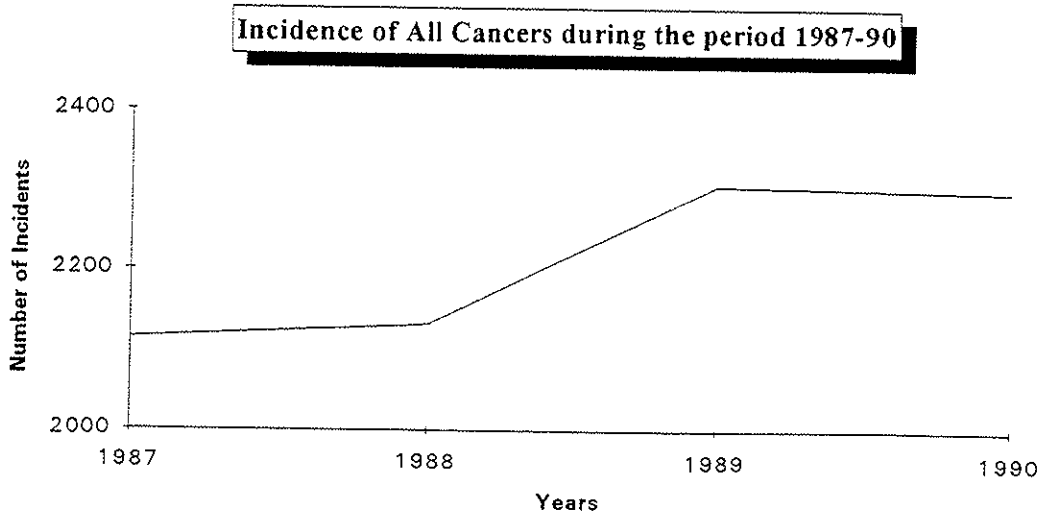


Source : Southern Tumour Registry 1991

The increasing trend in number of cases may represent a genuine increase in cancers in the population of Cork and Kerry but it should be noted that it may also be due in part to an improved quality of registration as time passed.

Data were available from the Southern Tumour Registry for the years from 1987 to 1990. The increase in cancer incidence during this period is shown below. Assuming the Population Census of 1991 to be representative of 1990, there were 531,533 people living in Cork/Kerry, which from these figures implies that under 1.0 % of the areas' population were registered as cancer sufferers.

Figure 24 : Incidence of Cancers, STR

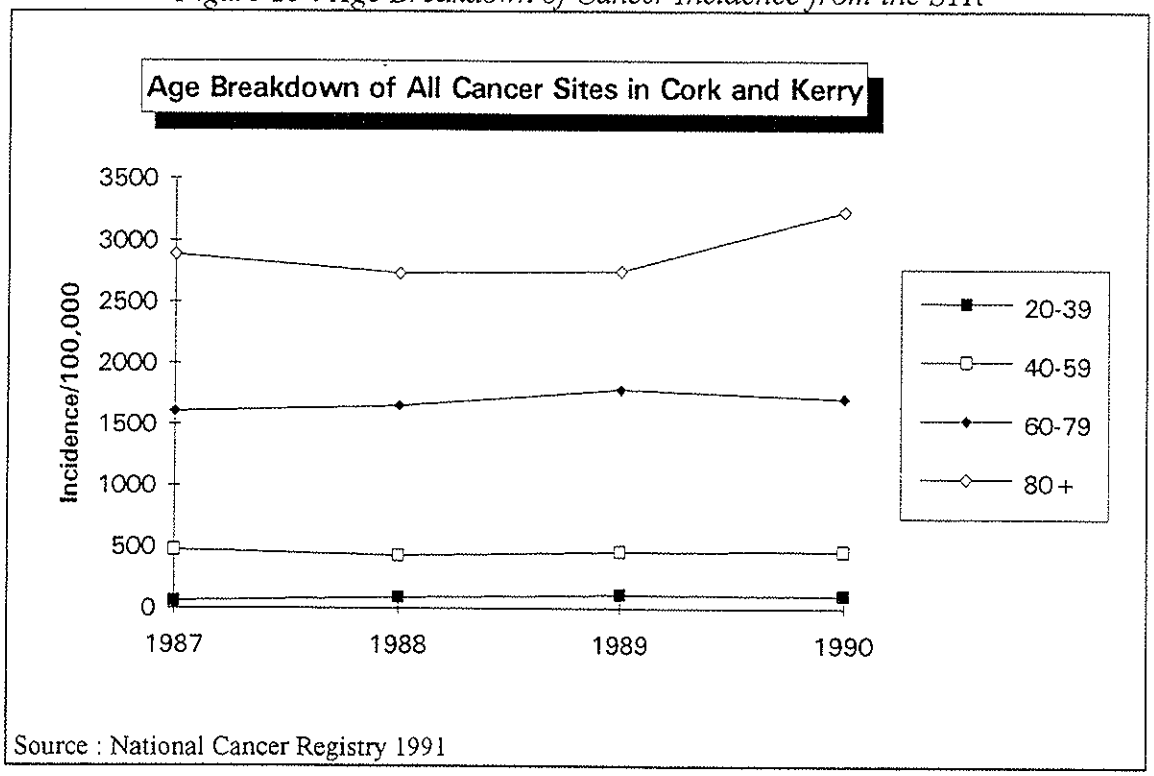


Source : Southern Tumour Registry 1991

The Southern Tumour Registry cancer incidences were found to be relatively stable in each of the age groups over the 4 year period (Figure 25). Almost 60% of all incidences each year occurred in the 60-79 age bracket followed by the 40-59 age group who accounted for around 20% of incidents.

A comparable data set from the HIPE unit for 1987 to 1990 were not available. In all other reported years, the HIPE unit breaks the age groups down into 45-64 and 65-74 categories, with similar levels of cancer admissions in each group. Although the data are not directly comparable with those of the Southern Tumour Registry, the slight increase in hospital admissions found in the HIPE data is not reflected in the tumour incidence for the counties of Cork and Kerry.

Figure 25 : Age Breakdown of Cancer Incidence from the STR



Source : National Cancer Registry 1991

As noted previously, a shift in the number of the older people in the population sample can significantly influence the crude rate of cancer. Age-adjusted rates are quoted by the Southern Tumour Registry to avoid misrepresentation of the incidence rates.

The ten most common types of cancer in the Cork and Kerry counties were identified for both male and female. These are tabulated below, with Danish figures as a comparison :

Table 19 : Ten Most Common Sites of Cancer for Males in Cork/Kerry (Age Adjusted Rate per 100,000)

Site	1988	1989	1990	Denmark (1988)
Skin	91.1	92.7	95.0	55.9
Lung	40.1	43.3	47.2	55.2
Prostate	26.3	27.3	31.9	30.8
Colon *	21.6	21.9	25.4	22.9
Bladder	10.7	10.8	14.3	29.3
Haematop & Ret.	14.3	16.5	12.7	12.9
Unknown Primary	9.8	9.5	14.9	7.8
Stomach *	15.7	14.0	12.8	10.3
Rectum *	13.0	14.3	11.8	15.7
Oesophagus *	5.6	6.7	9.4	4.4

Source : National Cancer Registry 1991

A marked pattern of increased incidence with age is seen, especially in the case of the prostate and colon/rectum (STR Annual Report 1987-1990). The tumours with an established association with diet are asterisked. Colon shows a consistent upwards trend over the three year period, with rates of stomach cancer tending to decline.

Table 20 : Ten Most Common Sites of Cancer for Females (Age Adjusted Rate per 100,000)

Site	1988	1989	1990	Denmark (1988)
Skin	64.0	87.4	74.7	51.3
Breast *	66.8	62.1	69.3	74.0
Cervix	30.8	42.4	40.1	16.4
Colon *	20.7	17.0	23.2	22.0
Lung	16.1	15.4	10.0	25.0
Ovary	10.6	17.6	13.6	13.8
Unknown Primary	9.8	10.0	9.3	6.2
Haematop & Ret.	8.6	6.5	8.7	16.8
Rectum *	8.5	7.7	9.6	9.6
Uterus	9.0	11.0	10.7	14.8

Source : National Cancer Registry 1991

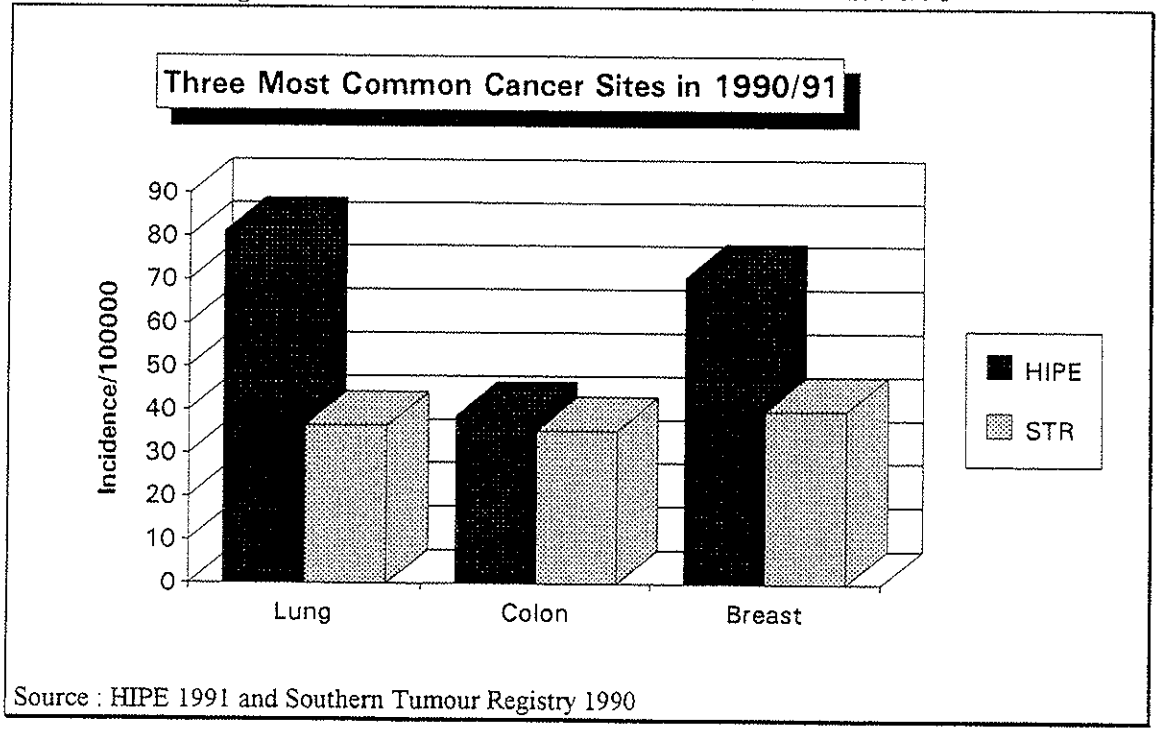
At a national level, the HIPE data includes records of the hospital activity due to malignant neoplasms. The sites for which these data are recorded are shown below. Skin cancers are not always considered to be life threatening and are often excluded from registration systems. The HIPE figures do not therefore consider skin cancers. The figures below show the number of hospital admissions and are adjusted to 100% national coverage :

Table 21 : Standardised National Hospital Admissions of Malignant Neoplasms

Malignant Neoplasms	1991		1992		1993	
	Male	Female	Male	Female	Male	Female
Lung, trachea /bronchus	1945	908	2099	1009	2179	825
Leukaemia	884	444	1528	674	1188	811
Colon *	748	613	838	658	721	516
Rectum / anus *	706	479	907	601	833	463
Stomach *	429	315	483	272	478	304
Female breast *	0	2487	0	2888	0	2493
Cervix uteri	0	332	0	372	0	388
Total Neoplasms	16502		18778		17895	

From Table 21 it can be seen that the most common cancer site for men was the lung/trachea/bronchus which accounted for almost 12% of all cancer admissions in each of the three years. Breast cancer was found to be the most commonly registered cancer for women, accounting for 15% of all malignant neoplasms. A prevalent cancer among both men and woman was cancer of the colon. Excluding skin cancers, these figures are similar to those found by the Southern Tumour Registry in 1990.

Figure 26 : Three Most Common Cancer Sites in 1990/91



Source : HIPE 1991 and Southern Tumour Registry 1990

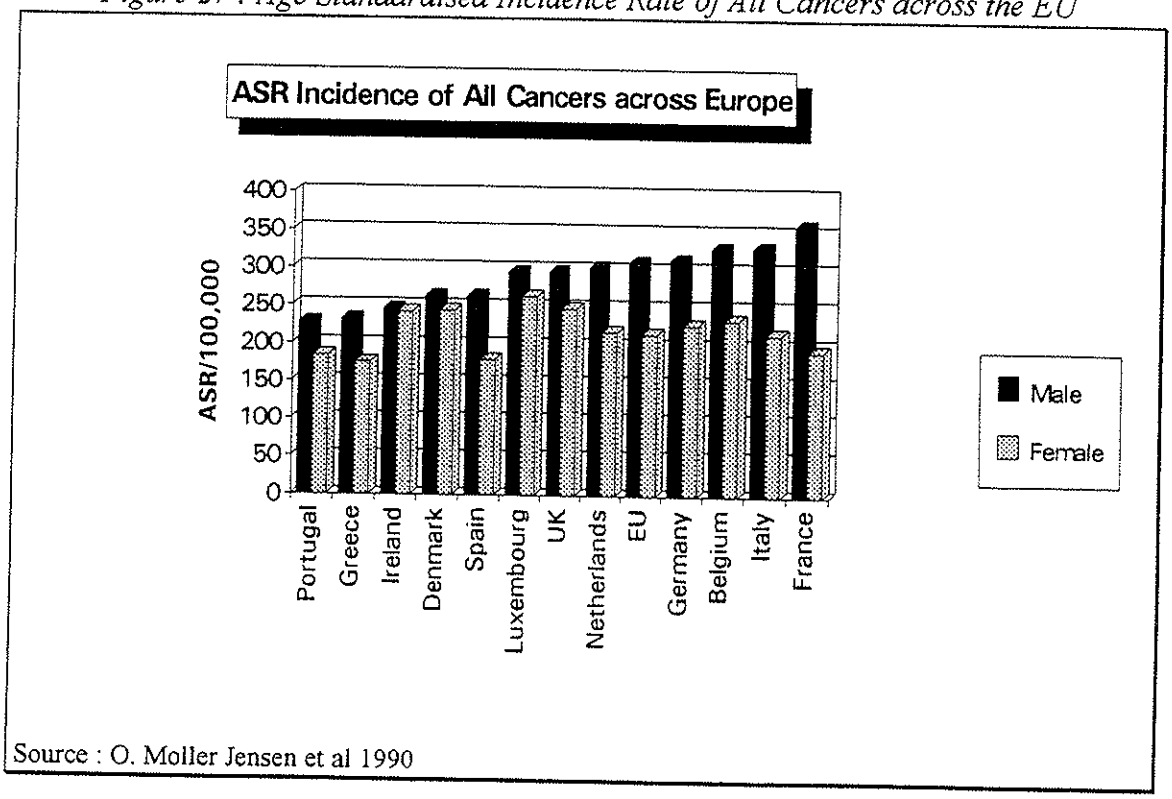
The Southern Tumour Registry covers the counties of Cork and Kerry, which are not necessarily representative of the country at large. Although some figures from the Southern Tumour Registry follow the same trend as the national hospital admissions, there are marked differences proportionately in the extrapolated incidence rates per 100,000 people. Figure 26 above shows the discrepancy between the HIPE and

Southern Tumour Registry data for both lung and breast cancer rates. The HIPE data shows much higher admission rates per 100,000 than the Southern Tumour Registry. This is almost certainly due to treatment artefact because of the method used by HIPE. Note however that the rank order of tumours is similar in both systems.

The patterns noted for dominant cancer sites in the HIPE data and the Southern Tumour Registry follow those found in a largescale European Union study (Moller et al, 1990). Excluding skin cancer, lung cancer was found to be the leading cancer among men, followed by prostate, colon and bladder. Our female counterparts also showed similar incidence sites. Breast cancer was the leading site, followed by colon and genital cancer.

Age standardised Incidence rates from 1978-82 for overall cancer incidence throughout Europe which is collated jointly by the International Association of Cancer Registries and the International Agency for Research on Cancer, show that Irish females had amongst the highest rates in Europe but that males had one of the lowest with France showing an obvious lead (Figure 27). It must be noted however that the Irish figures used come only from the area covered by the Southern Tumour Registry.

Figure 27 : Age Standardised Incidence Rate of All Cancers across the EU

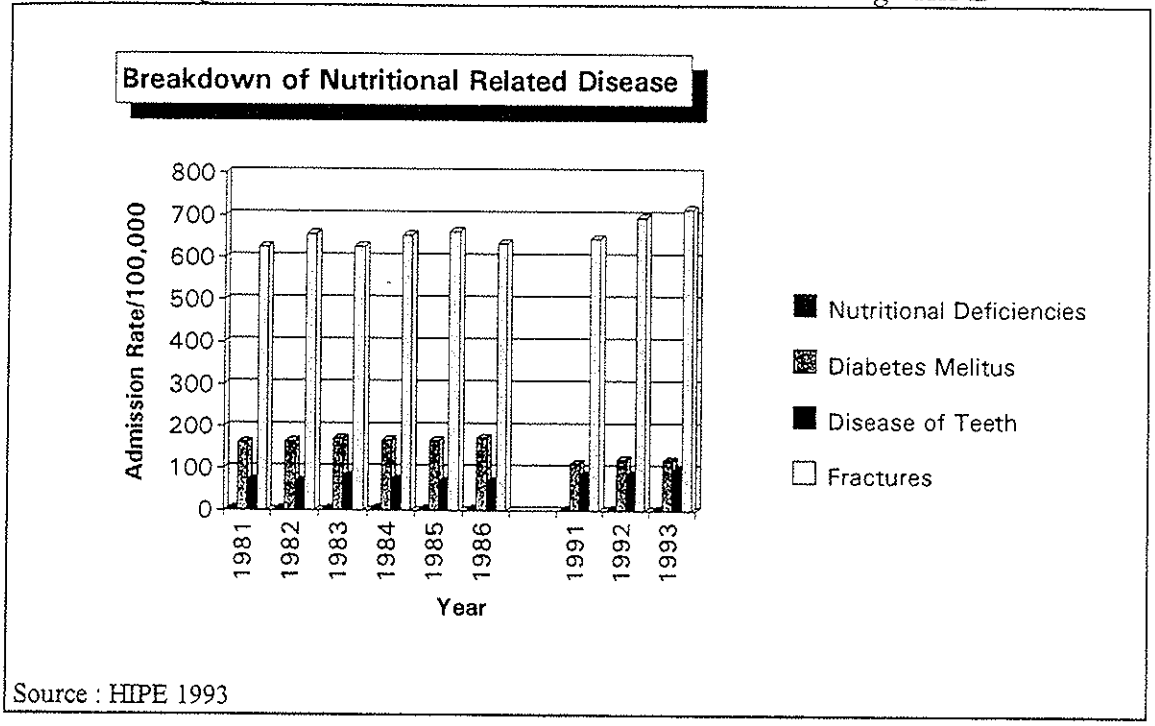


Source : O. Moller Jensen et al 1990

Nutrition Related Diseases

The HIPE unit also collects and collates data pertaining to hospital admissions due to nutrition related diseases. Fractures, which may or may not be osteoporosis related, accounted for the majority of such diseases followed by Diabetes Mellitus.

Figure 28 : Nutrition Related Diseases recorded through HIPE



Source : HIPE 1993

Osteoporosis

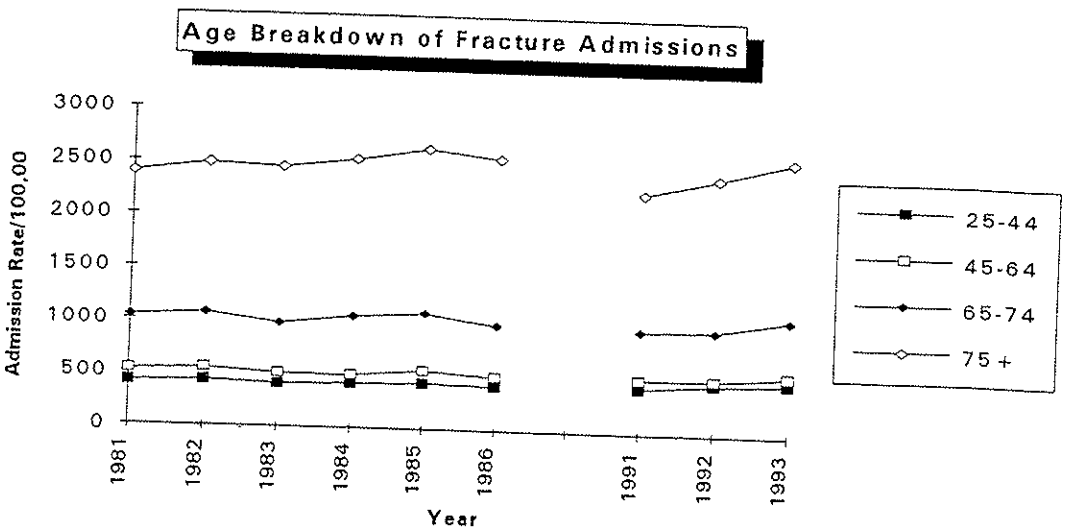
Osteoporosis is usually defined as a condition where bone mass or bone strength is reduced to such an extent that low energy or spontaneous fractures occur. Post menopausal and senile osteoporosis constitutes one of the greatest health problems in developed countries. The exact magnitude of the problem is uncertain especially in Ireland where there are no reported figures and is likely to depend on how the condition is defined.

It is known that by the age of 85 years 35% of all females and 4% of males will have suffered an osteoporotic fracture. In women the incidence rate of vertebral fractures is rising after the menopause and therefore rises with age. The risk of hip fracture and other nonvertebral fracture is increasing in the elderly, reaching near epidemic levels in many developed countries.

The HIPE unit records hospital admissions for all fractures. These may be fractures which are related to osteoporosis, especially those in the older age groups and around the menopausal age for women.

From Figure 29 below it can be see that the highest rate of admission for fractures was in the older age group of 75+ which is expected. The rates do not show any great changes over the time period.

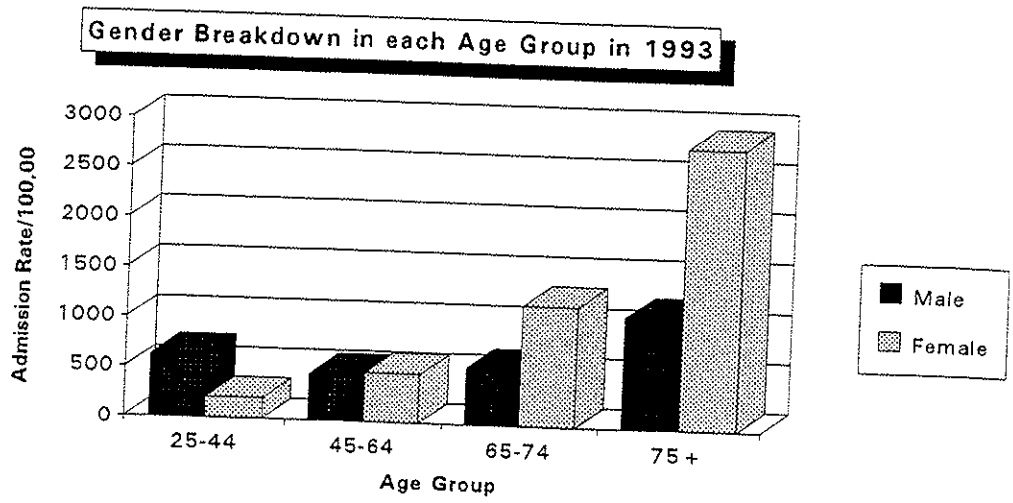
Figure 29: Admission Rates for Fractures recorded through the HIPE unit



Source : HIPE 1993

Figure 30 below shows the 25 - 44 age group males to have a much higher admission rates for fractures than females. However as the ageing process went on females started to overtake males for fracture admissions. In the 45-64 group females had a slightly higher admission rate which continued to increase dramatically in the older age groups compared to the males. The increase in female fractures around the ages of 65 - 74 and over may correspond to women becoming more prone to fractures after the menopause.

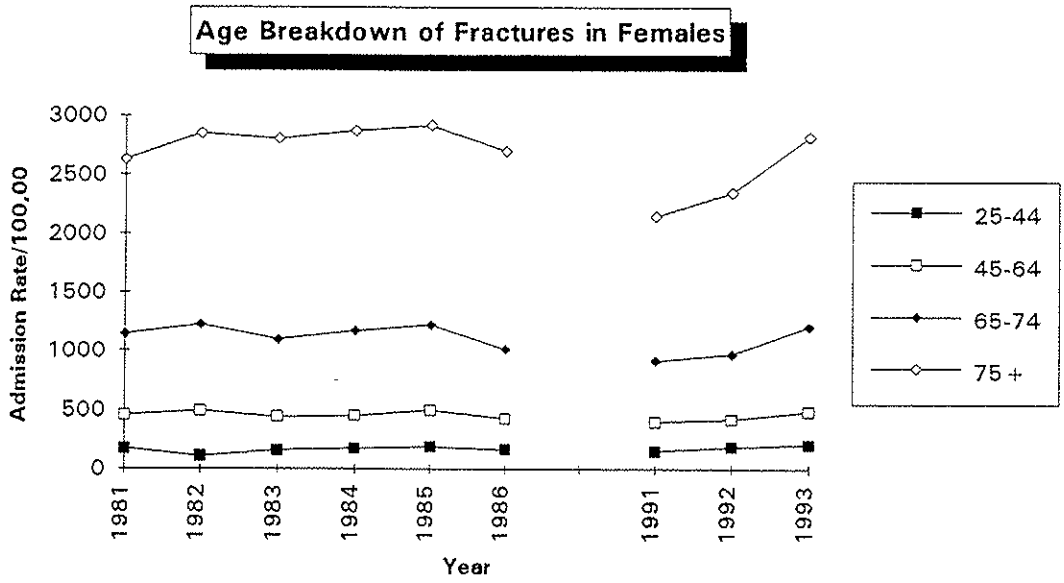
Figure 30 : Gender Breakdown for each Age Group in 1993



Source : HIPE 1993

Looking specifically at female admissions rates for fractures it can be seen from Figure 31 that almost 3000 admissions per 100,000 of the 75+ population per year occurred over the time period 1981 to 1993.

Figure 31 : Female Age Breakdown of Fractures Admitted to Hospital



Source : HIPE 1993

Fracture is almost always due to an interaction of bone fragility and injury. Reduced bone mass has many contributing causes of which inadequate nutrition is one. Other factors include a genetically small skeleton, gonodal hormone deficiency and physical inactivity.

Nutritional factors which affect bone health include calcium, phosphorous, protein, vitamins C, D, and K and various trace minerals. Of these calcium has been the most extensively studied. A study by Barrett - Connor (1994) found an association between increasing lifetime intake of caffeinated coffee and decreasing bone mineral density at both the hip and spine of women. Bone density did not vary by lifetime coffee intake in women who reported drinking at least one glass of milk per day during most of their adult lives.

A study of around 3000 elderly women showed that supplementation with Vitamin D_3 and calcium reduces risk of hip fracture and other nonvertebral fracture among elderly people (Chapuy et al 1992).

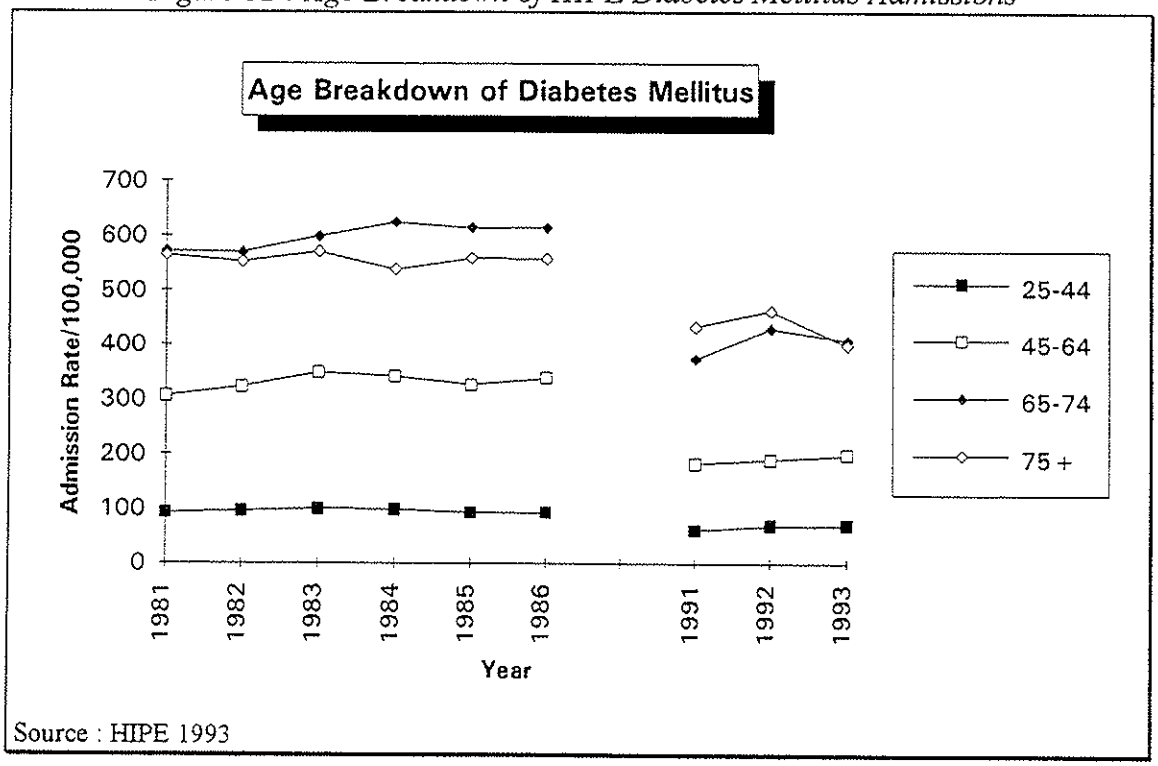
At the other end of the age range, a study of calcium supplementation in children suggested that additional calcium can increase the rate of bone mineral density build up (Johnston et al 1992). Another study showed that post menopausal women who received Calcitriol had a significant decrease in the rate of new vertebral fracture (Tilyard 1992)

Diabetes Mellitus

The World Health Organisation has recently addressed the growing global problem of diabetes. A figure in the excess of 100 million has been forecast as the number of people who will have non-insulin-dependent diabetes mellitus by the end of this century. This form of diabetes is often associated with obesity and other lifestyle factors such as diets high in saturated fats and low levels of physical activity.
Since figures show an increase in the incidence of obesity in Ireland it can be expected that non-insulin diabetes is on the increase here in Ireland as well as worldwide. The HIPE data (Figure 28) suggests a decrease in hospital admission rates for diabetes. However since most non-insulin dependant diabetics will not be admitted to hospital for initial treatment, the HIPE figures possibly do not reflect the WHO reported increase in non-insulin dependant diabetes.

Out of the total admissions for diabetes mellitus the dominant age group which presented was 65-74 group followed by the 45-64 year olds. An age breakdown of Diabetes Mellitus hospital admission rates per 100,000 age group population shows the high rates for the 65 + age groups in the Eighties to have dropped considerably in the years 1991 to 1993. There was also a reduction in rates for the age group 45 - 64 years (Figure 32).

Figure 32 : Age Breakdown of HIPE Diabetes Mellitus Admissions



Source : HIPE 1993

Coeliac Disease

Coeliac Disease is mainly a disease of Caucasians from Europe and their descendants in the Americas and Australasia. The prevalence varies considerably from about 1 in 300 in Co. Galway to 1 in 2000 in Caucasians of North America (Stevens F. 1994). Interestingly, there has been a three-fold increase in incidence of coeliac disease from 1 in 900 in the 1970s, to 1 in 300 in the mid 1980s in Sweden.
In Ireland until the mid 1970s, the bulk of diagnoses were made on children under 5 years presenting with failure to thrive. Since then, the annual detection rate has fallen while the mean age at diagnosis has risen.

Table 22 : Changes in Childhood Coeliac Disease in Galway 1971- 1990

	1971-1974	1987-1990
Mean age at diagnosis (yrs)	<4	>5
Annual Detection Rate	>10	<3

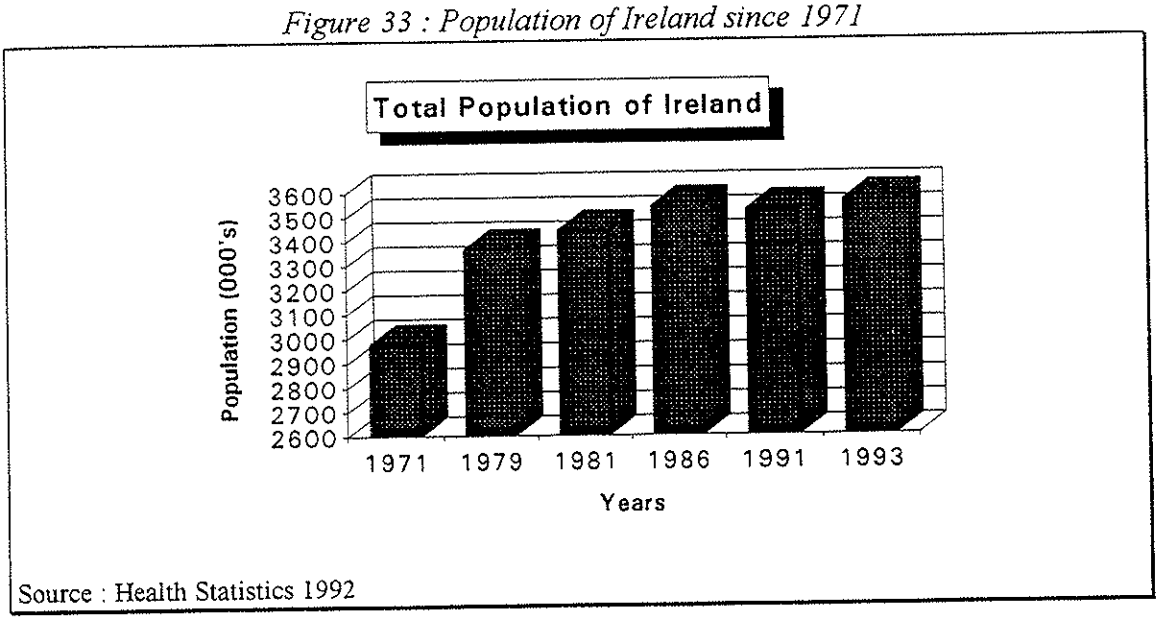
While similar trends are seen in other clinics in Ireland and the UK the opposite is true in Sweden and Finland. This has been attributed to the current vogue in Scandinavia of very early introduction of gluten to the diet of infants (the reverse is the case in Ireland since the early 1970s) Another factor could be the widespread use of screening for coeliac disease in Nordic children. Bottle feeding with a cereal containing formula is traditionally practised in Sweden. There gluten is now usually introduced in a large amount with the bottle soon after the age of six months.

Population and Vital Statistics

Irish Population :

The fall in the birth rate and the decline in mortality of the elderly have combined to accentuate the ageing of the European Union's population. Ireland still has the youngest population of the Union (36.7% of the population under 20 and 15.3% over 60).
As seen in Figure 33 the Irish population has increased substantially in volume over the past years.

Figure 33 : Population of Ireland since 1971



Source : Health Statistics 1992

Table 23 : Demographic Breakdown of Ireland

	1971	1979	1981	1986	1991	1993*
Total Population	2,978,248	3,368,317	3,443,405	3,540,643	3,525,719	3,563,300
Age Groups :						
% aged 0-14	31.3	30.6	30.3	28.9	26.7	25.8
15-64	57.7	58.7	59.0	60.2	61.9	62.7
65 and over	11.1	10.7	10.7	10.9	11.4	6.8
75 and over	4.0	3.8	3.8	4.1	4.6	4.7
Density :						
Number of persons per square Kilometre	42	48	49	50	50	-

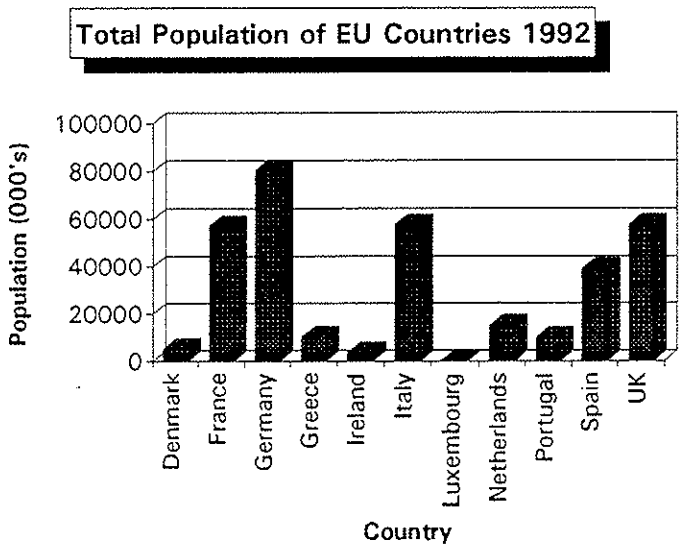
Source : Health Statistics in Ireland 1992
* Estimated Figures

In 1991 the total population of Ireland recorded through the Census was just over 3.5 million, with slightly over half being female.

Gender Ratio = Females 1,772,301 : Males 1,753,418

With just over 3.5 million people, Ireland is one of the smaller nations in the European Union.

Figure 34 : 1992 Population of the European Union

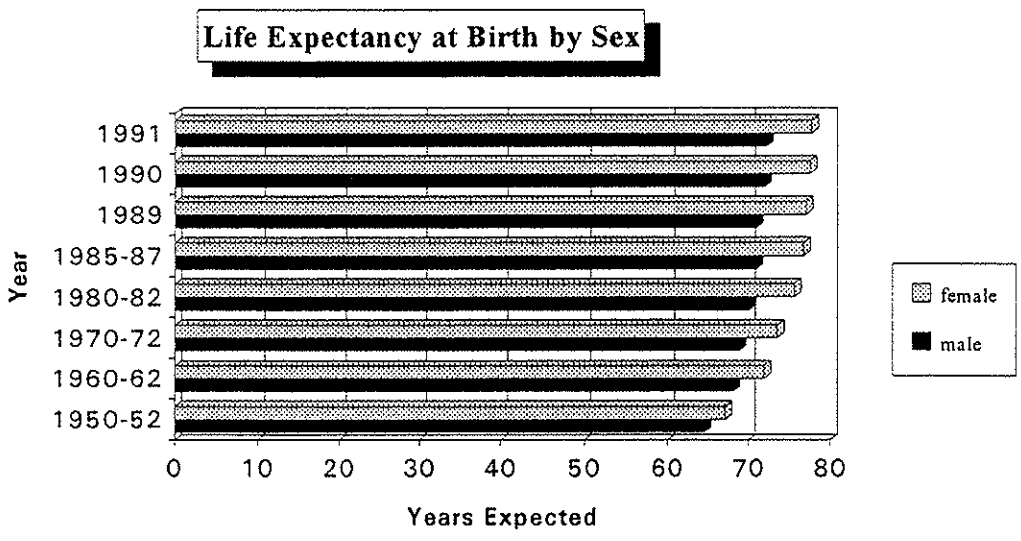


Source : Demographic Statistics 1993

Life Expectancy :

Life expectancy at birth in Ireland has risen to 77.7 years for a female and 72.2 years for males (Figure 35)

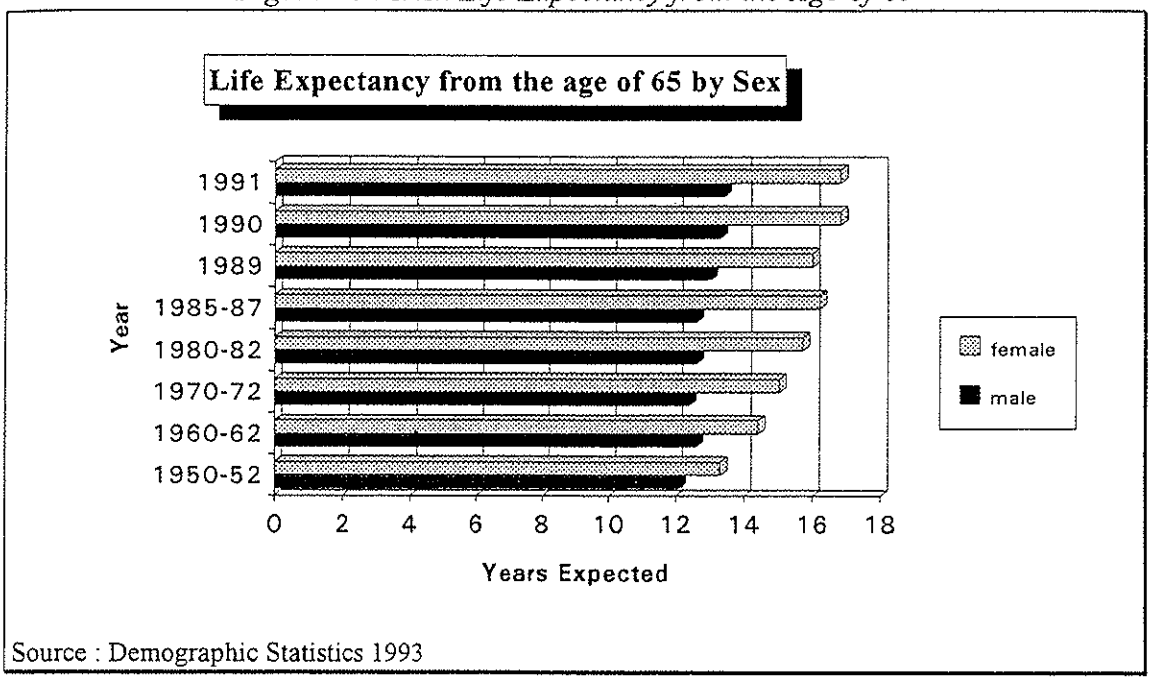
Figure 35 : Irish Life Expectancy from Birth



Source : Demographic Statistics 1993

The increase in life expectancy from the age of 65, predominantly so for females has also been noted in these years. (Figure 36)

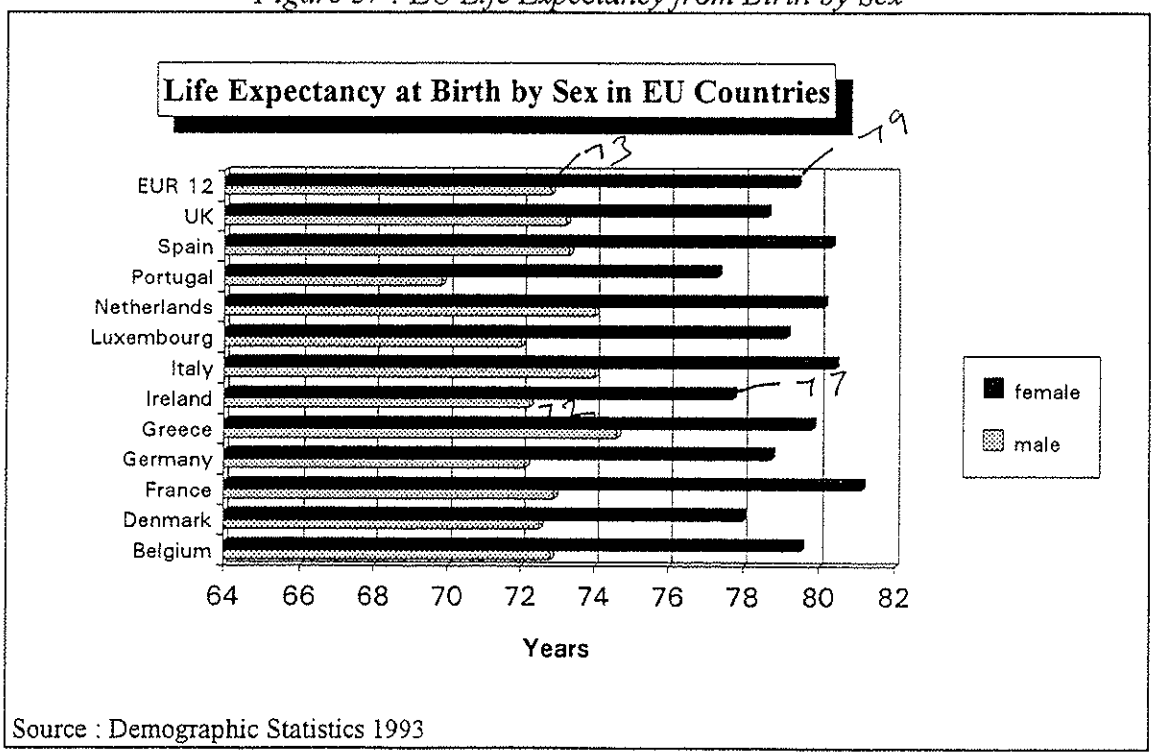
Figure 36 : Irish Life Expectancy from the Age of 65



Source : Demographic Statistics 1993

Ireland has a slightly lower life expectancy, for both sexes, than the European Community average (Figure 37). Over the last decade, the increase in life expectancy was lowest in Denmark and highest in Italy.

Figure 37 : EU Life Expectancy from Birth by Sex



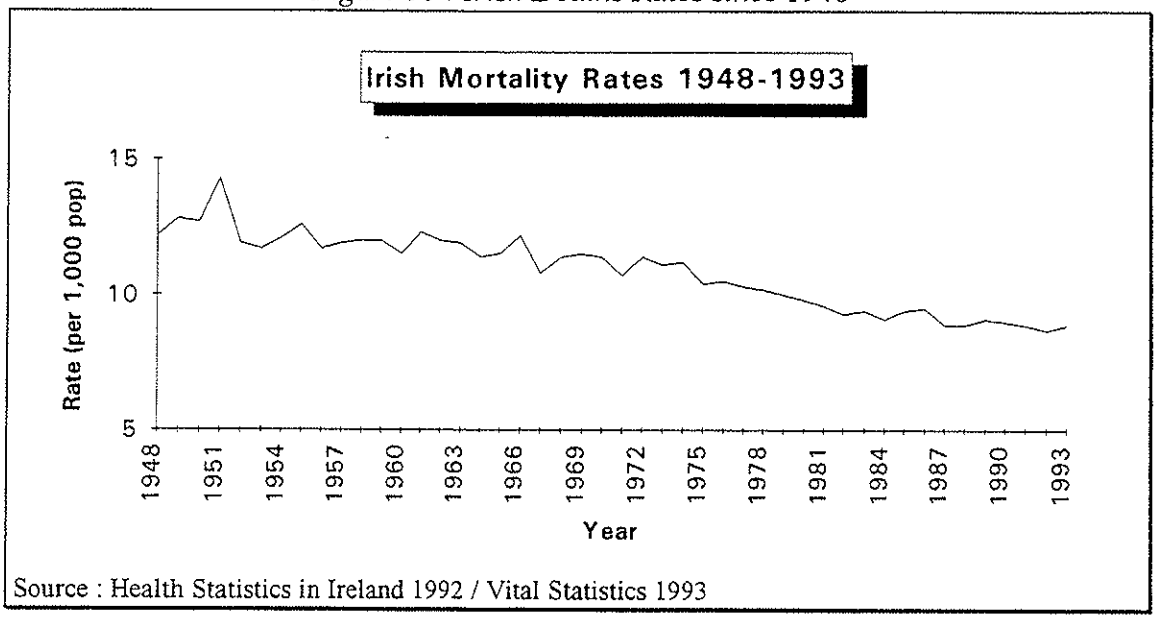
Source : Demographic Statistics 1993

Mortality

To describe the health status of the Irish population it is necessary to look at trends in both mortality and morbidity. Standardised Death Rate (SDR) and the International Classification of Diseases codes (ICD) are used when talking about mortality to enable comparisons with other countries.

Irish Mortality rates for the years 1948 - 1993 in Ireland show a slight decline (Figure 38) although it is still high compared to European standards.

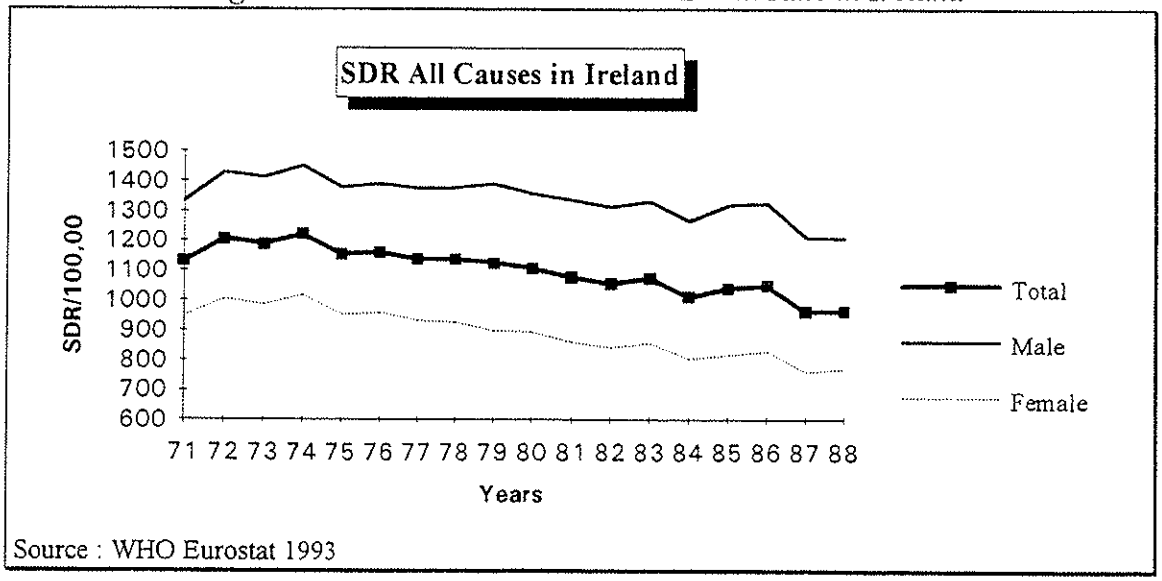
Figure 38 : Irish Deaths Rates since 1948



Source : Health Statistics in Ireland 1992 / Vital Statistics 1993

The All Cause SDR for all ages in Ireland (Figure 39) shows a decrease in this rate over the 17 year period.

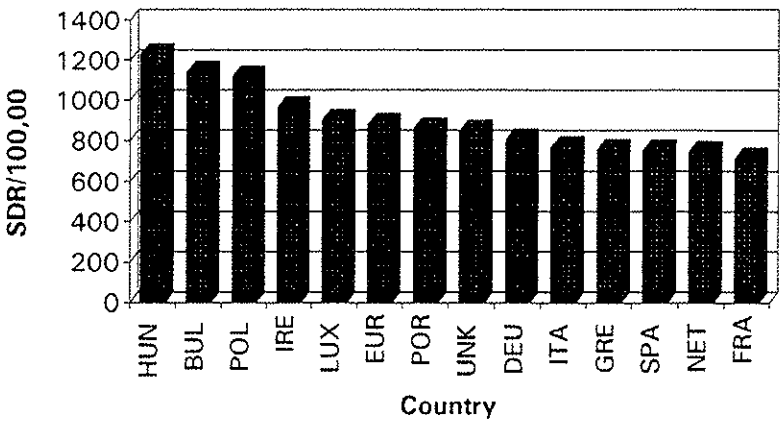
Figure 39 : All Causes Standardised Death Rate in Ireland



Source : WHO Eurostat 1993

A comparison of Ireland and selected other European countries SDRs shows Ireland to have the highest rate with only the Eastern European countries having higher.

Figure 40 : Selected European Standardised Death Rates for All Causes



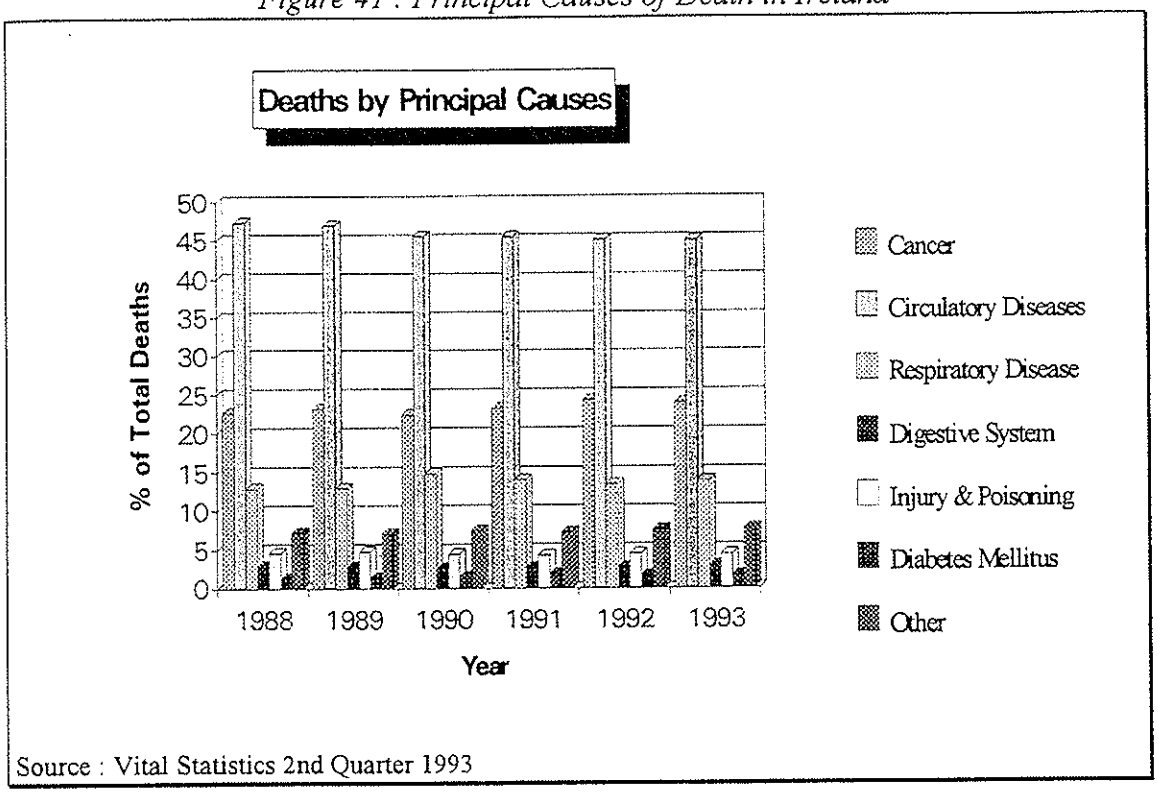
Source : WHO Eurostat 1993

Although the overall death rate in Ireland is decreasing, it is more gradual than our EU counterparts. This is attributed to mortality associated with Ireland's relatively high incidence of cardiovascular disease and certain cancers.

Cardiovascular diseases and cancers alone account for almost 60% of deaths in Ireland. Within Europe Ireland has one of the highest standardised death rates from disease of the circulatory system.

The principal causes of death in Ireland for the years 1988 to 1993 were predominantly cancers and diseases of the circulatory system and it can be noted from Figure 41 the above mentioned trends. The high levels of cancers and cardiovascular diseases coincide with the high levels of morbidity for the same diseases.

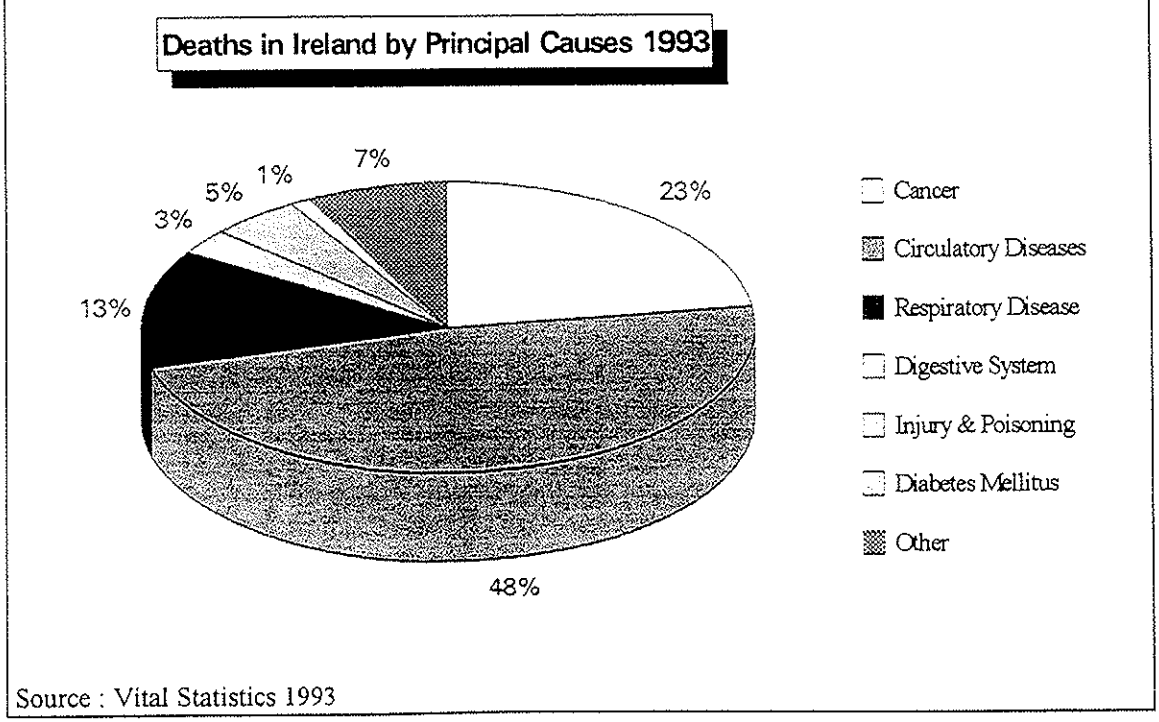
Figure 41 : Principal Causes of Death in Ireland



Source : Vital Statistics 2nd Quarter 1993

The total number of deaths in Ireland in 1993 was 31,656. The percentage of deaths due to the principal causes are shown below :

Figure 42 : Principal Causes of Irish Deaths in 1993



Source : Vital Statistics 1993

Although there has been a decline in rates over the past couple of decades, disease of the circulatory system, which encompasses all heart related problems, is still one of the main killers in Ireland, accounting for 48% of all deaths in 1993. Ireland has the highest Cardiovascular mortality rate in the EU for both male and females, according to the latest figures published by the WHO. (Rapid Report : Population and Social Conditions, 1993 No.4). The World Health Organisation collates European disease information in the computer package 'Health For All 2000'. Within this the standardised mortality rates are given for diseases of the circulatory system for all ages in all state members of the European Union. Although the data last available from each country may not be for the same year, overall trends may be observed.

Table 24 shows Ireland to have the highest total death rates from diseases of the circulatory system. The European figures show Irish males having the highest death rate and females the fourth highest. The highest death rate from malignant tumours was found in Denmark followed closely by Belgium and Ireland.

Table 24 : Age Standardised mortality rates by cause (per 100,000) - Last available year

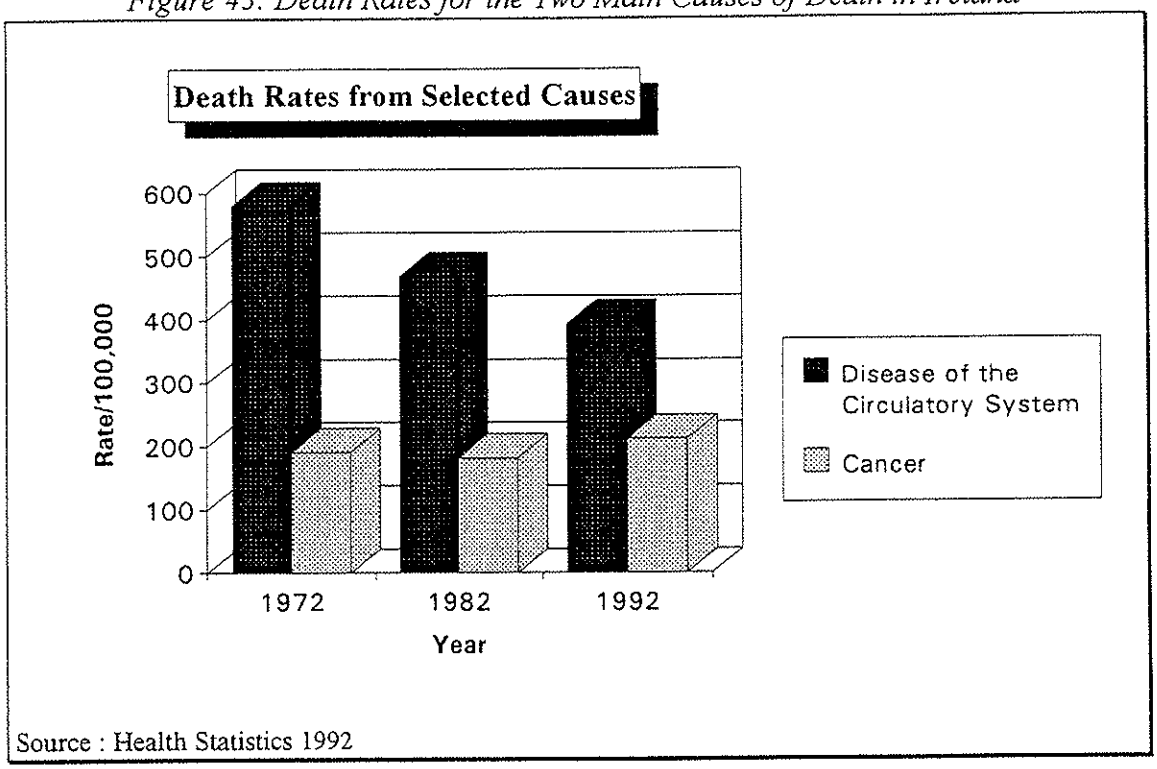
EUR		Diseases of the Circulatory System			Malignant Tumours		
		Total	Male	Female	Total	Male	Female
Ire	1991	**406**	**523**	**308**	**218**	**267**	**184**
Por	1993	388	472	326	170	229	128
D	1991	386	498	314	202	270	163
Gr	1991	359	409	315	159	219	111
UK	1992	349	456	268	219	278	183
DK	1992	341	443	263	230	272	204
Lux	1992	333	413	272	216	303	160
I	1990	303	374	250	204	285	145
Bel	1989	298	379	239	221	312	160
E	1991	285	335	242	177	255	119
NL	1992	280	370	214	213	295	160
F	1991	204	265	157	200	297	129

Source : WHO HFA 1993

Contributors to Mortality

Heart disease has been declining over the past 20 years in many countries worldwide but an increase in cancer rates has been observed.
Irish data show a decrease in the death rates from disease of the circulatory system but an overall increase in deaths from cancer for the period 1972 to 1992. (Figure 43)

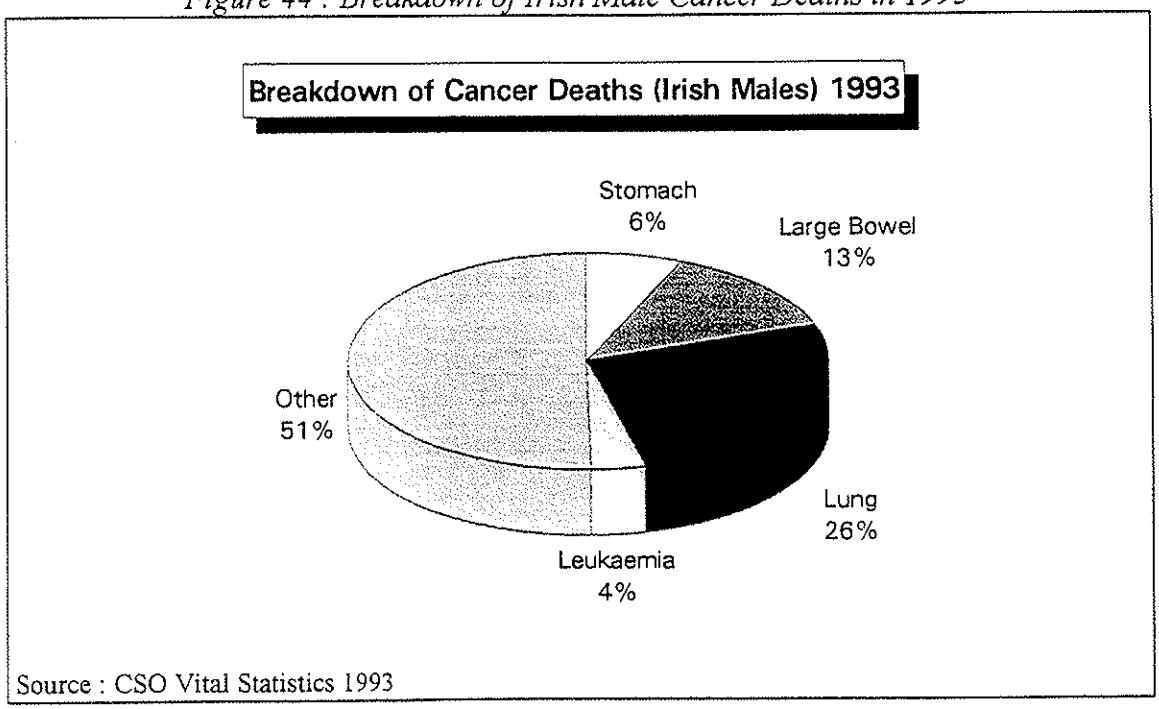
Figure 43: Death Rates for the Two Main Causes of Death in Ireland



Source : Health Statistics 1992

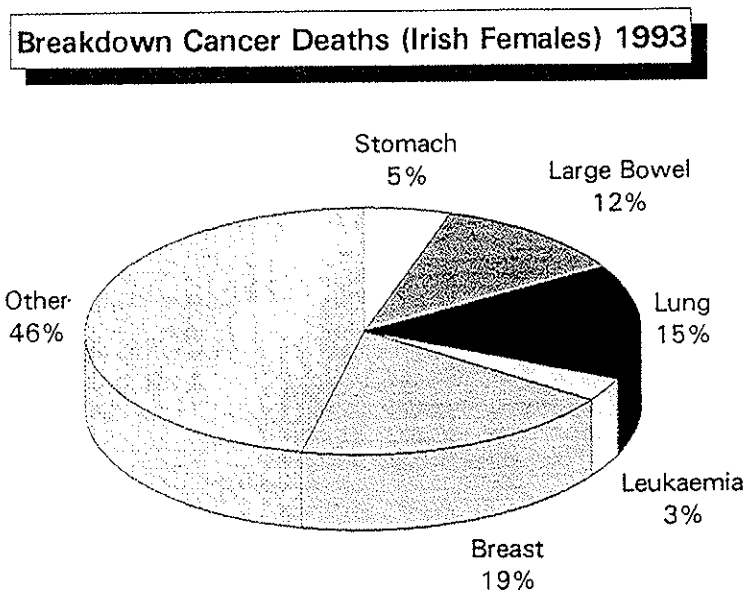
A gender breakdown of the mortality figures for cancer in Ireland show lung cancer to be one of the major killers in males.

Figure 44 : Breakdown of Irish Male Cancer Deaths in 1993



Source : CSO Vital Statistics 1993

Figure 45 : Breakdown of Irish Female Cancer Deaths in 1993



Source : CSO Vital Statistics 1993

Although not quite as large a percentage of women died from lung cancer as men, it is notably on the increase. Breast cancer was responsible for the majority of cancer related deaths in women and coincides with the large numbers of admissions and incidents of breast cancer found in the HIPE and Southern Tumour Registry data.

The implications of the preceding mortality and morbidity figures reinforce the importance of nutrition surveillance as a tool to monitor changes in diet disease relationships.

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List of Aknowledgements

1. British Standards, Manchester, England
2. Department of Biochemistry, UCG - Dr. Michael Power
3. Department of Health, Planning Unit - Hugh Magee
4. Department of Health Promotion, UCG - Dr. Ann Hope
5. Department of Medicine, UCG - Dr. Fiona Stevens
6. Dunn Clinical Nutrition Centre, Cambridge, England
7. Economic and Social Research Institute HIPE unit - Anne Clifton, System Analyst
8. Fobairt - Peter Coyle
9. Industrial Engineering, UCG - Dr. Enda Fallon
10. Irish Press - Carol Flynn
11. Magee Designers, Donegal - Sean Magee, Director
12. Marks and Spencers Public Relations, England
13. National Breast Cancer Research Institute, UCG - Declan Moher, Ross Warner
14. Next Clothing Ltd
15. Office of Population Censuses and Surveys, England
16. Richard Lewis Designs, Dublin
17. Southern Tumour Registry - Dr. Harry Comber
18. Teagasc, Dublin - Dr. Dermot Harrington
19. University of Loughborough - Professor Jones, Dr. Robin Hooper
20. Voluntary Health Insurance, Dublin
21. Wilson Hartnell Public Relations - Theresa Mooney
22. World Health Organisation, Nutrition Unit - James Akre