

Would lowering the price of healthy food increase demand/ consumption?

A prospective qualitative and quantitative study to gain insight into consumer interest in the case of healthy food, and the recent links to the increase in Overweight and Obesity to poor diet.

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Preface

This thesis would not have been possible had it not been for the supportive guidance, critique, and stringent expectations of my supervisor Professor Annette Alstadsæter . Thank you so much for the constructive feedback, comments, and patients during my thesis writing period

Additionally I would also like to thank the academic staff at the department of Health management, Policy, and Economics for either your direct feedback or to those that have made some form of contribution to this final product.

A special thanks to all participants in my questionnaire. The process of eliciting responses to a questionnaire is not always a simple process if there is not much incentive provided for the completion of a survey. I do thank those who provided the time and effort on this study, in which their responses did help to give further insight into this medical challenge.

A special thanks to my family Tina Sanders and Noah Sanders for all of your love and support first of all and secondly for your understanding during times in which the workload became a bit intense.

Abstract

Background: Overweight and Obesity related illnesses place a great burden on society. Health care costs in terms of diseases linked to overweight and obesity continue to rise steadily.

What we understand is that overweight and obesity is preventable and reversible. Foods we purchase and consume have a large impact on whether we become overweight or much worse obese. Looking at food purchasing patterns we assumed that most people purchase their food either because of taste, price, availability/ convenience, or family customs/ habits. We understand there is a tough market in which foods high in energy density such as processed foods, French fries, breaded chicken, donuts, cookies, and chips are usually the most inexpensive because of their cheaper ingredients they contain such as high amounts of salt, sugar, and fat. Low energy density but high in nutrient value foods such as fruits, rice, fish, vegetables, wholegrain breads, cereals, and pasta's tend to be priced much higher. Consumers are faced with then either satisfying hunger and risking health, or satisfying health and risking hunger. Shouldn't consumers also have a choice of good health through affordable healthy food? Let's examine whether lowering the cost of healthy food increases demand/ consumption.

Methods: My research methodology was conducted using both Qualitative and Quantitative methods. In search of the answers for my research question I put together a questionnaire. This Questionnaire based survey was to be made available online. I chose this method since it was more adaptable in order to meet the still present demand for information to be available and present through I.T (Information technology) in some form. Conducting the survey in this manner would allow me to send the link in a short moment or at some point in the future if the respondent did not wish to participate right at the moment when participation was offered. This method was also used since personal questions such as income, living situation, age, and even education were asked. Almost 97% of questions were close ended in which the remaining 3% were open ended. A potential bias of me being present by doing this questionnaire as an interview and then collecting the data could have put pressure on respondents to answer in a form that satisfied the interviewer, so again this is another reason why I chose against asking the questions from the survey in an interview setting. The negative aspect of this is that I would not be present to explain the question in person had there been a misunderstanding of any question or response option, so the questionnaire was solely left to

the participants interpretation. The inclusion time frame for the participants was from February 9th 2012 and would run until April 1st 2012.

Results: The survey was sent to 196 potential participants in whom again 76 completed. The response rate therefore was 38.7% (76/ 196). Statistical analysis of data was conducted using SPSS statistical package for the social sciences. Questionnaire responses were compiled also by the online survey in terms of frequencies and percentages. Further analysis was done on price related questions that have a connection to the research question: Does lowering the price of healthy food increase demand? In this process, data was dichotomized into more precise groups of either being in favor of the lowering the price of healthy food or not. This was done to make the results more explicit.

It was shown that in general participants in the survey were willing to buy the healthy alternative if it was priced the same or less than the unhealthy alternative (Question 19 from survey). We have to know that this response is what participants say and what they would actually practice could differ. One observation that was made after examining a bit further was when we gave participants an actual choice in the survey like choosing between a healthy option such as granola bar, smoothie, chicken wrap vs the unhealthy alternative soda, chocolate bar, or burger we didn't see the same amount in favor of the healthy alternative. According to those who stated they would be according to question 19, 89.47% were in favor, 8% neutral, and 3% not in favor of the healthy alternative. Then again given our scenarios it could be argued that participants lost favoritism to the healthy item possibly due to not being given a good choice. It is possible that they still would have chosen another healthy alternative but just not our options of chicken salad, smoothie, fruit juice, or granola bar.

Conclusion: One strategy such as lowering the price of healthy food is not enough to see major effects eliciting consumers to demand more. Strategies need to come from all angles that support lowering the price of healthy food. There needs to be awareness and education campaigns that run concurrent encouraging, informing, and reminding people of why it important to eat and live in a healthy manner. We can look to the questionnaire which gathered the data on more information needed. According to our survey 69.7 % who participated said they would buy more healthy items if they were better informed on what is healthy or not. In general as society we still lack in depth knowledge

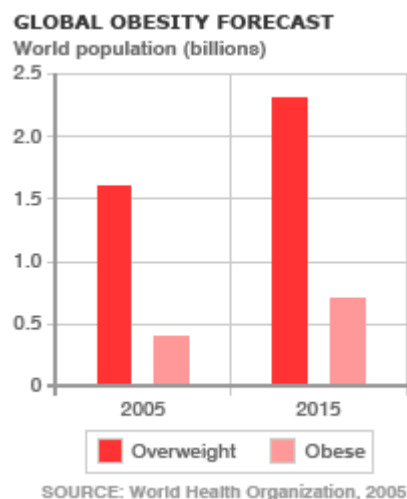
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1. Introduction

Globally, the burden of obesity and overweight is increasing at an alarming rate. According to figures reported on Obesity and Overweight in 2005, 23.2 % of the world's adult population were overweight and 9.8% of the world's adult population were obese. (Kelly et al. 2008).

Looking into to the future the *World Health Organization predicts there will be 2.3 billion overweight adults in the world by 2015 and more than 700 million of them will be obese.*



Obesity and Overweight are becoming more and more a huge public health issue. According to OECD (organization for Economic Co-operation and Development) reports Obesity is becoming public health enemy number one in most OECD member countries. Obesity and Overweight are expensive to treat to say the least. This can be seen when we look at costly treatment for chronic diseases such as cardiovascular, cancer, and diabetes that Obesity and Overweight are linked to. Using the United States as an example, obesity alone will cost the states 344 billion in medical related expenses by 2018(USA Today)

Throughout an obese person's life it is estimated that health care expenditures are at least 25% higher for them, when compared to someone of normal weight. The expenditure continues to rise rapidly as a person gains more weight logically. (Obesity and the Economics of Prevention)

This information must be looked at critically. OECD member countries do however have outliers when it comes to extreme figures in relation to obesity such as the United States, United Kingdom, Spain, and Austria.

Looking more closely here at home in Norway we do not find the drastic statistical reports when it comes to obesity and overweight as in other nations we just mentioned such as the United States and United Kingdom. We do see increases that need to be observed carefully. According to Folkehelseinstituttet Norway, "Overweight and obesity have been of increasing concern in Norway during the last 20-30 years. Although the increase in overweight and obesity among children and adolescents seems to be leveling off, and the increase among adults is weaker than before, overweight and obesity is a major challenge for future public health". (Folk. Inst. Norway)

According to the OECD, "Health status here in Norway is reported to be generally good, with higher life expectancy and lower morbidity and mortality. Though increasing prevalence of overweight, obesity and diabetes is a negative trend here in Norway". Here again we see recognition that Obesity and Overweight is an issue of concern in Norway and need to be addressed before this becomes an extreme issue as with the case of the United States where more than one-third of U.S. adults (35.7%) are obese and approximately 17% (or 12.5 million) of children and adolescents aged 2—19 years are obese. (CDC Center for Disease Control, United States)

This increase in overweight and obesity can be linked to poor diet and lifestyle choices generally, but it is also known that genes from parents could pass on this trait as well. We must understand that the issue is greater than just the causes mentioned before. Today we live a different lifestyle than the ones of our parents some decades ago. We are not as active a society as we once were. In the last 10 years we have had this boom in Information technology where all we need to know awaits us at a desk and a computer at our house and

not a walk to and from our nearest library, in which this walk to the library would do well for our health.

We often employ the same methods when we engage with our peers via chat or messenger applications instead of a more active method of physically meeting somewhere by foot to some degree as our parents would have used years ago. Today demands of the job such as longer working schedules and increased demands by our employer, point to less time that could be allocated to promoting healthy wellbeing. This inactivity has been mentioned as a culprit to obesity. We as a society simply are not as active.

We can also mention that this worldwide epidemic is linked to the easy availability and accessibility of food. One such method that has made foods more accessible and readily available is foods coming in the form of processed foods. Processed Foods are foods that have been canned, frozen, boxed or bagged. Processed foods are also foods that have been altered from its natural state. Processed foods have become more popular because they are easy to consume. These foods are ready made to eat, thus saving those with busy schedules a valuable commodity, time. But, while we save time by eating processed foods we could be damaging our health. These foods are made up of the most harmful ingredients such as trans- fats, saturated –fats, sodium, and sugar. Many of the ingredients in processed foods such as artificial colorants, preservatives, and nitrites have also been linked to the skyrocketing amount of obesity and cancer among the population today. (WHO). We have to ask ourselves is this fast paced lifestyle everyday really worth losing the quality of our overall health.

Another aspect of food becoming more available is the price mechanism of cheap or inexpensive unhealthy or junk food in our society. As we are seeing an economic recession in many parts of the world this is becoming a concern because citizens with a lower socio economic status could be sacrificing good health by purchasing foods that contain cheaper ingredients such as sugar, salt, and fats. These foods are flooding the market daily.

Lack of education from a societal standpoint has also become a worry to policy makers. There is a sense that many do not have the proper health education to make proper evidence informed decisions that are to their health benefit. We can argue that if we were making the proper educated decisions then we wouldn't need to have this conversation and Obesity and

Overweight may not be such a huge threat to society as it has become.

Many discussions have occurred from small communities all the way to national agencies such as Folkehelse institutte and Helsedirektoratet here in Norway on this matter. The reason for such interest around Overweight and Obesity is because it is preventable and reversible if strategic interventions are made!

It clearly is just a matter of putting in effort and allocating the proper resources to tackle this issue. Preventable and reversible, means that it is in our hands to decide our fate on this issue. Reducing the prevalence of obesity and overweight can be done from as small as the individual, to as large as national government scene. So let's see what can be done.

1.1. Research background and motivation

I have decided on this research topic because it is a evermore frequent observation in my eyes that more and more of our youth make food purchases detrimental to their health. These choices are linked to them becoming overweight and more seriously obese. I believe that the food choices they make are because of taste, habits that they pick up from family, but more so lately the low cost of unhealthy food due to its cheap ingredients it contains. Reasons for engaging in this study is a passion that I have for not only myself but other individuals to understand the benefits of a healthy lifestyle. The Kiwi report was part of this motivation, because they too used a chain wide campaign to lower the price of healthy food options and then examine the effects.

1.2. Outline

It can be seen that foods that are highest in fats, salts, and sugars are those that are the cheapest and continue to have had a steady price decline through recent years. It is especially a concern here in Norway since the health care system is tax payer financed , which it will be discussed why it is important to make early interventions in this type of system. In this research the goal is to examine a strategy that has similarly done by Kiwi Norge AS where

they wanted to see: Would or Does lowering the price of healthy food increase demand? The previous points will be covered in Chapter 2. This study would use the results to make implications to policy makers. Would people will be willing to buy more healthy food if it is made more affordable and less costly? This is what I will look forward to examining in Chapter 3 of the research question, data and results sections. Chapter 4 will cover the Discussion around this thesis. In chapter 5 we will look to the conclusion of this research and looking back.

1.3. Previous research/ literature review:

To find previous research on lowering the price of healthy food, I conducted a literature search collecting information from November 2011. Databases such as Pub med, google and google scholar, as well as previous research at the University of Oslo digital repository. Keywords such as price of healthy food, consumption of healthy food, price mechanisms, price elasticity, food prices, and impact of food prices on consumption were used.

Most of the relevant research and analysis in the field of the effect of price on demand has centered around price elasticity of demand. Price elasticity is a measure which shows the responsiveness of the quantity demanded of a good or service to a change in its price. More precisely it gives the percentage change in quantity demanded in a response to a 1% change in its price weather lower or higher. Frequently mean price elasticity is also measured and compared. An example of this can be seen in a recent study: Impact of food prices on consumption; a systematic review of research on the price elasticity of demand. The study's conclusion was "that Economic shocks such as falling income in a recession or dramatic increases in energy or food prices can lead to changes in purchasing behavior that are not necessarily predicted by elasticity estimates calculated with data collected under normal market conditions. It is important to understand the effects of such economic circumstances on diet quality, particularly in low income groups. The fear is that increasing food prices or falling incomes in a recession create pressure to purchase the foods lowest in cost, which makes processed, calorie-dense foods more attractive. Given the relative consensus in the economic community about the magnitude of food price elasticity's and the observed gaps in

research related to substitutions between healthy and unhealthy foods, future research should focus on predicting the impact of specific public health policies aimed at improving diets and reducing the burden of chronic disease.” (Impact of food prices on consumption) Tatiana Andreyeva, PhD, Michael W. Long, MPH, and Kelly D. Brownell, PhD

In addition another systematic review of “The effect of fiscal policy on diet, obesity and chronic diseases which was summed up by the World Health Organization listed various studies in relation to my research topic. The first to note would be Food and Nutrient consumption by Jensen and Smed 2007 where a value added tax was reduced by 50% on fruits and vegetables. The effect on the target population was that sugar consumption decreased , fat consumption decreased, saturated fat consumption decreased , and lastly fiber consumption increased. Cash et al 2005 study found that a subsidy to decrease fruit and vegetable prices by 1% prevented 6733 cases of coronary heart disease and 2946 cases of ischemic stroke. Asfaw 2007 used a food subsidy also and found that a 1% price decrease in fruit and vegetables decreased BMI and a 1% price decrease in eggs and milk decreased BMI also. Something to note on the latter study is though the effect of the price change was minimal, so was the price change. It Could be recommended to increase the price reduction to beyond 10% to see a significant change. As we see most of the above mentioned studies focused on a cause and effect of an price mechanism where the effect was measured in some way. In addition the Dong and Lin 2009 study on fruit and vegetable demand was a bit nearer to my study. A 10% subsidy for fruit and vegetables for people on low incomes was conducted. It was noted that household fruit consumption increased and vegetable consumption increased.

On the contrary many conducted studies on an increase in price on unhealthy food such as a excise or extra tax within the borders on soft drinks for example. (Gustavsen 2005) . It was found most often in studies modeled in this way that consumer consumption decreased.

2. Background

This project's background is meant to serve as a fundamental overview of what obesity and overweight are. How they are defined will be discussed. In addition, we will look into different reasons for why people in general become overweight, the health consequences of obesity and overweight. In identifying this issue, it will also be examined how overweight and obesity can be reduced. In the latter sections of this background, we will look into the situation here in Norway in terms of overweight and obesity and if significant, a possible spike in health care spending could be seen in the foreseeable future. A look into the way Norway delivers health care services to the population will also be explained. Lastly, an additional campaign that was carried out by the grocery chain Kiwi As here in Norway in which they lowered the prices of healthy food in hopes of increasing demand. The World Health Organization will be referenced throughout. WHO acts as the coordinating and directing authority for health within the United Nations system. Its responsibilities are to provide leadership on global health matters, to help shape the health research agenda, set norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends.

2.1. What is Obesity and Overweight

What is obesity and overweight? Obesity is an accumulation of excessive body fat. The body mass index (BMI) is used to define these conditions. BMI is weight in (kilograms) divided by height (in meters squared). Overweight is defined as BMI of 25 to 29.9 and obesity is defined as BMI of 30 or more (Merck Manual of Medical Information). Overweight and obesity are also defined as abnormal or excessive fat accumulation that may impair health (WHO).

Let's look at the big picture of what has happened and why this is an issue.

Worldwide obesity has more than doubled since 1980. In 2008, 1.5 billion adults who were aged 20 and older, were overweight. Of these, over 200 million men and nearly 300 million women were obese. (WHO). Obesity has become even more a problem in children.

Prevalence rates have shown a spike in young children and adolescents more noticeably. Nearly 43 million children under the age of 5 were overweight in 2010 (WHO).

Facts about obesity: Overweight and obesity are the fifth leading risk for global deaths. At least 2.8 million adults die each year as a result from being overweight or obese. In addition 44% of the diabetes burden, 23% of the ischaemic heart disease burden and between 7% and 41% of certain cancer burdens are attributable to overweight and obesity. (WHO)

In affluent societies, the diets have become higher in fat. One problem with high fat diet is that the fat does not appear to trigger the stop eating (satiety) response as quickly as carbohydrates or proteins. Thus when a diet is high in fat, more foods tend to be eaten to satisfy the hunger. Furthermore fats have twice as many calories per gram as carbohydrates and proteins (Merck Manual)

2.2. Why are people Overweight and Obese?

The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended. Globally, there has been: an increased intake of energy-dense foods that are high in fat, salt and sugars but low in vitamins, minerals and other micronutrients; and a decrease in physical activity due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanization. Changes in dietary and physical activity patterns are often the result of environmental and societal changes associated with development and lack of supportive policies in sectors such as health, agriculture, transport, urban planning, environment, food processing, distribution, marketing and education. (WHO)

Obesity does not just happen overnight, it develops gradually from poor diet and lifestyle choices, lack of physical activity, to some extent, from your genes (the units of genetic material inherited from your parents). (NHS Choices)

Let's look more closely into what lifestyle choices are. Lifestyle choices are an important factor in influencing your weight. Eating an unhealthy diet is said to be a heavy predictor of overall health and risk to obesity and overweight. Unhealthy food is a term for any food that is low in essential nutrients and high in calories, sodium, sugar. Unhealthy foods are often foods such as highly salted potato chips and pretzels for example. Foods that are high in refined carbohydrates (empty calories) such as candy, cake, chocolates, and soft drinks also make the list. (Medical Dictionary)

A unhealthy diet could also include eating processed or fast food that are high in fat, not eating fruit, vegetables and unrefined carbohydrates, such as whole meal bread and brown rice, and drinking too much alcohol. Alcohol contains a lot of calories. Many people that go out and have a drink do this late in the evening and sometimes into the morning, experts say that alcohol also triggers one to become hungry thus causing late night snacking which could set weight gaining in motion very easily.

On the contrary a diet in healthy food is more optimal for healthy function. Healthy food is any food believed to be 'good for you', especially if high in fiber, natural vitamins, fructose, etc. Healthy foods have many benefits. They help to reduce cholesterol and atherosclerosis. They reduce the risk of stroke, help control glucose, halt progression of osteoporosis, and reduce the risk of infections and cancers. More examples of healthy food would include: Apples, beans, carrots, cranberry juice, fish, garlic, ginger, nuts, oats, olive oil, soy foods, tea, yogurt. (Medical Dictionary)

Lack of physical activity is another important factor that is related to obesity. Many people have jobs that involve sitting at a desk for most of the day, and rely heavily on their cars to get around. When it is time to relax, people tend to watch TV, or play computer games, and rarely take any regular exercise. If you are not active enough, you will not use up the energy provided by the food you eat, and the extra calories are thus stored as fat instead. Not exactly a favorable method that should be done often. But more and more this is the reality.

Genes or genetic pre disposition are another factor. Some people tend to stay the same weight for years without much effort, whereas others find they put on weight quickly if they are not careful about what they eat. This could be due in part to your genes or the genetic framework passed on to you by your parents or grandparents.

Some genetic conditions can increase your appetite, so you end up eating too much. There are also genes that determine how much fat your body stores. A particular genetic variation could mean that your body is more likely to store fat than somebody else.

Medical reasons are also another factor for developing obesity and overweight. Medical conditions that can cause weight gain include: Cushing's syndrome, which is a rare disorder that causes an over-production of steroid hormones (chemicals produced by the body), an under-active thyroid gland (hypothyroidism) when your thyroid gland does not produce enough thyroid hormone (called thyroxin, or T4), and polycystic ovary syndrome (PCOS) when women have a large number of cysts in their ovaries.

Certain medicines, including some corticosteroids and antidepressants, can also contribute to weight gain. Weight gain can also be a side effect of taking the combined contraceptive pill, and from quitting smoking. (NHS Choices)

2.3. What are common health consequences of overweight and obesity?

Raised BMI is a major risk factor for non-communicable diseases such as: cardiovascular diseases (mainly heart disease and stroke), which were the leading cause of death in 2008; diabetes; musculoskeletal disorders (especially osteoarthritis - a highly disabling degenerative disease of the joints); some cancers (endometrial, breast, and colon). The risk for these non-communicable diseases increases, with the increase in BMI. Not only do you run the risk of the most common risk factors from overweight and obesity but you could become victim of morbidity issues such as: low back pain, breathlessness, reproductive disorders, sleep apnea, psychological problems, social problems, and complications in both surgery and pregnancy. (WHO) These are all health consequences that are very much agreed on in the medical community.

2.4. How can overweight and obesity be reduced?

Overweight and obesity, as well as their related non-communicable diseases, are largely preventable. Supportive environments and communities are fundamental in shaping people's choices, making the healthier choice of foods and regular physical activity the easiest choice, and therefore preventing obesity. (WHO)

At the individual level, people can: limit energy intake from total fats; increase consumption of fruit and vegetables, as well as legumes, whole grains and nuts; limit the intake of sugars; engage in regular physical activity; achieve energy balance and a healthy weight. (WHO)

Individual responsibility can only have its full effect where people have access to a healthy lifestyle. Therefore, at the societal level it is important to: support individuals in following the recommendations above, through sustained political commitment and the collaboration of many public and private stakeholders; make regular physical activity and healthier dietary patterns affordable and easily accessible to all - especially the poorest individuals. (WHO)

The food industry can play a significant role in promoting healthy diets by: reducing the fat, sugar and salt content of processed foods; ensuring that healthy and nutritious choices are available and affordable to all consumers; practicing responsible marketing; ensuring the availability of healthy food choices and supporting regular physical activity practice in the workplace. (WHO)

2.5. Overweight and Obesity in Norway and a growing Health Care expenditure as a reason for concern!

According to Folkehelse Instituttet Norway: "Overweight and obesity have been of increasing concern in Norway during the last 20-30 years. Although the increase in overweight and obesity among children and adolescents seems to be leveling off, and the increase among adults is weaker than before, overweight and obesity is a major challenge for future public health". (Folkehelse Instituttet)

Weight has increased in all adult age groups from the mid-1970s to 2000. Over half of adult men in Norway are overweight and 15-18 percent are obese according to BMI values. The proportion of women who are overweight is somewhat lower. These figures come from health studies in five counties between 2000- 2003. . (Norwegian Institute of Public Health)

FIGURE 1.

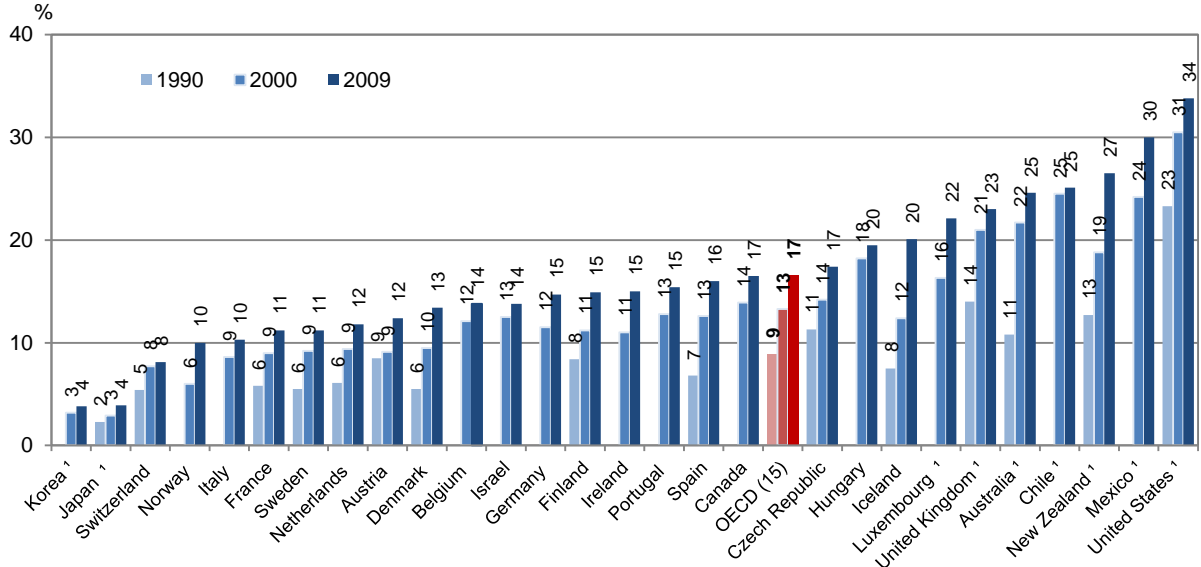
Year		2000-2003			
Weight classification		underweight	normal weight	overweight	obese
Gender	Age				
men	30 yrs	0.4	40.9	43.9	14.8
	40+45 yrs	0.2	30.5	51.6	17.7
	60 yrs	0.2	23.9	53.4	22.5
	75 yrs	0.6	31.7	50.9	16.8
women	30 yrs	1.7	58.4	26.6	13.2
	40+45 yrs	1.0	50.7	32.7	15.5
	60 yrs	1.0	36.5	39.1	23.4
	75 yrs	1.5	32.2	42.6	23.7

Figure 1. Proportion with underweight, normal weight, overweight and obesity in five counties totaled, 2000-2003 (Oslo, Hedmark, Troms, Oppland and Finnmark). (Figure corrected 10th March 2011) These are the most recent measurement data available. *Source: Norwegian Institute of Public Health*

Looking in comparison to other OECD member countries through the 1990’s, 2000, and after 2009 we see Norway falls below the average in obesity rates. But if we notice more closely we do see that just in the years 2000 to 2009 even there was an increase in 4% more. Making more sense of this data we can say that today or after 2009 about 1 in 10 people here in Norway are obese. Around the year 2000 there were much less. Again, the picture not nearly

as bad as the United States which is near 4 out of every 10 people obese, but we do notice again increases in occurrence and prevalence here in Norway (see figure 2)

FIGURE 2. Increasing obesity rates among the adult population in OECD countries, 1990, 2000 and 2009 (or nearest years)



Source: OECD Health Data 2011.

It can be said in general that Norwegians are getting heavier. One in four Norwegians were overweight in 2008. The percentage of Norwegians being overweight has increased by 7 percentage points during the last ten years. Looking across gender more men than women are overweight, as men in particular seem to be putting on the weight. In 2008 one third of all men and one fifth of all women were overweight. One fifth of the population was what may be termed somewhat overweight. If the limit for overweight is put at 25 BMI or above, four in ten Norwegians would be considered overweight. One in ten Norwegians are actually in fact obese. There has been little change in overweight among women since 2002. (Statistics Norway) (See also Figure 2b)

Figure 2b:

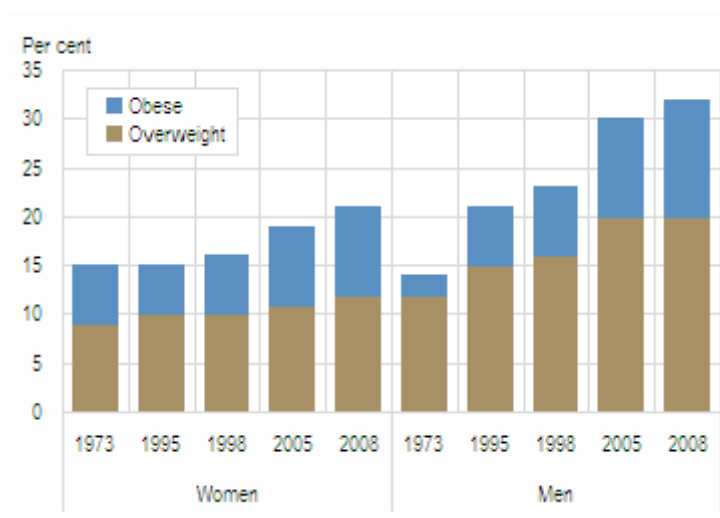


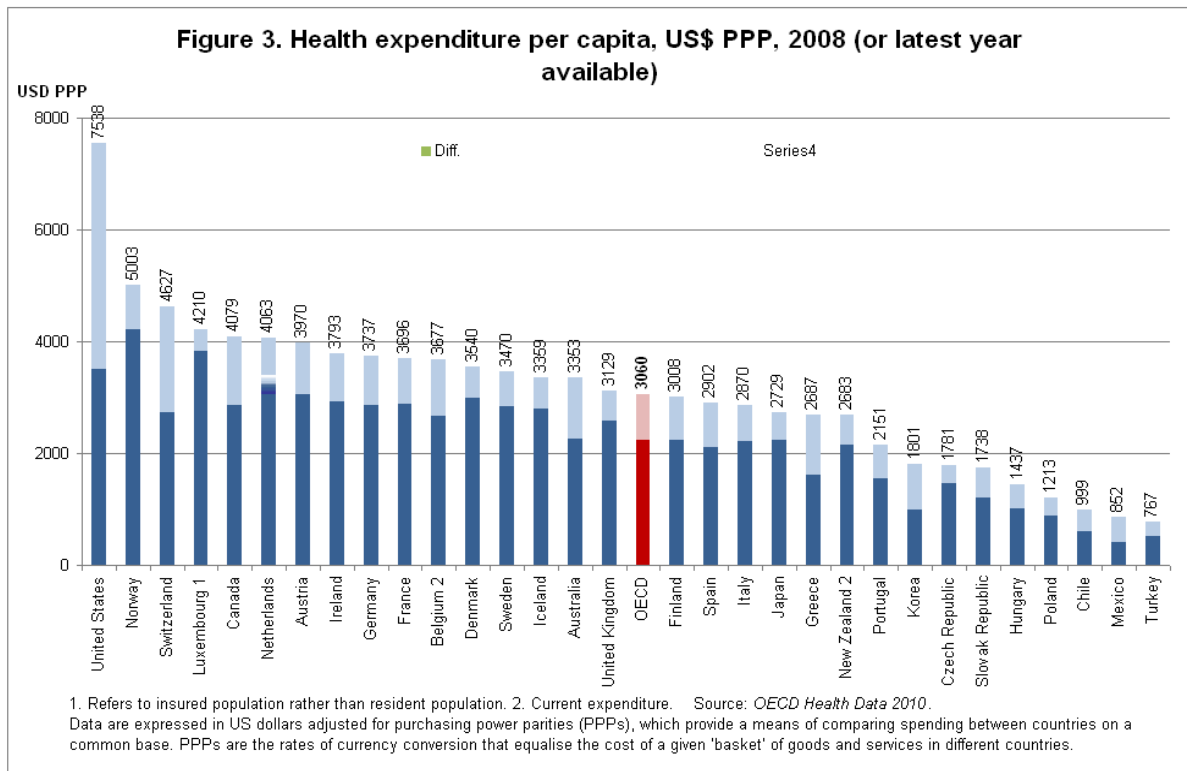
FIGURE 2B: Persons aged 16-79 who are overweight with bmi greater than 27 or obese with BMI greater than 30 percent.

Source: Statistics Norway

Children or adolescents here in Norway have also shown a weight increase. (Norwegian Directorate of Health 2008, Juliusson 2007, vilimas 2005) it was found that 15-20 percent of Norwegian children in the 8-12 year age group are overweight or obese. The prevalence of overweight and obesity among children seems to be at the same level in Norway as in Nordic countries and Western-Europe in general. (Norwegian Institute of Public Health). Approximately 8-14 per cent of Norwegian 15-16-year olds are overweight or obese (Norwegian Directorate of Health 2007, Grøholt 2008, Juliusson 2007).

At the same time, obesity rates have increased in recent decades in all OECD countries, although there are notable differences. In Norway, the obesity rate among adults - based on self-reported height and weight - was 10.0% in 2008. This was much lower than the United States (27.7%) but similar to Sweden, (11.2% in 2009). The average for the 28 OECD countries with self-reported data was 15.1%. Obesity's growing prevalence foreshadows increases in the occurrence of health problems (such as diabetes and cardiovascular diseases), and higher health care costs in the future (OECD Health data 2011 report)

2.5.1. Growing Health Care expenditure as a reason for concern!



Norway has the second highest health expenditure per capita after the United States. Although there can be arguments posed around these findings for Norway having such a high health expenditure such as purchasing power of parity in which costs here in Norway would be higher due to a higher cost of living for instance. On the contrary one thing is clear. Health care expenses will continue to rise. Increased advances in technology and medicine contribute to these rising costs. Looking back to diseases related to overweight and obesity there is a clear understanding that providing care for these illnesses will again put a heavy demand on health care services here and Norway and the funding for them.

Comparing Norway to other nations on this matter we find that Total health spending accounts for 9.6% of GDP in Norway in 2009, compared with an average of 9.5% across OECD countries. The United States is, by far, the country that spends the most on health as a share of its economy (with 17.4% of its GDP allocated to health in 2009), followed by the Netherlands (12.0%), France (11.8%) and Germany (11.6%). In terms of health spending per capita, Norway ranked the second highest among OECD countries in 2009 (after the United

States), with spending of 5352 USD (adjusted for purchasing power parity), well above the OECD average of 3223 USD.

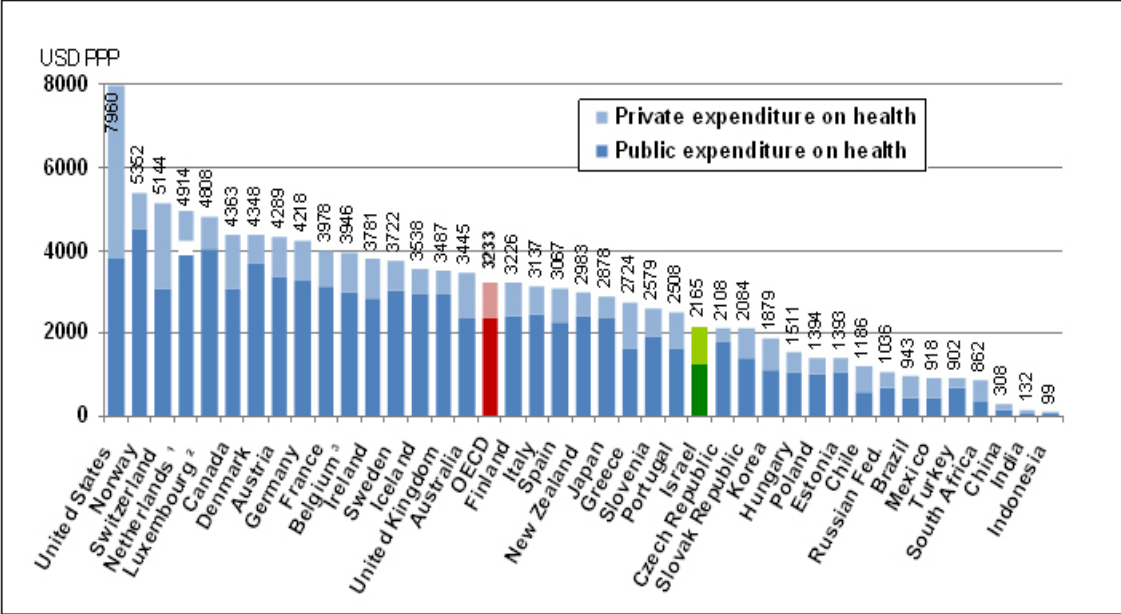


Figure 4: Total health expenditure per capita, public and private, 2009 (or nearest year) OECD Health Data 2011

The public sector is the main source of health funding in all OECD countries, except in Chile, the United States and Mexico. In Norway, 84.1% of health spending was funded by public sources in 2009, well above the OECD average of 71.7% and higher than all other Nordic countries, except Denmark (85.0%).

2.6. Norway’s Health Care System and why early interventions are important

I will start by giving you the main features of the Health care system in Norway. All Norwegians are insured by the National Insurance Scheme. This is a universal, tax-funded, single-payer health system. The Percent Insured are 100%. All Norwegian citizens and

residents are covered. The funding for this system is done by which the government sets a global budget limiting overall health expenditures and capital investment. (HealthCare-Economist)

The system is mainly organized as a two-tier. The responsibility is divided between the municipalities and the state. The Municipalities are responsible for all primary health services. This includes the promotion of health and prevention of illness and injuries as well as diagnosis, treatment and rehabilitation. Nursing care within and outside institutions is the responsibility of the municipalities. All inhabitants in the municipality have the right to a general practitioner from a government GP list. These GP's then act as gatekeepers giving access to specialist services.

The state is responsible for the running of all specialist health services, including the somatic and psychiatric hospitals. The state has organized the specialized health service in four regions. Each region has an enterprise owned fully by the state. The regional health enterprises own the hospitals. They are responsible for providing specialized health care to the inhabitants in the region. The organization into enterprises means that we use organizational tools from the private sector and add elements from traditional public governance to operate our welfare policy.

Some small things to note are that there are no copayments for hospital stays or drugs. There are small copayments for outpatient treatment. It is possible for seekers of health care treatment to opt out of the government system and pay out of pocket. Some citizens take this option when waiting lists are long in the case of hip surgery's, transplants, etc.

Patients in Norway have a legal right to health care. The Patients' Rights Act guarantees the patient's right to care and regulates the relationship between the patient and the health service. Patients are entitled to information, a second opinion and free choice of hospitals. There is a system for complaints and there is a Patients' Ombudsman in each county. When patients suffer economic loss as a consequence of medical errors a public system ensures that they are awarded compensation.

Knowing what we know now about the health care system here in Norway which it is said to be designed to be equally accessible to all residents, regardless of social or economic status. We can wonder then why not lower the price of healthy food so good health through healthy

food is then also equally accessible to all residents regardless of social or economic status. In the next section we will begin to look at a small step that was made by a grocery chain Kiwi here in Norway, along with collaborative efforts from the government and other Public Health institutions in which they made healthy food options less costly for consumers.

2.7. KIWI Report:

While conducting this thesis I came across a study that was done by a grocery chain Kiwi here in Norway in cooperation with national institutes such as Helsedirektoratet and Folkehelse Instituttet. What was done was that Kiwi in cooperation also with the Norwegian government implemented a price reduction for foods that fall into a category of low levels of fat, sugar, and salt. They issued a report of these findings of which they called it the Kiwi report. This was a huge motivation for me in regard to this research because they too wanted to examine the effects of lowering the price for healthy food and if it could increase demand. Their motivation as well as my own was to see what it would take to get people to eat healthier. Their motivation came from a belief that diet here in Norway wasn't what it should be. Too much consumption of foods high in sugar, fat and salt and not enough fiber. What was feared was an obesity epidemic if some sort of intervention was not used. Along with a reduction of price mechanism and a campaign that increased awareness around where and how to participate along with background information Kiwi, Helsedirektoratet, and the health director here in Norway began this strategy.

Findings of the Kiwi Campaign:

Through two comprehensive tax cut experiments on fruit and green respectively and Key hole products have shown that KIWI lower prices on healthy foods (probably relatively speaking compared to unhealthy options) contributes directly to increased consumption of healthy foods. The effect was similar to the fruit and green (23 percent increase) and Keyhole (22 percent).

The campaign also shows that Keyhole arrangement works. 52 percent of the population uses the brand actively to choose healthier foods when they shop in stores. This is good news, especially for the Norwegian health authorities. TNS Gallup-wallpapers-our survey also shows that fewer and fewer

We see below in a figure of the Kiwi report, if the research question was applied: Does lowering the price of healthy food increase demand there would be a positive correlation with the decrease in price and increase in sales for health food. So therefor according to the Kiwi report and it's parameters we can say yes, lowering the price of some healthy foods does increase demand. But as they mentioned this was not the sole reason why. Awareness and education on the campaign also can be linked but is hard to prove. (See Figure 5)

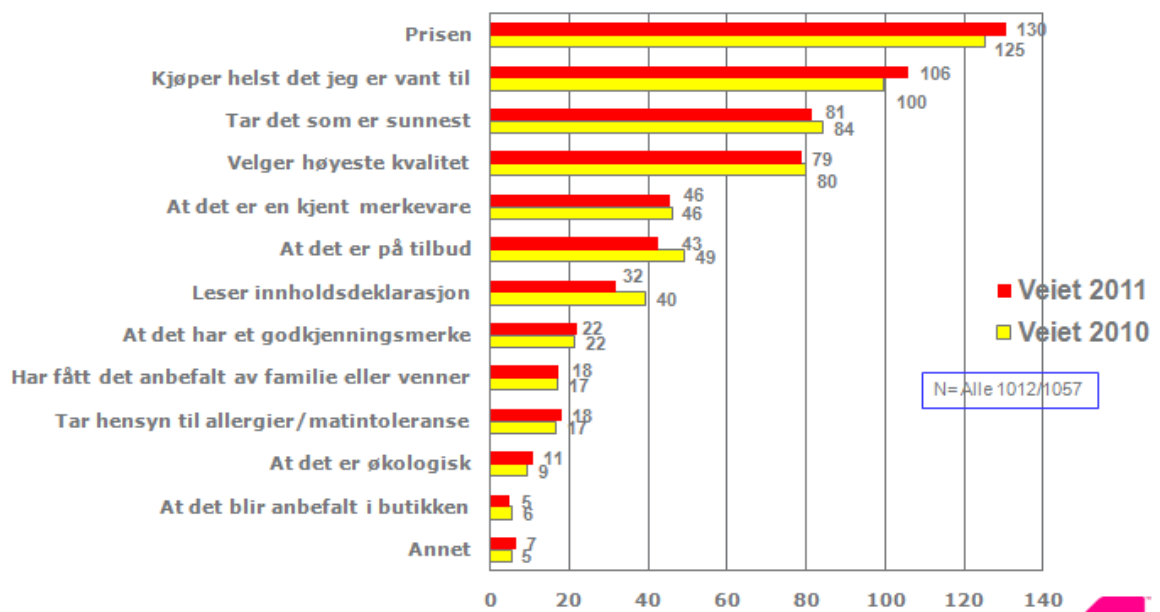
Figure 5:

Kriterier for valg av dagligvarer – pris blir enda viktigere



Veier vi svarene ved å gi viktigste verdien 3, nest viktigste verdien 2 og tredje viktigste verdien 1, ser vi at pris alt i alt har høyest og økende fokus i Norge. Vane står også sentralt, mens sunnhet og kvaliteter viktige, men reduseres.

Vi vil gjerne vite hva som er avgjørende for deg når du velger dagligvarer i butikken, hvilket av følgende er viktigst? Og nest viktigst? Og tredje viktigst?



As we notice above price again is the most frequent reason that consumers chose the healthy option in 2010 and 2011, but there are other reasons as well. We will look further into possible other reason in my study questionnaire.) Some issues to note are that the quality of the food was also important. Person's habits as discussed earlier also were reason for the choice. (See figure 5)

3. Research Question, Data, and Methodology

3.1. Research Question and study objective:

The aim of the study is to explore whether lowering the price of healthy food would increase demand or consumption. The methods used were to create a questionnaire that would be sent to participants. The plan would be to gather responses based on price related questions. These price related questions would have two options of either a healthy food item and a unhealthy food item. The next step would be to check for basic descriptives of how many were in favor of buying healthy food if the price was lower. Further analysis could be made with comparing groups, income, age, and gender according to what they chose. The sample was to be collected or consisted of students in either the bachelor level or masters level at the university of Oslo department of Health sciences through general email mailing list provided by administration. Invitations were also sent out to friends or associated friends through social media website (Facebook), in which it was only used in this method to reach more participants from noticing a trend that most do and can receive messages through this site and check for messages from this site often. Participation in the survey was mentioned to others as open. Participants were allowed to mention to others about the survey and send the link. There was one criterion that I did mention had to be followed, it was that the participants had to be living in Norway. I was able to have a control on this issue by using the kwiksurveys software in which it listed the i.P address for every respondent, this was a numerical label assigned to a computer or device from which the questionnaire was sent. These i.p addresses can be put into a simple google search to confirm if they originated from a Norwegian address.

3.2. Data

Data was collected using the online survey and software from Kwiksurveys. This survey was implemented via web. This system is web based and respondents can reply on the url page or be sent the link from myself, or other participants. The questionnaire was posted online February 20th 2012 and remained open until April 2012. In total 76 respondents conducted the survey. The survey was sent to 196 potential participants in which again 76 completed. The response rate was 38.7% or (76/ 196) . The questionnaire would contain 30 questions asking

respondents to rate the importance of price, convenience, and personal habits on a typical survey scale ranging from strongly agree to strongly disagree. Mailing lists for students studying at the University of Oslo were also requested, and then emails were sent out inviting their participation in the survey via email. There were some participants who were asked randomly if they were interested in participating in an online survey. If those few who comprised about 10% roughly did say they would be willing, then their email was collected and the survey was sent directly to them.

3.3. Statistical analysis/ results

First I performed a basic run on all frequencies of the dependent variables. The dependent variables included age, education, gender, income, whether the person asked in the questionnaire is the one that buys their own shopping and current living situation. Statistical analysis that was done was to run chi- squared tests to see if significant differences between two categorical variables or groups. In our case we explored if there were differences between gender, age, education level, and income for the responses on the 7 price related questions asked in the questionnaire. Regression analysis was also used to understand which among the independent variables such as (age, gender, education, and salary) are related to the dependent variables price or food choice, and to also test this significance. Questionnaire responses were compiled also by the online survey in terms of frequencies and percentages. Further analysis was done on price related questions that have a connection to the research question: Does lowering the price of healthy food increase demand? In this process data was dichotomized into more precise groups of either being in favor of the lowering the price of healthy food or not. This method was used to present the results in a more explicit manner.

4. Descriptives, Analysis, Statistical Methods :

The first basic descriptive was to provide a basic table of all 29 questions asked, number of respondents for each question, the question in writing, and their percentage of the total to which category in the likert scale in which they answered. (See Table 1)

Table 1: Survey responses in percentages according to question

Question	respondents	question	Strongly agree	agree	neutral	disagree	Strongly disagree
1	76	What is your gender?					
2	76	What is your age?					
3	75	What is your last completed level of education?					
4	76	What is your average monthly income?					
5	76	I, myself am usually the one that does the shopping at grocery stores when purchasing food.					
6	74	My current living situation is.					
7	76	It is important to me that the food I buy on a typical day is high in fiber.	17.11%	40.79%	35.58%	6.58%	3.95%
8	76	It is important to me that the food i buy on a typical day is low in calories.	9.21%	44.74%	35.53%	5.26%	5.26%
9	74	It is important to me that the food i buy on a typical day is low in fat.	10.81%	47.30%	27.03%	9.46%	5.41%
10	76	It is important to me that the food i buy on atypical day is low in sugar.	18.42%	47.37%	23.68%	5.26%	5.26%
11	76	It is important to me that the food i buy on a typical day contains alot of vitamins and minerals.	22.37%	48.68%	19.74%	6.58%	2.63%
12	75	It is important to me that the food I buy on a typical day contains no artificial ingredients, food additives, or preservatives.	16.00%	41.33%	32.00%	6.67%	4.00%
13	76	It is important to me that the food i buy on a typical day helps me maintain a high level of health related quality of life.	43.42%	42.11%	7.89%	3.95%	2.63%
14	76	It is important to me that the food i buy on a typical day is easily available in shops and supermarkets.	51.32%	43.42%	3.95%	1.32%	0%
15	74	It is important to me that the food i buy on a typical day can be cooked or prepared very simply.	21.62%	45.95%	20.27%	10.81%	1.35%
16	76	It is important to me that the food i buy on a typical day is not expensive.	27.63%	48.68%	19.74%	3.95%	0%
17	76	It is important to me that the food i buy on a typical day is a good value for the money.	26.32%	57.89%	14.47%	1.32%	0%
18	76	It is important to me that the food i buy on a typical day is cheap.	13.16%	36.84%	31.58%	17.11%	1.32%
19	76	I would buy the healthy alternative if it was priced the same or less than the unhealthy alternative.	61.84%	27.63%	7.89%	2.63%	0%
20	76	I look for products marked with Nokkelhull/ Keyhole over other alternatives.	11.84%	22.37%	32.89%	23.68%	9.21%
21	75	I would buy more keyholre products if the price on keyhole products were the same or lower than an unhealthy alternative.	32.00%	28.00%	30.67%	8.00%	1.33%
22	76	I would buy more vegetables(salad/ cooked or steamed vegetables etc) if the prices on vegetables were lower.	32.89%	27.63%	28.95%	7.89%	2.63%
23	76	I would buy more fruit if the price of fruit was lower.	40.79%	25.00%	22.37%	9.21%	2.63%
24	74	I would buy a granola bar over a chocolate bar if the price was the same on both items	20.27%	24.32%	28.38%	22.97%	4.05%
25	75	I would buy fruit juice over soda/ soft drink beverage if the price was the same on both items.	42.67%	33.33%	12.00%	10.67%	1.33%
26	76	I would buy a chicken salad over a burger from a fast food restaurant if the price was the same on both items.	38.16%	26.32%	17.11%	15.79%	2.63%
27	75	I would buy a smoothie over a milkshake if the price was the same for both items.	46.67%	24.00%	17.33%	10.67%	1.33%
28	76	I would buy more healthy items if I was better informed on what is healthy or not.	23.68%	46.05%	19.74%	7.89%	2.63%
29	76	I would prefer to buy more healthy food but it is too expensive for my budget.	17.11%	38.16%	21.05%	15.79%	7.89%

DESCRIPTIVES: AGE, GENDER, EDUCATION, INCOME, I SHOP FOR MY OWN FOOD, LIVING SITUATION.

Table 1: Gender			
		Frequency	Percent
	male	43	56.6
	female	33	43.4
	Total	76	100.0

1A: FREQUENCY AND PERCENTS OF GENDER.

Table 1 A represents all 76 participants. A simple look into the share of male vs female participation in the survey in terms of frequency and percentage that took part in the survey up until the inclusion or open time frame that began February 9th 2012 and ended April 1st 2012. It can be noticed that slightly more males participated in this survey, but enough females were included to make a somewhat fair comparisons across gender if needed.

Age			
		Frequency	Percent
	15-20 years old	13	17.1
	21-24 years old	15	19.7
	25-35 years old	38	50.0
	36-45 years old	9	11.8
	46-55 years old	1	1.3
	Total	76	100.0

1B: Table 1B represents all 76 respondents in terms of frequency and percent's of Age variable. Most of the sample population centered around 25-35 year olds. This can be linked to surveys being sent via email to university level students and early working year adults. In general there was enough randomness and variety in the age population range from 15-35 years old. What can be seen is that more appropriate assumptions if any could be argued in the case with age group 25-35 years old.

Education		
	Frequency	Percent
no response	1	1.3
Lower Secondary School	6	7.9
Upper Secondary School (Videregående)	21	27.6
University Bachelor	38	50.0
University Master's	9	11.8
University Phd	1	1.3
Total	76	100.0

1C: FREQUENCY AND PERCENTS OF EDUCATION.

Table 1C represents 75 respondents of 76 possible. One error/ no response or incomplete was noticed in this category after individually examining all responses across all 29 questions. We can notice the characteristic that describes our sample size the most in terms of education are those with University level Bachelor completed. A fair amount of the population was present in those that completed upper secondary school also, enough to make some small assumptions. I chose to include the education level breakdown of how it may be used in Norway to avoid any translation error, misclassification, or information bias.

Income		
	Frequency	Percent
0-10,000 kroner per month	33	43.4
10,001-20,000 kroner per month	16	21.1
20,001-30,000 kroner per month	16	21.1
30,001-40,000 kroner per month	4	5.3
40,001-50,000 kroner per month	2	2.6
above 50,000 kroner per month	5	6.6
Total	76	100.0

1D: FREQUENCY AND PERCENTS OF INCOME

Table 1d represents all 76 respondents in terms of income level. Our most frequent group of income level centered around those who made 0-10,000 kroner per month. This can help validate if we wanted to check to see if our data matches what we expected, such as seeing that we have mostly university level students , or those who may not work full time it is

expected that most will earn in the 30,000 kroner per month or less. It would have been a bit unexpected had we had most saying they earned in the 30,000 kroner and above categories. This gave me also the validation that respondents did in fact mostly answer truthfully possibly knowing that their identity was protected.

I Shop for my own food(I am the one that does the shopping)			
		Frequency	Percent
	true	52	68.4
	false	24	31.6
	Total	76	100.0

1E: FREQUENCY AND PERCENTS OF PERSONS WHO SHOP FOR THEIR OWN FOOD

Table 1e represents all 76 respondents in terms of people who shop for their own food. This was in a way meant to be asked to control for our information that was collected. It would have been deemed to be less meaningful if respondents say they would buy certain foods but in fact they are not the ones that shop in the first place. We can be somewhat satisfied that about 70% said they do shop their own food, more participants following this characteristic would have obviously have made findings more valid.

Living Situation

	frequency	Percent
No response	2	2.6%
Alone	13	17.1%
With family	31	40.8%
With friends or roomates	9	11.8%
With partner or spouse	21	27.6%
<u>TOTAL</u>	<u>76</u>	<u>100%</u>

1F: FREQUENCY AND PERCENTS OF LIVING SITUATION AMONG ALL 76 RESPONDENTS

Table 1f represents 74 respondents and their living situations. There was a total of 2 error or incomplete findings. This is not uncommon being that the questionnaire contained 30

questions, so long as it did not happen too frequent. We could learn from this by maybe in the future having less questions, possibly changing the fonts or headings so that reader are more alert to each question. We can see that we did have a mix of persons living situation. There were however more of those that answered that they lived with family members which represented 40.8% of the 76 respondents. A fair amount of those who lived alone, with partner- spouse, or with roommates-friends were observed to make some small assumptions.

*In the next section we ran regression analysis tests to see how one variable is changed when the other is varied. Simple regression allows us to look at the relationship between one normally distributed interval predictor and one normally distributed interval outcome variable. For example we see that the relationship between **Gender and I would buy more vegetables if the price was lower from the table below** is positive with a p-value of (.043), we would conclude this relationship is statistically significant. We would say there is a statistically significant positive relationship between gender and I would buy more vegetables if the price was lower. We do notice the same for the variables Gender and I would buy the healthy alternative if it was priced the same or lower than the unhealthy alternative, this was represented with a p value of lower than the 0.05 significance we were measuring. In this case it was (.012). Our last significant finding was when we looked for statistically significant relationship between living situation responses and those who would buy granola bar over a chocolate bar if the price was the same for both items. This was seen to have a p value of (.020) Table 2 will follow with all results given from the tests that were run.*

Table 2: Linear Regression test chart

	Gender	Age	Education	Income	I am the one who does the shopping	Living situation
I would buy the healthy alternative if it was priced the same or less than the unhealthy alternative	<u>.012</u>	.060	.941	.374	.486	.949
I would buy more vegetables if the price was lower.	<u>.043</u>	.293	.096	.922	.857	.906
I would buy more fruit if the price was lower	.191	.488	.096	.260	.926	.383
I would buy juice over soft drink if the price was lower.	.642	.624	.458	.928	.924	.114
I would buy granola bar over chocolate if the price was the same for both.	.444	.793	.279	.085	.260	<u>.020</u>
I would buy a smoothie over milkshake if the price was the same on both items	.317	.715	.946	.241	.388	.168
I would buy a chicken salad over burger if the price was the same for both	.216	.978	.570	.518	.490	.287

In this section we ran Chi squared test to see if there is a differences between two categorical variables gender and buying the healthy alternative if it is priced the same or less than the unhealthy alternative. We leave one example below of how this would be written out and explained in text. Table will follow after in which we ran Chi squared test across all dependent variables and price related questions.

H

O= there is no difference between gender and buying the healthy alternative if it was priced the same or less than the unhealthy alternative. Null hypothesis is true

H

1= there is a difference between gender and buying the healthy alternative if ti was priced the same or less than the unhealthy alternative. Null hypothesis is false

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.724 ^a	3	.081
Likelihood Ratio	7.689	3	.053
Linear-by-Linear Association	6.550	1	.010
N of Valid Cases	76		

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is ,87.

This particular test that was run was chi squared on variables gender and healthy and unhealthy alternative. We found this test not statistically significant due to a p-value of 0.081 which is not less than a 0.05 level. Thus it tells us that there is a no significant difference between genders. In other words males and female did have statistically significantly different opinions when asked if they would buy the healthy alternative if it was priced the same or less than the unhealthy alternative (question # 19 from survey). We do note that according to or based on normal approximation

Table 3: Chi squared tests chart

	<i>Gender</i>	<i>Age</i>	<i>Education</i>	<i>Income</i>	<i>I am the one who does the shopping</i>	<i>Living situation</i>
I would buy the healthy alternative if it was priced the same or less than the unhealthy alternative	.081	.770	.237	.277	.688	.770
I would buy more vegetables if the price was lower.	<u>.001</u>	.748	.727	.111	.859	.126
I would buy more fruit if the price was lower	.819	<u>.000</u>	.109	<u>.036</u>	.372	.577
I would buy juice over soft drink if the price was lower.	.626	<u>.000</u>	.998	.153	.602	.397
I would buy granola bar over chocolate if the price was the same for both.	.318	<u>.005</u>	.851	.060	.643	.400
I would buy a smoothie over milkshake if the price was the same on both items	.533	.433	.806	.052	.091	.893
I would buy a chicken salad over burger if the price was the same for both	.618	<u>.000</u>	.771	.110	.272	.119

Table 3: Table above represents chi squared tests that were run to see if there is a significant difference between two groups. The values can be interpreted in such way that any value indicated in the box that is greater than .05 means that there is no significant relationship between those two variables. There for we can reject the null hypothesis and concluded that there is a difference in which the variables do have an effect on each other. This can be seen

in when we compared gender vs I would buy more vegetables if the price was lower. In addition with age vs I would buy fruit if the price was lower, soft drink if the price was lower, granola bar over chocolate and chicken salad over burger. Lastly income vs I would buy more fruit if the price was lower. These values were highlighted in bold to differentiate from the others.

Second analysis in this study was in relation the research question: Would lowering the price of healthy food increase demand? Or to examine if lowering the price of healthy food would increase demand/ consumption. Respondent here would be dichotomized; to divide or separate into two parts or in our case into two groups of yes or no responses. A yes response would = anyone who answered strongly agree or agree and a no response would = anyone who answered disagree or strongly disagree. All neutral responses were shown as well as a sum of responses that could possibly have needed more information, were unsure, or

Statistical analysis for 2nd study was to take into consideration 4 price related questions: Would respondent buy more fruit if it was priced lower, buy more vegetables if it was priced lower, buy more juice if it was priced lower than soda, and lastly if they would buy more healthy items if they were better informed on what is healthy or not. The latter question would be more of a control question to fill information gaps in the research or on this topic in general.

FIGURE 1.1 : All 76 respondents and their frequencies and percent's according to question 19 labeled (price) , question 28 labeled (information) , question 22 labeled (vegetables), question 23 labeled fruit, and question 25 labeled (juice).

Figure 1.1

Statistics					
	price	information	vegetables	fruit	juice
N	76	76	76	76	76

FIGURE 1.2 A : Question #19 (I would buy the healthy alternative if it was priced the same or less than the unhealthy alternative) This question was asked as a starting point to see which respondents would be initially interested and to then compare later who actually answered accordingly when we give them scenarios in which they are given the a choice between an unhealthy and healthy food choice. From the response we see a great proportion of respondents that would be generally in favor of buying more healthy food if the price was lower. Almost 90% of the sample agreed where, 2.6% said, and 8% were neutral.

Figure 1.2 A

(I would buy the healthy alternative if it was priced the same or less than the unhealthy alternative)		
	Frequency	Percent
neutral	6	7.9
No	2	2.6
Yes	68	89.5
Total	76	100.0

FIGURE 1.2 B : Pie Chart

Pie chart includes responses in categories of yes, no, and neutral and their proportions of the total.

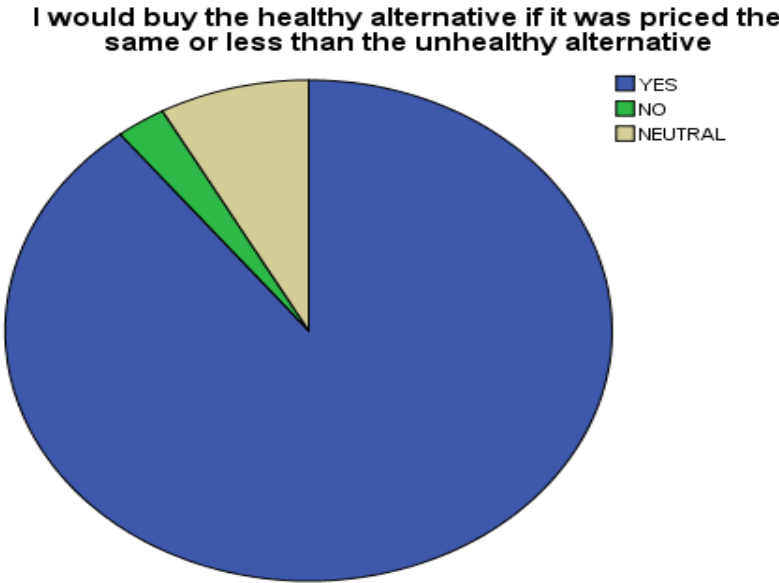


FIGURE 1.3 A: Question # 28: (I would buy more healthy items if i was better informed on what is healthy or not) . This question I felt was important because I wanted to test the hypothesis: would people buy more healthy items if they were informed on what is healthy or not. From what see in the data is the majority would buy more healthy items if they were better informed. This was also represented in pie chart to better illustrate the proportion

Figure 1.3A

(I would buy more healthy items if i was better informed on what is healthy or not)		
	Frequency	Percent
neutral	15	19.7
no	8	10.5
yes	53	69.7
Total	76	100.0

FIGURE 1.3 B: Pie Chart

Pie chart includes responses in categories of yes, no, and neutral and their proportions of the total.

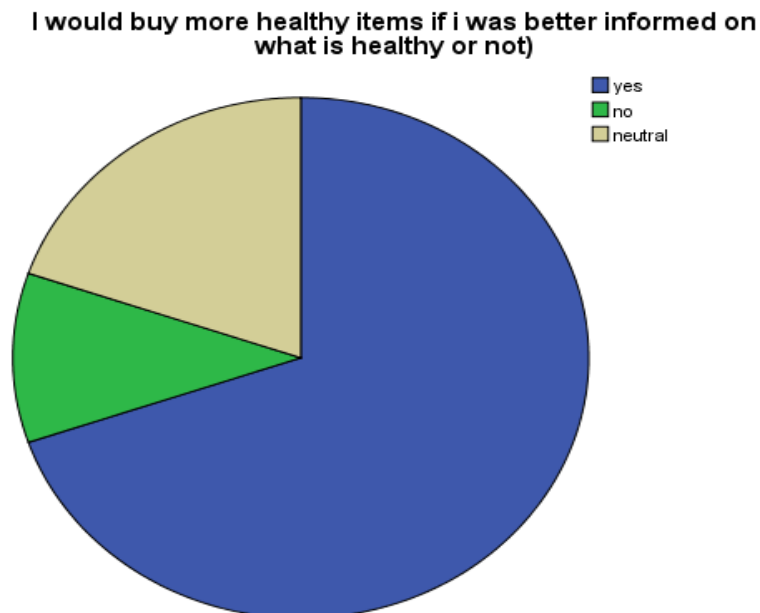


FIGURE 1.4 A: Question # 22: (I would buy more vegetables if the price on vegetables was lower.) I felt it was important to examine the interest in terms of a lower price for vegetable since this is one category that is often up for thought when a subsidy for healthy food is being discussed. Having a strong amount of interest could help to drive the necessary policy change to make it a reality. We can see that 61% mentioned they would buy more vegetables if the price was lower.

Figure 1.4A

(I would buy more vegetables if the price on vegetables was lower.)		
	Frequency	Percent
neutral	22	28.9
No	8	10.5
Yes	46	60.5
Total	76	100.0

FIGURE 1.4 B: Pie Chart.

Pie chart includes responses in categories of yes, no, and neutral and their proportions of the total.

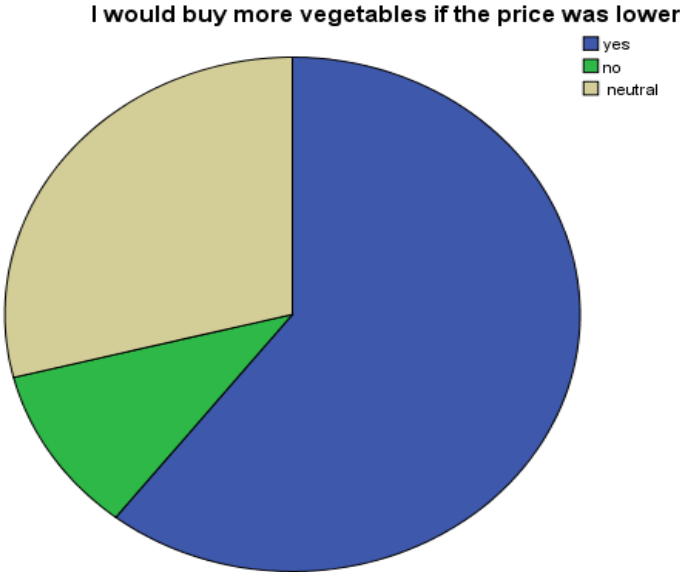


FIGURE 1.5 A: Question # 23: (I would buy more fruit if the price of fruit was lower.) Here according to our data we see that there was a good amount of interest in purchasing fruit if the price was lowered. We can make a small comparison that when asked about fruit price being lowered there was more interested in this measure when compared to those interested if the price of vegetables was lowered (65.8% vs 60.5%). We notice a rather fair amount of neutral responses. This could again be a target group for health officials to give more health information or awareness.

Figure 1.5A

(I would buy more fruit if the price was lower)		
	Frequency	Percent
neutral	17	22.4
no	9	11.8
yes	50	65.8
Total	76	100.0

FIGURE 1.5 B. : Pie Chart

Pie chart includes responses in categories of yes, no, and neutral and their proportions of the total.



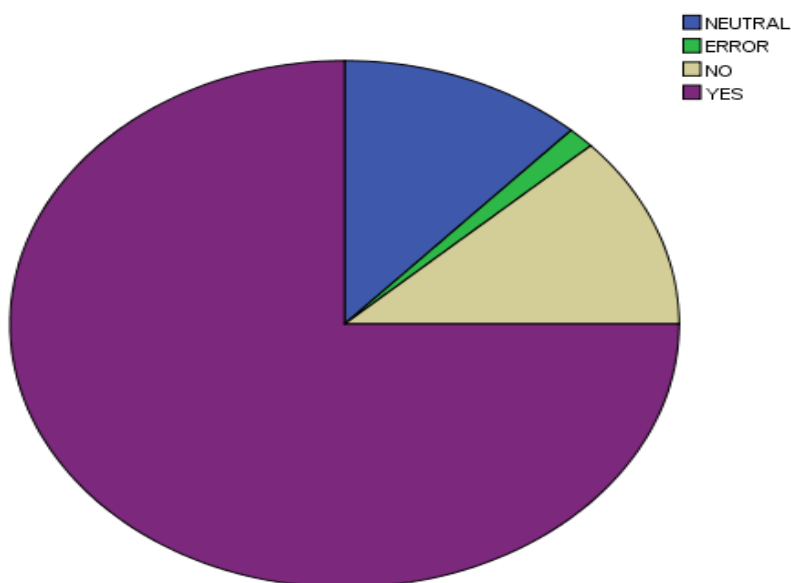
FIGURE 1.6 A: Question # 25: (I would buy more juice over soda/ soft drink if the price was the same on both items.) This question I was anticipating coming across to see what the results would be. According to the data 75% or the respondents would buy more juice over soft drinks if the price was the same on both. This question shows a more precise willingness to pay since we did not make it too simple for the respondents to choose juice over soda. We made it a bit more challenging by asking if they were priced the same.

Figure 1.6 A

(I would buy more juice over soda/ soft drink if the price was the same on both items.)		
	Frequency	Percent
error	1	1.3
neutral	9	11.8
no	9	11.8
yes	57	75.0
Total	76	100.0

FIGURE 1.6 B : Pie chart includes responses in categories of yes, no , error/ incomplete, and neutral and their proportions of the total.

I would buy fruit juice over soft drink if the price was the same for both items.



Statistical analysis for this study was to provide and examine Charts with clearly defined answers: These responses will fit into the category of either yes or no responses that were based on the responses of a Strongly agree or agree = yes, or a strongly disagree or disagree = no. Neutral responses were left out to give a more precise indication of those truly in favor of a lower price in terms of healthy food or not or in the case of Question #28 those who would buy more healthy items if they were better informed on what is healthy or not.

FIGURE 3.1: Question #19 (I would buy the healthy alternative if it was priced the same or less than the unhealthy alternative) Neutral responses were not included in this test! Neutral responses were 8% of the original total. Thus our total sample for this test would examine the 70 other participants who follow the key of = yes response or = no response.

	frequency	Percent of 100
(Yes) In Favor	68	89.47%
(No) Not in favor	2	2.63%

Total sample of 76: consisted of

FIGURE 3.2: : Question # 22: (I would buy more vegetables if the price on vegetables was lower.)

	frequency	Percent of 100
(Yes) In Favor	46	10.5%
(No) Not in favor	8	60.5%

Total sample of 76: consisted of the above selections, 22 neutral selections or 28.9%

FIGURE 3.3: Question # 23: (I would buy more fruit if the price of fruit was lower.)

	frequency	Percent of 100
(Yes) in favor	50	65.8%
(No) Not in favor	9	11.8%

Total sample of 76: consisted of 17 neutral selections or 22.37%

FIGURE 3.4: Question # 24 I would buy granola bar over chocolate bar if the price was the same for both items.

	frequency	Percent of 100
(Yes) In favor	33	44.59%
(No) Not in favor	20	27.02%

Total sample of 76: consisted of 21 neutral selections or 28.38%

FIGURE 3.5: Question # 25: (I would buy more juice over soda/ soft drink if the price was the same on both items.)

	frequency	Percent or 100
(Yes) In favor	57	75.0%
(No) Not in favor	9	11.8%

Total sample of 76: consisted of the above selections, 1 error in which participant didn't select an option, and 9 neutral selections.

FIGURE 3.6: Question # 28: (I would buy more healthy items if i was better informed on what is healthy or not) .

	Frequency	Percent of 100
(Yes) In Favor	53	69.7%
(No) Not in Favor	8	10.5%

Total sample of 76: consisted of 15 neutral responses or 19.74%

5. General study Limitations

The following section will provide you some of the possible study limitations. First of all I would need to address generalization in regard to this study. According to the sample size that I used, it isn't possible to make general assumptions for the masses here in Norway according to a relatively small sample size of 76 respondents. The study cannot be interpreted as a representation of the Norwegian population also in regard to the uneven distribution of the sample size. Variables such as age were unevenly distributed where most of my population sample consisted of those aged 35 or younger. Similar situation with income where most earned an income of 30,000kr or less per month. Education was more centered around those who have at least a Bachelor's degree or less. Lastly those who do the shopping themselves was another variable that was unevenly distributed, in which it centered around those who did do most their shopping. In the case of our study this is a good finding! We of course want to measure those who do say they shop for their own food, and not those who have the spouse of someone else bring the food home.

The variables that were more evenly distributed were gender and living situation. There were an almost even mix of male to female participants. Living situation was a bit more symmetric but not totally. Most participants lived with family when compared to living alone, with friends, or partner. The selection of subjects to the questionnaire was more based on voluntary participation than a random sample.

Another Limitation is that this survey was conducted in english across a Norwegian population. The questions in the survey could have been interpreted in a different way than intended. This could have led to translation errors. I did try my best to keep the questions that were asked in a basic manner. A few questions even has a link to best fit Norwegian word that corresponds in the case of choices for education.

By using a questionnaire I had hoped to give the participant more peace, space, and time on their own to complete the questionnaire. I had desired for my participants a more non-intrusive method rather than asking them to fill out a questionnaire or conduct an interview in which I would be more in control of the time, place, and setting. In addition I did not want my participants to answer the question in a way that would satisfy me the researcher. But what I

gained by giving the participants freedom I lost the ability to be present and clarify if there were any misunderstandings or misinterpretation within my questionnaire.

6. Discussion

According to data collected there was a interest in people buying healthy food if the price would be lowered across many variables. There are other factors that could be considered when people buy food. Price was the main factor focused on here in this study, but we could have asked also in addition to price if price and location makes the difference. Another example could be to ask if taste alone or price along with taste in comparison to location is the reason for choosing to buy certain foods. As we see a few more factor could have been added, but in this study I wanted to explicitly focus those who would be in favor of purchasing healthy food if the price was lower than an unhealthy alternative. Though the process of using a questionnaire may have not been the best method to actually see what people will do in practice we do notice an interest. The many neutral responses can also be seen as a positive in the case of the questionnaire as people that health authorities could reach out to and help clear any mis-understandings. Something else to think about though a bit off topic is that the proportion of daily smokers among the adult population has shown a marked decline over the past twenty-five years in most OECD countries. Much of this decline can be attributed to policies aimed at reducing tobacco consumption through public awareness campaigns, advertising bans, and increased taxation. In Norway, the proportion of smokers among adults has been reduced from 36% in 1980 to 21% in 2009, slightly below the OECD average of 22.3%. We can wonder then why not too do the same in terms of either raising taxes for unhealthy food or lowering the price of healthy food.

Lowering the price of healthy food in general would be likely to induce a small change in increasing demand, to some extent. The best method would be to cover all angles at the same time while the price change is implemented. All angles covered means there need to be strong campaigns that run in the media, newspapers, radio, ads, and internet to help support the price change.

7. Conclusion

Obesity and Overweight worldwide are of concern. The situation here in Norway is no different. We know that here in Norway people have the benefit of enjoying equal and fair access to healthcare no matter their ability to pay or socio-economic status. It is my belief that in a perfect market those who fall victim to lower priced unhealthy food could benefit extremely from a fair market in food price, which offers healthy food at a price more affordable to everyone. This again is of importance since a major predictor of whether you or I will live a life into the future that is not interrupted by non-communicable diseases such as cancer, diabetes type 2, cardiovascular disease; etc is based on our access to the food that would protect us from the diseases just mentioned. This access to healthy food should be more equal.

This review found that within the research sample taken, that there was a general interest in people buying healthy food when the price is lower when the question was asked. There were scenarios given where a unhealthy food and healthy food were a choice and the same majority that said before that they would chose the healthy option in practice didn't or were unsure or neutral in our survey. This could have been because of the unhealthy and healthy food choice we gave them in the questionnaire such as the choice between a burger and a chicken wrap. Those who were neutral or not in favor could have chosen this response due to a preference against this type of food. In general we cannot conclude that only lowering the price of healthy food will increase demand. This method is not meant to be a cure all to the problem of people purchasing unhealthy food. The best method as was employed by Kiwi AS here in Norway is to simultaneously increase awareness to the public through media outlets such as television, radio, internet, etc. The goal should also be to supplement this knowledge with teachings on how to eat a healthy diet and create a healthy lifestyle for themselves.

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Appendix: