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Why Economics is good for your health. 2004 Royal Economic Society Public lecture

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Why Economics is good for your health. 2004 Royal Economic Society Public Lecture

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Abstract

In this paper, I examine the contribution that economics can make to our understanding of key issues in health and health care.

In the first part of the paper, I argue that economics can bring valuable insights into the world of over-eating and present recent economic theories that argue that the root cause of the increase in obesity lies in technological change. Technological change, in terms of the kind of work we do, the agricultural production revolution and the major cost reductions in food processing and distribution have all contributed to weight gain. This hypothesis is illustrated by data from the USA.

In the second part, I argue that understanding incentives is the key to understanding the behaviour of suppliers of health care, explaining for example, why health staff 'fiddle the figures' to meet government targets and why doctors will respond to financial payments.

JEL Classification: I1

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Introduction

Economists are often stereotyped as only being interested in money. In the health field, this stereotype comes in the form that all economists are concerned with is the cost of health care. But economic analysis is far broader than simply counting the costs of activities in hospitals or that of new drug developments. The idea that individuals make trade-offs, based on the benefits and the full prices of competing activities is central to understanding why we are getting fatter, why nurses fiddle the figures in A and E departments, and why hospitals want to merge together. On the research agenda are such topics as understanding whether restricting fast food outlets will curb the growth in obesity, whether bans on smoking in public places will stop people from starting to smoke, and whether the new market reforms in health care in the UK will deliver better health outcomes.

Central to economic analysis is the idea that individuals make trade-offs based on relative prices. Conceptually economists use a broad definition of price, called the opportunity cost of an activity. In the case of consumption this includes not only the monetary price of buying a product, but also the time and other costs associated with using it. So the price of consuming a restaurant meal will include the travel time to the restaurant as well as the bill for the meal. Closely linked to the notion of price is the idea of incentives: a change in the relative price of an activity represents a change in incentives to undertaken that activity. So often economists use the idea of prices and incentives interchangeably, and I'm going to do this here.

This focus on responses to full price helps us to understand the behaviour of individuals with respect to decisions about their health (consumption decisions) and the responses of suppliers of health care (production decisions). I'm going to illustrate this by examining at a small set of case studies, drawn from the health and health care field. I'll begin by looking at the consumption side, where I'm going to look at the economics of obesity and addiction. Then I'll move onto at the production side and look at the responses of suppliers of health care – doctors, nurses and hospitals – to changes in the incentives they face.

The Economics of Obesity

The facts

Obesity – being too heavy for your height – is fast becoming the number 1 public health issue in the Western World. Figure 1 gives a journalistic view of this. Table 1 shows the rise in obesity in both the UK and the US. The US leads the way in the world league tables of obesity: the percentage of adults who are obese (which is defined in terms of a ratio of weight to height) has doubled since the late 70s and tripled for children, but the UK is not far behind and figure 2 shows the growth in obesity in the last 10 years in the UK. Figure 3 gives an OECD perspective and indicates that the UK and the US – together with the two countries in the former Czechoslovakia – are at the top of the league table.

Obesity has a cost: in the US obesity is the second leading cause of death, accounting for around 300,000 deaths per years, compared to smoking at around 400,000. In the UK over 30,000 deaths a year are caused by obesity in England alone. A study by the National Audit Office in 2002 estimated the condition costs the NHS £500 million a year and the economy £2 billion through sickness and early deaths.

The rise on obesity has been blamed on a host of factors, including genetics, fast food outlets, cars, TV viewing, a lack of participation in sports, working women. With the exception of genetics, all of these factors exhibit upward trends. However, just because they increase at the same time as obesity has risen does not mean that they cause increases in obesity: some may well be the outcome of increased obesity rather than the determinants. Economists have focused on the determinants of this rise and have argued that technology may be fattening. This possibly surprising argument goes as follows.

The economic argument: technology is fattening

We begin with the fact that over the twentieth century, obesity has grown with a modest rise in calorie consumption, falling food prices and a substantial increase in both dieting and recreational exercise (Philipson and Posner 1999). This means any explanation has to take into account that people are not eating that much more and they are doing more recreational exercise. The first economic explanation is a long run once and argues that long run technological change has led to weight gain over the last century.

Technological change and long run weight gain

Weight is the outcome of consuming calories and expending calories. If calorie consumption is greater than that needed to maintain current weight, people will gain weight and vice versa. Philipson and Posner (1999) argue that technological change has altered the relative prices of consuming calories and spending calories. Technological change on the supply side, through agricultural innovation, has lowered the price of food, making the price of calorie consumption cheaper. At the same tie, technological innovation has changed the nature of work. In agricultural and early industrial societies, work is strenuous; in effect, workers are paid to exercise. In a post-industrial society, work entails relatively little exercise. Payment is mostly in terms of foregone leisure, because leisure based exercise must be substituted for exercise on the job. So the cost of expending calories has increased. Together this means weight has risen.

This technology explanation has different implications for prices than alternative explanations for the rise in weight. If obesity is due to a growth in the demand for food or a growth in the demand for fast food, a change in attitude towards obesity or reduced parental oversight of children, these would all increase the demand for food. This would mean that weight would rise, but as demand for food shifts outwards for a given supply, so would prices and food consumption would unambiguously rise, as shown in Figure 4a. Yet the long run trends indicate some periods in which there have been declining calorie intake, declining prices and yet growth in weight. This can be explained by a combination of sedentary technological that lowers the demand for food, while agricultural technology expands its supply. This is shown in Figure

4b. Note that the impact on quantity is ambiguous, but the price effect will be unambiguously negative.

The evidence (Lakdawalla and Philipson 1999) suggests that around 40 percent of the recent growth in weight in the US may be due to agricultural innovation that has lowered food prices, while 60 percent may be due to demand factors such as declining physical activity from technological changes in home and market production.

Technological change in food preparation

Culter et al (2003) also stress the role played by technological change. They argue that the Philipson and Posner argument may explain long run changes, but cannot explain the continued rise in US weight. Since the 1980s there here has been little technological change in jobs since the 1980s and most of the other changes in energy expenditure – sport, travel to work etc - occurred earlier. TV watching increased considerably in the 1970s, but has risen relatively little since. Similarly, travel to work patterns not changed that much in US since 1980s.

So explanations of recent weight gain must focus on reasons for increased calorie consumption. As noted above, conceptually, economists use a relatively broad definition of price, which includes not only the monetary price of purchasing a good, but also the time and other costs associated with using the product. Cutler and his co-authors argue that there have been large changes in the price of food consumption as a result of the technological change that have drastically reduced the time costs of food preparation. We eat more because improved technology – from the microwave oven to flavour protecting preservatives to packaging – has cut the time taken to prepare food.

Thus food is cheaper, not only in the hours on the job it takes to earn money to buy dinner (its direct price), but also in the minutes needed to make it. In 1965 non-working married women spent over 2 hours per day cooking and cleaning up from meals. In 1995 the same tasks take less than 1 hour. This fall in time price has led to an increase in the quantity and variety of food consumed. Culter and co-authors cite the case of the potato. Before World War II, Americans ate massive amounts of potatoes: largely baked, boiled or mashed. Chips (French fries) were rare, because the preparation time was high. French fries are now peeled, cut and cooked in factories, then shipped frozen, to be reheated in kitchen microwaves or a fast food fryer. The French fry is now the dominant form of potato in the US and between 1977 and 1995, Americans ate 30% more potatoes, most in the form of fattening French fries.

This theory has several implications. First, increased calorie consumption comes from consuming more meals rather than more at a meal, because of lower fixed costs of food preparation. Second, consumption of mass produced food has increased the most. Third, groups in the population that have had greatest ability to take advantage of the drop in price of food preparation have gained most weight.

These findings are broadly confirmed for the US. Increases in calories consumption are due to more snacks rather than more calories per meal. Around 28 percent of people reported eating two or more snacks per day in 1977-8, while in 1994-6 this number was 45 percent. Table 2 shows changes in calorie consumption in the US, the

rise in the number of meals consumed, and the dramatic increase in the calories from snacks. In contrast, the amount of calories eaten at each meal has risen much less, and in some cases (such as at dinner for women), has actually fallen. This increase in snacking means obesity gains can't be due solely to bigger portions in restaurants (because what is eaten is primarily dinner) or fattening meals at fast food restaurants (because this is usually eaten as a formal meal in the USA). The increase in snacks is largely concentrated in snacks at home, and to a lesser extent, bought in stores and restaurants.

In addition, food items with large amounts of commercial preparation have increased most in consumption: those with less commercial preparation have fallen. Groups who previously spent most time preparing food in the early 70s – primarily married women - have increased most in weight.

These economic analyses can also explain why there are differences across income groups in weight gain. In the US, the rich tend to be thin, the poor overweight. One in four adults below the poverty line is obese, compared to 1 in 6 in richer households. In post-industrial society, people must pay for, rather than be paid, to undertaken exercise. If work is sedentary, an increase in earned income will have a larger effect on weight than an increase in unearned income, because earned income also reduces physical activity. Exercise is also more expensive for those who have earned income, because they must give up time that could be spent in work. Therefore those with greater income from asset markets may be less obese than those who get income from employment markets. Further, in terms of food prices, calorifically speaking, the best bargains are packed with sugar, fat and refined grains. Processed foods are also more accessible: their long shelf life means they can be found in most stores, so the travel costs to access them are less. This is perhaps less a European problem - where the density of living and food outlets in urban areas is high - than a US one - where many people don't have close markets, but do have petrol stations and small convenience stores close by. Thus in the US, for poorer individuals the cost of use such stores and buying such foods is lower than the cost of searching out the healthy and more expensive alternative. Poor children – at least those in urban areas - also face higher costs of exercise: green spaces are further away; the streets are less safe.

Implications of these explanations

These economic analyses draw attention to the fact that some of the culprits blamed for the increase in obesity – the rise in restaurants and fast food outlets the greater amount of pre-prepared food in supermarkets – are not the causes of the increase in obesity, but are the correlates. Faster food is a natural response to the increased value of time induced by technological change: the output foregone by a meal produced at home has risen, so individuals will demand faster food, both at home and in the market.

The analysis also suggests that while genetics and food addiction may play a role, genetics cannot be the driving force. Genetics or addiction might explain cross sectional differences within a population. However, the rapid increase in weight gain is unlikely to be genetic. Rather, the rise is due to the interaction of genetics and changes in prices: the drop in the price of food has allowed individuals who might be

addicts or need less calories to eat more. In other words, the change in budget sets is the causal force, not the change in tastes.

Should fast food be taxed?

Economic analyses also cast doubt on the value of some of the policies advocated to combat obesity. If health is not everything in life, then interplay of preferences and technology may mean that people are better off being above their own ideal weight. People are likely to prefer higher paying sedentary jobs to more physically demanding ones with lower pay. In general, when technology makes something easier, quicker or cheaper, we consume more of it, and that's generally a plus. Think broadband, faster planes, heart surgery.

Several economists would argue that the issue is not the provision of greater information, as some of the health lobby argue, but changed incentives. Most people know that more calories in means weight gain, while fewer means weight loss. Labelling food products may help some people, but if the price differentials are large, or healthy products not available, this information may have limited impact.

Do incentives need changing? The standard rationale for government intervention to alter prices, through either taxes or subsidies, is market failure. One common form of market failure that may warrant taxes is that that private costs diverge from social costs. Individuals based their actions on private costs: if these actions impose a cost on other than they don't take into account, then social costs are higher than private ones, and a tax may be warranted to lower the total amount of the activity. This is the classic argument, for example, for cigarette taxes. Smoking by an individual imposes costs on others (the health consequences of 'passive smoking') that the individual does not take into account. A tax paid by the individual will reduce their consumption and so also reduce the amount of passive consumption and the costs imposed on others.

But the market failure arguments in favour of reducing obesity may be limited. The private benefits of (lack of) obesity far outweigh the social benefits. In a world in which being slim, even thin, is seen as beautiful, there are large private gains to being thin but few external benefits to others. However, one potential external benefit from obesity derives from the public financing of care. Taxing obesity would reduce the costs, borne by all of society in a tax-financed system, of treating the medical care that is associated with obesity. But there is a trade-off between health expenditure per period and the number of periods over which that health expenditure is incurred. If reductions in obesity cause longer life then the number of periods for which subsidies will be paid will increase. Economists have also pointed out that, paradoxically, the increase in taxes to combat smoking[1], which are believed to have been successful in the USA, may have contributed to the increase in obesity, because food and cigarettes are substitutes.

These arguments do not suggest that governments should tax fast food or impose controls on the number of fast food outlets. And note that taxing fast food would hit the poorest in (Western) societies hardest, as they are the biggest consumers of such

[1] Taxes on tobacco have risen by 164% between 1980 and 2001 (Chou et al 2002).

food. However, there may be one group of people for whom price based incentives are useful. If certain people have trouble controlling how much they eat, then technological changes that have lowered the costs of calorie consumption may exacerbate these problems. For these people, increasing prices may increase welfare. The policy implications therefore hinge on what proportion of the population have self-control problems. If lots of us fall in that category, then taxation of fattening foods, or subsidisation of healthy foods or regulation may be warranted. There may also be grounds for changing prices to change the choices children make, as children may be less able to make rational, well informed choices, than adults.

Cigarettes consumption (and other addictions)

Economic analysis has been used to understand, and make policy recommendations for, consumption of addictive substances, including tobacco. I focus here on analyses of tobacco, but the same analytical frameworks have been used to explain addiction to 'hard' drugs, such as heroin.

Prior to the early 1960s, tobacco consumption was not seen as a significant social issue. Following the publication of seminal British and American reports on smoking and health (Royal College of Physicians 1962, US Department of Health, Education and Welfare 1964, quoted in Chaloupka and Warner 2000) public policy has moved to curb tobacco consumption. Understanding people's responses to price – in terms of starting, continuing and quitting - has been central to the debate about the usefulness of using taxes of tobacco as a tool to discourage smoking. In addition to price, a variety of other factors, including income[2], promotional activities (adverting) and taste can affect the demand for cigarettes. These are important and receiving increasing attention from economists but I'm not going to focus on them here.

Modelling the demand for cigarettes (and other addictive goods)

Early economic analyses often ignored the addictive nature of the good and estimated demand as a function of current price, as if tobacco consumption was a standard good. But addiction means that short and long run responses to price may differ considerably and prices are likely to have very different effects on starting smoking, consumption as a smoker and quitting. To model addiction, economic analysis has recognised that the full measure of price must include past and future prices as well as current price.

Three broad approaches to modelling addiction in the economic literature can be distinguished. In the first, labelled imperfectly rational addiction models, it is assumed individuals have stable but inconsistent short and long run preferences. Schelling (1978, p290) describes a smoker trying to give up:

[2] In industrial nations, the relationship between tobacco consumption and income appears to have reversed. Studies in the US, for example, using data for before the 1980s concluded that cigarette smoking was a normal good, while more recent research has concluded that cigarette consumption has become an inferior good, with that the likelihood of smoking declines as income rises.

> "Everyone behaves like two people, one who wants clean lungs and a long life and another who adores tobacco. … The two are in a continual contest for control; the 'straight' one in command for most of the time, but the wayward one needing to get occasional control to spoil the other's best laid plans"

This inconsistency between current and future preferences arises when individuals discount the future very heavily. This means the future gains or costs are given little weight when considering today's consumption. While this idea has not yet been used to estimate the effect of price on cigarette smoking, it has been taken up by economists interested more generally in individuals' behaviour with respect to actions which from a distance seem worth doing (like losing weight) but as the moment for self-sacrifice approaches seem increasingly unappealing. Such an inconsistency in time discounting might explain, for example, why people try to lock themselves into the investment activity, for example by signing up for a course of 10 sessions with a personal trainer at the gym[3].

The second approach is the myopic addiction model. This model stresses the role of habit: what I smoke today depends on what I smoked yesterday[4]. But behaviour in this model is naïve, in that the individual recognises the dependence of current addictive consumption on past consumption, but ignores the impact of current (and past) choices on future consumption when making current choices. More recently, researchers have modelled addiction as 'rational'. A rational consumer recognises the future consequences of current smoking decisions and takes them into account when planning future consumption levels. Given the habit-forming nature of smoking, it is reasonable that a smoker will change their current consumption depending on what they expect future prices to be. This means that individuals incorporate the dependence between past, current and future consumption when making decisions about current consumption and that all past and all future prices, as well as current prices, will affect demand in a negative manner. The implications of this model are that the long-run effect of a permanent change in price will be bigger than the short run effect. An anticipated price change will have a bigger effect than a comparable unanticipated price change, and a permanent price change will have a larger effect than a temporary change.

Empirical analyses tend to support these predictions. Long run price responses to price are greater than short run ones, and are in the order of -0.5 i.e. a one percent increase in price will lead to a 0.5 percent decrease in consumption. Women tend to be less responsive to price changes than men, and men behave more myopically (Chaloupka and Warner 2000).

But while there has been considerable empirical support for the model of addiction as rational, there have also been objections. The rational addiction approach is one in which addicts are modelled as not regretting past decisions, and heavy smokers are heavy consumers because they want to be. Recent work has pursued the idea that individuals know that current consumption will affect future consumption, but have

[3] Laibson (forthcoming)

[4] These models are comparable to the demand for a consumer durable, where current demand depends on (depreciated) consumption in the past. In estimation of smoking, current consumption is modelled as depending not only on prices but also on the stock of past consumption. Addiction is indicated if consumption depends on the stock positively.

incorporated ideas such that the inexperienced user may not be fully aware of the potential harm associated with consuming an addictive substance. These models can help explain experimentation with smoking when young and the importance of peer influences, both of which are commonly observed facets of smoking (and indeed other addictive good consumption).

Also on the agenda is to determine how other aspect of the price of smoking – particularly the use of smoking bans - influence tobacco consumption. As noted above, conceptually economists use a relatively broad definition of price, which includes not only the monetary price of purchasing a good, but also the time and other costs associated with using the product. So, in the case of smoking, recent restrictions on smoking in public buildings in the UK and elsewhere imposes an additional cost on cigarette consumers – the cost of exiting from their offices to stand on the street, raising the time and discomfort associated with smoking. Because these bans affect all people, they provide a nice opportunity for economists to see how smoking behaviour (including starting, quitting) is affected by an increase in its time cost.

Health care reform

Health care reform has become a perpetual activity of the UK and other governments. One reason for this is the large (and growing) amount of money spent on health and the importance of tax finance within this. Figure 5 shows the proportion of GDP spent on health care in various OECD countries is large. Figure 6 shows that a large proportion of this comes from the public purse. In seeking to get maximum value from this expenditure, we need to understand how the suppliers of health care behave. Can we use economic analysis to understand and predict the behaviour of suppliers in health care markets?

The arguments against use of economic analysis

Arguments that might - and indeed have been - made against the use of economic analysis include that medicine is a 'caring profession'; that healthcare is often funded by the state so that doctors and hospitals operate in the public sector and therefore have 'public sector' motivation, or that even where there are few public hospitals, an important role played by not-for-profits. So, for example, a recent federal court judgement on a merger case in the USA concluded, "The board of University Hospital is quite simply above collusion" (quoted in Gaynor and Vogt 2000).

It is certainly true that the sector is one to which individuals who care about individual's outcomes are attracted. It is also the case that the state plays a large role in the provision as well as funding of health care, as Figure 6 shows. It is also true that the organisation of suppliers is such that not-for-profits play a large role. Even in the US in 1994 only 12 percent of general hospitals were for-profits. In contrast, 60 percent were organised as not-for-profits with the remaining 28 percent being operated by governments (Sloan 2000).

But it is also an incorrect and unhelpful view to argue that financial and other incentives are not important. When we look at the behaviour of doctors or hospitals we can observe that they respond to financial and other incentives, and further that

they respond in ways that can be predicted by economic analysis. This has implications for the design of health care institutions, payments systems, the use by government of financial incentives and the regulation of markets in this sector.

How might healthcare suppliers respond to financial (and other) incentives?

If health care suppliers do respond to incentives, we cannot assume that their responses will always be as the body that sets the incentives (generally the government) wishes. The economic literature on incentives, stresses that individuals will respond in ways that maximise their own net benefits. This response may or may not maximise the net benefit to society.

What a financial or other incentive will do is to increase the reward from undertaking the task that the government has decided to reward. Whether this increased activity on the part of the health care supplier will lead to the results the government (on behalf of society) desires depends on, amongst other things:

- how precisely the government can specify the task it is increasing the reward for
- what other tasks the supplier undertakes (that are now less rewarded)
- on the strength of the incentive.

In many cases, it may not be possible to define the task to be undertaken very precisely. This is particularly likely to be the case in the public sector, and in health care too, where precise measures of output are difficult to define. So the government may have to rely on proxies for increased activity on the task. This means that suppliers who are given stronger incentives will focus on increasing output of these proxies. This may lead to better health care, but it may also results in suppliers gaming the system: altering their activity to increase the measured output, but not real output.

Increasing the incentive to do one task alters the relative prices facing the health care supplier: the other tasks that they may do are now relatively less rewarded. In response to this relative price change, as suppliers only have limited time, they will switch their effort patterns towards the better rewarded task and away from the less rewarded tasks. This switching of effort will be more likely the less well these other tasks can be measured and the bigger is the reward for the incentivised task relative to the other tasks the supplier carries out.

Below, I provide illustrations of how health care suppliers – both individuals and organisations - have responded to incentives. Given the relevance of the subject for the UK, which is in the middle of yet another health care reform, this one entailing the re-introduction of the ‘internal market’ in health care (more on which later), I will focus on three areas that are particularly pertinent to the UK. These are evidence on how family doctors in the UK (and elsewhere) have responded to changes in financial incentives, evidence on the response of providers of health care to performance monitoring and evidence on how UK hospitals responded to the introduction of competition in the 1990s. I’m going to argue that in most cases health care suppliers have responded to incentives – and have done so rapidly - but that these responses have not always led to the outcomes desired by the government.

Family doctors and incentives

Evidence that doctors respond to financial incentives comes from variation in the way family doctors are paid. Family doctors (GPs) are typically paid in one of three ways: salary, capitation and fee-for-service. Salaried doctors are paid a salary that is not related to the exact hours they work. Under capitation, the GP receives a payment for every patient for whom they provide care. Under fee for service (FFS), income is directly linked to the volume of service provided. These different types of payment should cause different work patterns by GPs.

Evidence generally supports this. In the UK, it has been found that salaried payments lead GPs to order higher levels of tests, make more referrals and have lower patient throughput compared to FFS and capitation payments. This fits with the fact that salaried doctors cannot increase income, but can reduce their workload. But it could also be argued that these differences reflect different types of doctors, rather than responses to different forms of payments. Doctors who prefer more to less leisure will choose to work in salaried environments, while those who are value income more and leisure less will work in a setting in which their remuneration is linked to the hours they work.

So the best evidence comes from cases where doctors face a change in their payment system. In Denmark, a move from capitation to FFS saw GPs increase their diagnostic and curative services and decrease their prescribing and referrals. This fits with the GPs doing more work themselves, rather than referring on to specialists or prescribing medication (Scott 2000). In Quebec, in the late 1970s, in a bid to decrease medical expenditure, the government reduced the reimbursement rate paid to doctors for a set of activities once their total expenditure on these activities had hit a target. These targets were set for three month periods, which meant that once the doctors has hit their ceiling the financial payment they earned for each activity above this level was reduced. Doctors responded to these incentives by sharply decreasing the activity they undertook in the third month of each accounting period, some even taking holidays in each of these months (Rochaix 1993).

Some of the most robust evidence in the UK on responses of GPs to financial incentives comes from the internal market of the 1990s. In 1991, the Thatcher administration in the UK undertook introduced the internal market reforms. These reforms, which have been described as the ‘boldest of market based reforms’ in public health care, were intended to improve health care by linking the income of providers of health care to their performance by allowing competition between hospitals. Money was to follow the patient rather than being set on the basis of historic activity. The reforms created, out of the public sector, separate sellers and buyers of hospital-based health care (Propper 1995). The sellers were to compete with each other (and with private sector suppliers of hospital care) to win contracts for care from the buyers. There were two types of buyers: buyers responsible for all the population in their area and a smaller group of buyers, who were family doctors, who were given more limited budgets to buy care for their practice populations. This group were called General Practice Fundholders (GPFHs). Crucially, GPFHs were able to keep any surplus from their budget at the level of the practice. The GP benefits from this when they come to sell the practice on leaving the profession.

The precise operation of the GPFH scheme permits examination of GPFHs' responses to the changed set of incentives embodied in the scheme. I examine here two issues: whether GPFHs exploited features of the system that allowed them to get bigger budgets for their practices and whether GPs were able to use financial incentives to get better care from hospitals for their patients. The latter also provides a test of whether hospitals responded to the cash incentives provided by GPs.

Impact on referrals

When GPs wished to become fundholders, they announced their intention and then waited a year whilst their referrals to hospitals were counted in order to work out their budget. So the obvious question to ask was whether GPFHs increased their referrals in the year before becoming a fundholder in order to increase the size of their budget once they became a fundholder. In a study of GPs located in one area of the UK, Propper et al (2001) found that GPFHs did exactly that: they increased their referrals to hospitals relative to their previous referral patterns (also controlling for changes that were happening to non-fundholders) by about 10 percent. Once they became fundholders, their referral patterns dropped by about 10% and thereafter appeared to revert to their long run normal levels. We can't tell precisely whether this was to benefit their patients or the GPFHs themselves, but can see that the GPFHs did respond to financial incentives. And in the process, because the total pot for buying hospital care was finite, they also took monies away from practices that weren't fundholding.

Shorter waiting times?

Waiting times have been a major concern in the UK. One of the ways in which fundholding might have improved care is if GPFHs were able to use their purchasing power to secure shorter waiting times. A study of over 100,00 admissions by Croxson et al (2002) found that GPFHs secured shorter waiting times for their patients compared to all other doctors (including themselves before they entered the scheme) (Propper et al 2002). But our findings are quite nuanced. We found that where the GPFHs paid directly for their patients' care, waiting times fell by about 8 percent. But where they were only able to choose – but not pay for – their patient's care, fundholder were no more able to reduce waiting times for their patients than non-fundholders. What this suggests is that GPFHs did respond to the incentives of the scheme by focusing on an area which patients valued, but their ability to alter the behaviour of hospitals is limited. When they pay directly for care, hospitals will respond. Without those cash incentives, hospitals will not respond to the wishes of referring doctors.

The responses of health care suppliers to performance monitoring

In the public sector, governments interested in increasing output often use performance monitoring to try and increase productivity in the sector. Performance monitoring takes many forms, but at its core is the idea of measuring output in some way and setting targets based on these measures. Sometimes the targets are tied to financial rewards, but mainly they are linked to less direct, but none the less important rewards (Propper and Wilson 2003).

The idea is that such targets will make people work harder. However, because the output of the sector is often hard to measure, the measures are imperfect. This gives the people being monitored incentives to alter their activities - not only to work harder which is what the government wants - but also to manipulate the targets. There is no reason why people in the health service should be anymore immune to this than anyone else.

Two recent TV interviews illustrate these points. The first is a conversation between the manager of an Accident and Emergency department of a London hospital (JC) and the interviewer (Dennis) about the meeting of waiting time targets:

> JC: We met the target in the week that it was measured, and as expected our performance against that target has fallen away since the week of monitoring.
> Dennis: so the whole thing is a bit artificial?
> JC: The whole thing is a bit artificial if you look at it one way. Because it was... yes clearly it was artificial, and we put in a lot of additional resources. I think one thing that has been very helpful, is for that week we've actually measured what additional resources we put in. (Newsnight (BBC), 'Health Delivery', May 2004).

Or there's James Strachan of the Audit Commission:

> "The system is being distorted to meet those targets in the sense that money that was intended for longer term purposes, like buying medical equipment, buying computers simply maintaining the buildings, that's being diverted in order to be able to meet waiting time targets". (Panorama (BBC), 'Fiddling the Figures', June 2004).

The impact of competition on health care outcomes

Many market based health care reforms seek to increase the amount of competition between providers, on the grounds that policy makers believe this will be beneficial. The current Labour administration in the UK, for example, has re-introduced the idea that users of health care should have choice of hospitals, which is essentially introduces competition between hospitals for patients.

The argument that competition will improve outcomes in health care draws heavily on the general argument that competition is beneficial for the rest of the economy. Yet, in fact, predictions from theoretical models of competition in health care markets tend to be ambiguous: competition may decrease price, but not quality, or it may increase both price and quality, or price may decrease and quality rise. The effect on price and quality will depend on the sensitivity of demand to price relative to the sensitivity of quality, and on the precision of price and quality measures.

So the outcome of competition between providers will depend on the precise nature of the market into which competition is introduced and on the amount and quality of information available to buyers. For example, competition is likely to have different outcomes in markets where competition is primarily on price from markets where price is fixed and sellers compete on quality.

Empirical evidence

Empirically, there are markets where greater competition has been associated with higher quality *and* higher prices. The classic example of this is the 'medical arms race' in the US prior to the 1990s, where due to the high levels of insurance of consumers, hospitals did not compete on price to attract patients, but rather on quality and facilities in order to attract physicians. Analysts of the US market have argued that changes in the US market post 1990 have resulted in competition leading to both lower prices and higher quality. This result is, however, subject to considerable debate and appears to depend considerably on whether buyers and sellers negotiate on both price and quality or only on the latter.

The 1990s UK internal market also provides evidence on the relationship between competition and prices and costs on one hand, and quality on another. In the internal market sellers and buyers negotiated on both price and quality. However, while price information was relatively freely available (so that a buyer could compare across hospitals) quality information was very limited in quantity (hospital performance tables were not published, for example, until 1999 – two years after the end of the internal market) and was not reliable (basically because it was hardly used). Given this institutional set-up, it might be expected that competition would be associated with lower prices but also lower quality. Propper et al (2004) tested this hypothesis using data from hospitals in the internal market and found that hospitals located in more competitive markets had poorer quality for heart attack treatment.

The implications

All these examples indicate that health care suppliers do respond to incentives – financial and otherwise. But as doctors, nurses and administrators will respond in ways that maximise their own benefits, incentive design is crucial. Given that health care suppliers have many tasks to undertake and that many of these may be difficult to measure, there is a real danger that strong incentives to do one activity will lead to health care suppliers focusing on meeting the targets for this activity at the expenses of less easily measured or observed, but not necessarily less important tasks. In such cases, economic analysis suggests that incentives should not be too 'high powered' – no single activity should be rewarded too highly.

Conclusion

Economists, in the field of health care, are often stereotyped as being interested only in the costs of certain activities. But economic analysis is far broader than simply counting the costs of activities in hospitals or that of new drug development. The idea that individuals make trade-offs, based on the benefits and the full prices of competing activities is central to understanding why we are getting fatter, why nurses fiddle the figures in A and E departments, and why hospitals may collude. On the future research agenda are such topics as understanding whether restricting fast food outlets will curb the growth in obesity, whether bans on smoking in public places will stop people starting smoking, and whether the new market reforms in health care in the UK will deliver better health outcomes.

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Figure 1. The Rise in obesity

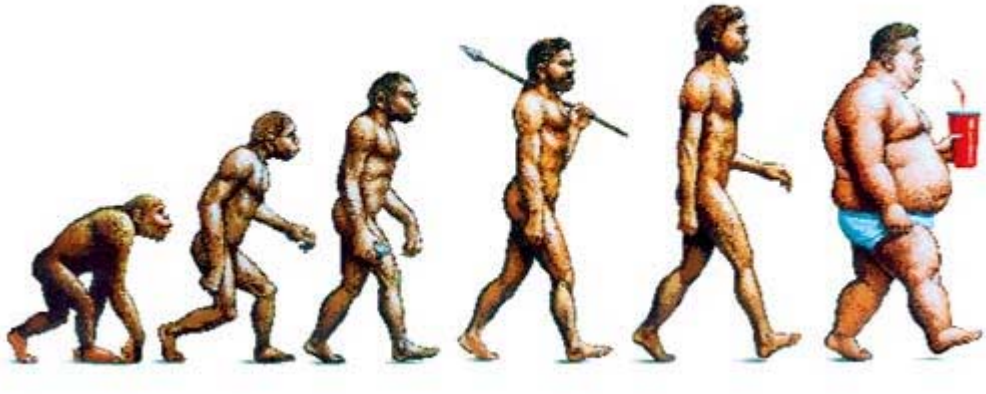
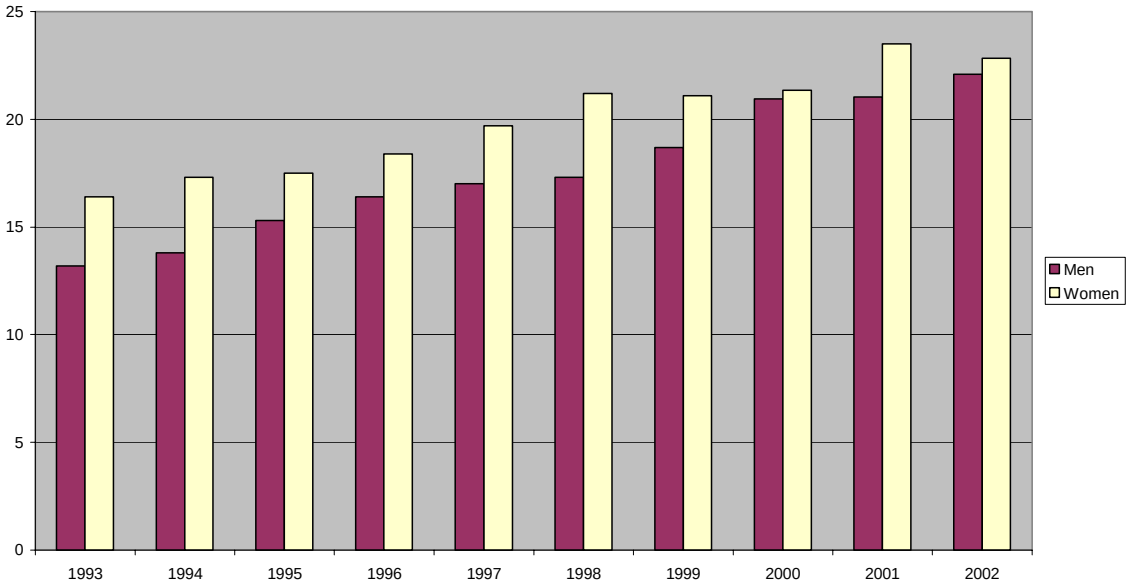
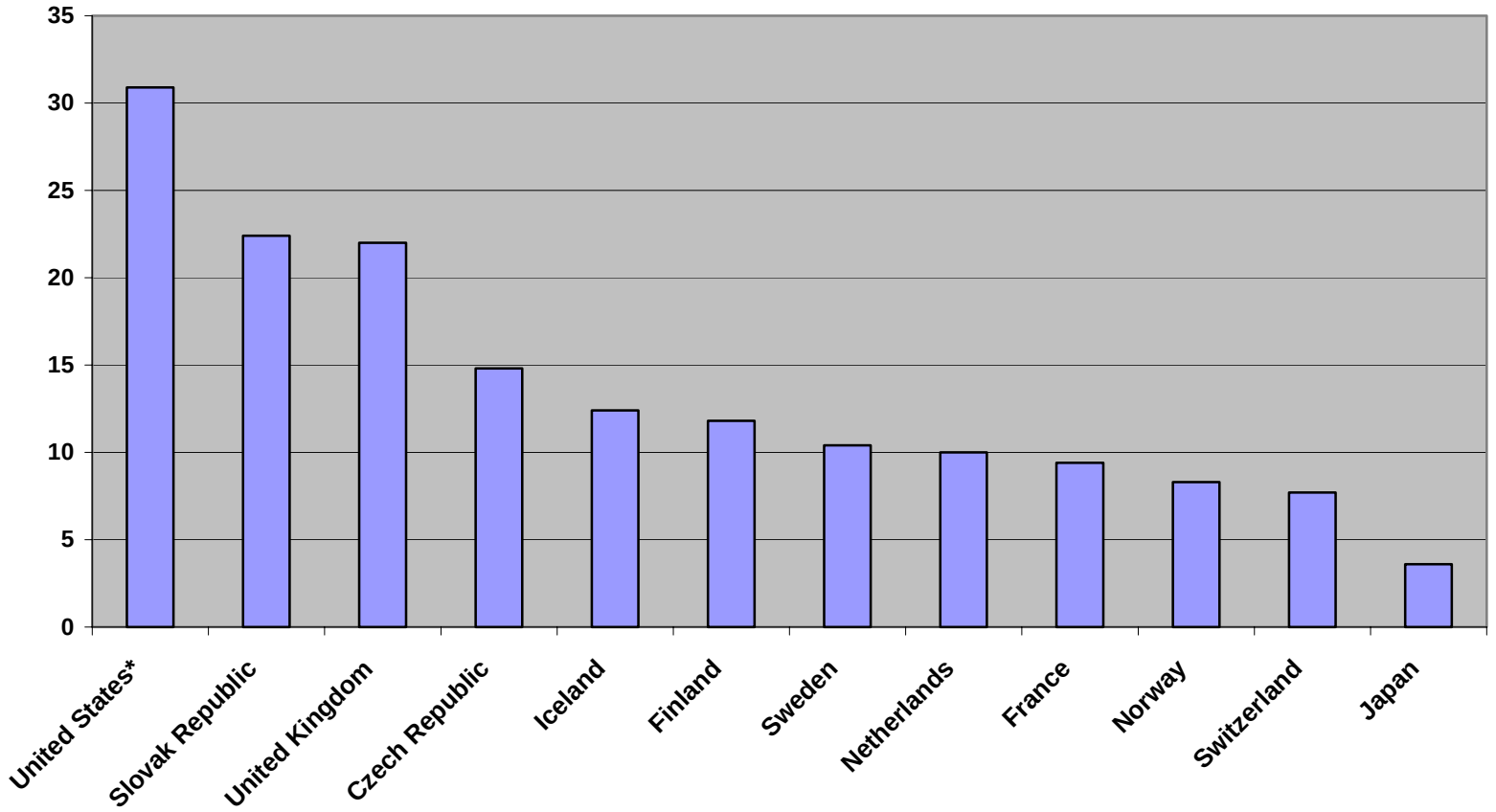


Figure 2. Percentage of adults obese in the UK 1993-2002



Source: UK Department of Health

Figure 3. Percentage of Adults Obese, select OECD countries



Source: OECD Health Data, 2004

Figure 4a. Price and quantity after an increase in the demand for food

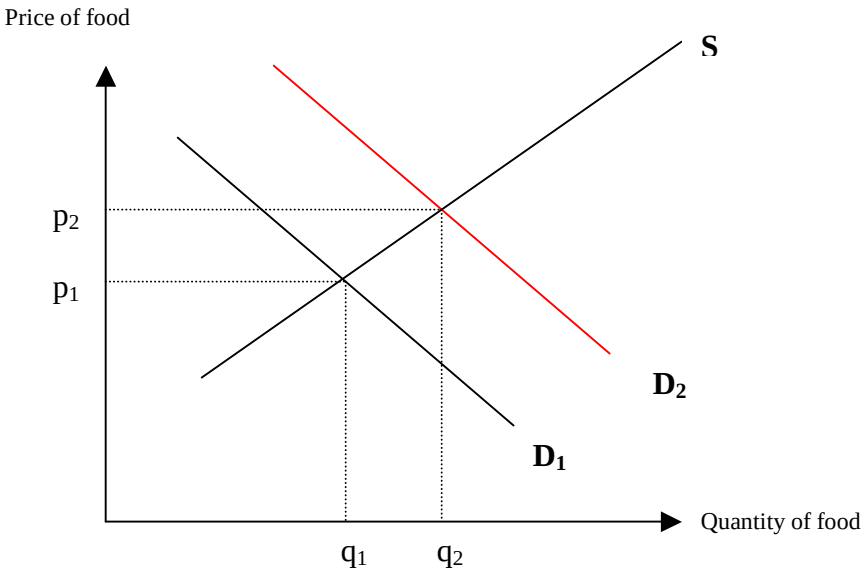


Figure 4b. Price and Quantity of food after a fall in demand and increase in supply

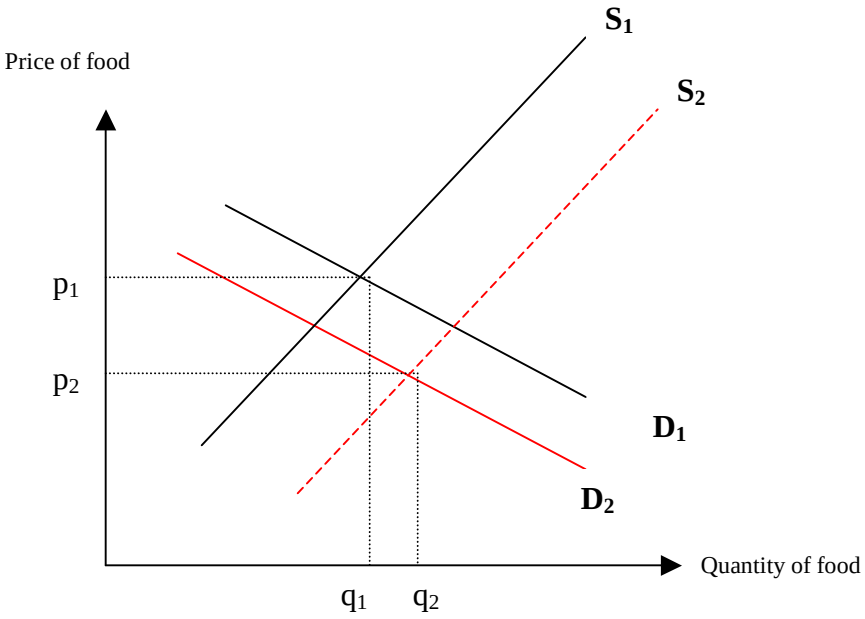
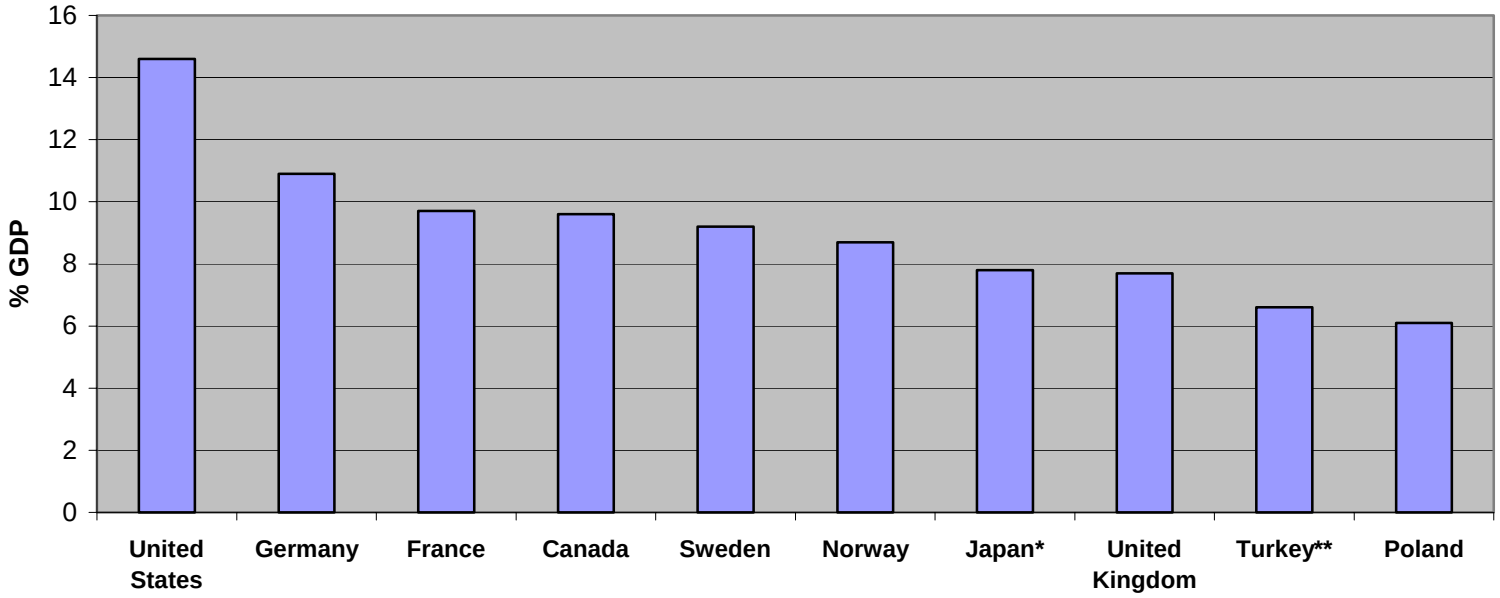
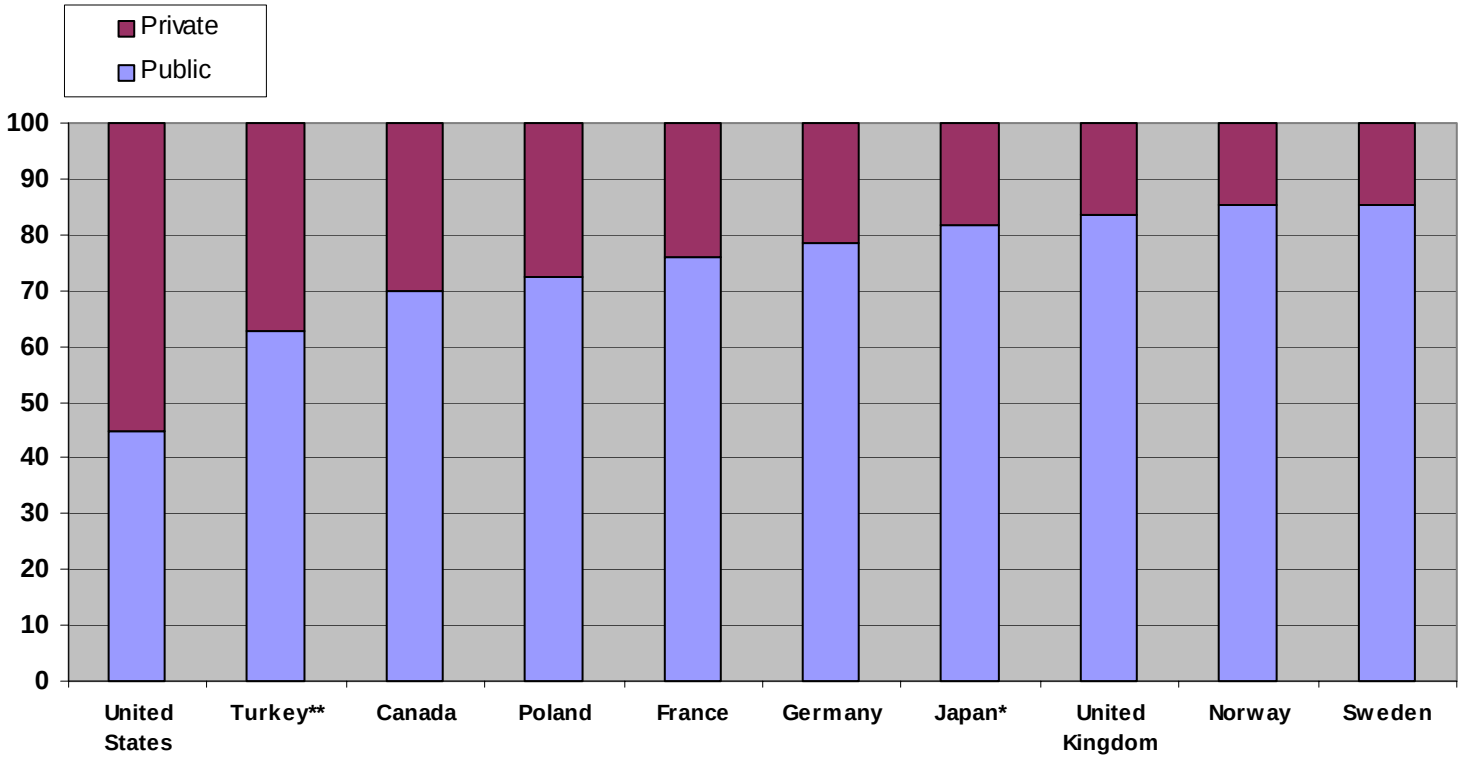


Figure 5. Expenditure on Health Care in the OECD as proportion of GDP 2002



Source: OECD Health Data 2004

Figure 6. Percentage of health care expenditure from public purse, OECD 2002



Source: OECD Health Data 2004

Table 1. Obesity Trends: UK and USA

% Obese, UK			
	1946	1993	2000
Men	12.0	13.2	21.0
Women	11.0	16.4	21.4

Source: National Survey of Health and Department of Health

% Obese, US			
	1960	1993	2000
Men	10.7	23.3	30.9
Women	15.8	25.9	34.0

Source: National Health Examination Survey and National Health and Nutrition Examination Survey

Table 2. Changes in US calorie consumption 1997-8-1994-6

		Calories		
	Meal	1977-78	1994-96	Change
Male	TOTAL	2080	2347	267
	Breakfast	384	420	36
	Lunch	517	567	50
	Dinner	918	859	-59
	Snacks	261	501	240
	Calories Per Meal	573	566	-7
	Meals Per Day	3.92	4.53	0.61
Female	TOTAL	1515	1658	143
	Breakfast	286	312	26
	Lunch	368	398	30
	Dinner	676	602	-74
	Snacks	186	346	160
	Calories Per Meal	422	408	-14
	Meals Per Day	3.86	4.44	0.58

Source: Culter et al (2003)