

# Determinants for participation in the Norwegian Breast Cancer Screening Programme

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## Preface

Two rewarding and demanding years as a master student has passed as I submit this master thesis in public health. With my background as a radiologic technologist I wanted to write a thesis relevant to the field of radiology and public health, with special attention to prevention and women's health. My work with the thesis has given me much greater knowledge in these areas, but also about quantitative research, which I find very interesting.

I want to express my sincere gratefulness to my supervisor, Professor Eiliv Lund. Thank you for constructive feedback, guidance, time and patience. I have learned a lot from you throughout this process. To my very helpful co-supervisor Morten Aarflot, thank you for always having an open door, and for goodwill and support. I would also like to thank my family and friends, and fellow master students for mutual support. To my partner Stian, thank you for your interest in my work, your patience and your encouragement in a stressful period.

Tromsø, 20.06.17

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## Abstract

**Background:** Breast cancer is the most frequent cancer among women worldwide, and the second most important cause of cancer death in developed countries after lung cancer. Early detection with mammographic screening reduces breast cancer mortality. Few studies have investigated factors associated with participation in The Norwegian Breast Cancer Screening Programme.

**Objective:** To identify determinants for participation in the breast cancer screening programme in Norway by demographic, lifestyle and socioeconomic factors.

**Material and method:** Cross-sectional study with data from the Norwegian Women and Cancer Study. Data collected in 2011, 8938 women aged 54-69 years. Self-reported behavior on lifestyle and socioeconomic factors collected by questionnaires. Logistic regression analysis with forward stepwise (likelihood ratio) selection was used to calculate odds ratios.

**Results:** Approximately four of five women have participated in the Norwegian Breast Cancer Screening Programme. After covariates were adjusted for, determinants for participation in the screening program were young age, OR 0.57 (CI 0.49-0.66), having a mother without breast cancer, OR 1.60 (CI 1.26-2.04), high socioeconomic status and living in the western region of Norway. Abstaining from alcohol gave lower odds of participation.

**Conclusion:** Our study found several determinants for participation in the screening program. There is a social gradient associated with participation, with increased participation in higher social classes. Measures to increase it should be directed specifically at women in lower social classes. Demography is also decisive for participation, while lifestyle factors were of less importance.

Key words: Breast cancer, mammography, socioeconomic status, screening



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# 1 Introduction

## 1.1 Background

Breast cancer is a major public health issue on a global scale (1). It is the most frequent cancer among women worldwide, and it comprises > 20 % of all female cancers (2, 3). In 2015, 3415 new cases were diagnosed in Norway (2). Breast cancer is the most common cause of cancer death among women, and the second most common cancer death after lung cancer in developed countries (3). Early detection with mammographic screening are associated with a reduction in breast cancer mortality (4). Breast cancer screening is recommended in Norway regardless of being in a risk group or not (2). Few studies have been conducted to investigate factors that are associated with participation. By mapping determinants for participation in the screening program, and by identifying non-participants, the program can be customized in order to increase the participation and further reduce the breast cancer mortality in the future.

## 1.2 Screening

Primary prevention measures involve improving health and reducing risk of developing invasive cancers or other diseases in the general population (5). These measures may include reduced alcohol consumption, a healthy diet and other lifestyle modifications (5). When it comes to breast cancer, it may not be socially accepted to change behavior, or difficult to remove some of the specific risk factors. This is why secondary preventive measures are developed (6). Screening is a form of secondary prevention which aims to discover disease among asymptomatic individuals. The central idea with screening programs is early disease detection and treatment (6). Screening programs seeks to test large numbers of individuals for one or more risk factors or diseases, on a voluntary basis (5). The Norwegian Breast Cancer Screening Program is a quality assured program that became nationwide in Norway in 2004

(7). Its primary target is to reduce breast cancer mortality with 30 % among the invited women (7). Women aged 50-69 years are invited, and recommended, to participate in the program every other year. Through this 20 year period each of the women are invited to participate 10 times (7). The mammographic screening is done at a stationary or mobile breast diagnostic center, which is placed central in the different Norwegian counties. The examination is performed with two projections on each breast (8). If the mammographic images show any suspicious findings, the women are summoned to further examinations that might include new radiologic projections, ultrasound and/or biopsy (8). Approximately 76 % of the invited women participate in each screening round, while 83 % of the invited women have participated at least once (9). The Norwegian quality manual indicates that it is necessary to have a participation rate on at least 75 % for the breast cancer screening program to be cost effective (10). One important disadvantage with the breast cancer screening program is the phenomenon of overdiagnosis, where breast cancer is diagnosed at screening when it would not have been detected in the absence of the program (11). It is not possible to determine whether or not the individual case of breast cancer is a case of overdiagnosis. This may lead to unnecessary treatment for the women, mental strain and an increased use of resources in the healthcare system (11). A cancer diagnosis in itself may cause substantial impact on both the mental and physical quality of life. The prognosis of breast cancer is strongly dependent on stadium of the disease, which can be affected by early diagnostics (11). The latest results from The Norwegian Breast Cancer Screening Program showed that participants had 43 % lower breast cancer mortality relative to non-participants (12). Various research show inconsistent results, and mortality risk reduction varies according to age of screening, among other factors (3). Women can also be examined with mammographic imaging after referral from a physician, if there is any suspicion of malignancy in the breast. This is referred to as opportunistic screening (11).

### 1.3 Risk factors

There are several established risk factors for breast cancer (8, 13). Menarche at an early age is associated with an increased risk, as higher number of menstrual cycle's results in a higher cumulative dose of estrogen (8). Women who give birth to their first child after the age of 35 have a significant increased risk of developing breast cancer relative to women who give birth before the age of 20 (13). There is a general consensus that multiparity has a protective effect on breast cancer (1, 13). Menopausal age are also of importance, and late menopause after the age of 55 are associated with 30 % higher risk of breast cancer relative to those who reaches menopausal age before 45 years (8). Hormone replacement therapy is a known carcinogen, and women using estrogen and progestin preparations combined has 26 % increased risk of breast cancer (14, 15), with a declining risk 2-3 years after treatment cessation (15). Among women who participated in the Norwegian Breast Cancer Screening Programme between 1996-2004, ever use of hormone therapy was associated with 58 % increased risk of breast cancer than never use (16).

Approximately 5 % of all breast cancers are hereditary, and the hereditary component is most prominent if first-born relatives as mother, sister or daughter have had premenopausal breast cancer (8). Both nutrition and physical activity might be significant factors on breast cancer risk. Studies show that postmenopausal overweight is associated with an increased risk of breast cancer, while premenopausal overweight has a protective effect (8). Alcohol and tobacco consumption are closely correlated (17), but whilst high alcohol consumption has shown to increase the risk of breast cancer, smoking shows inconsistent results (8).

#### 1.4 Health and social inequality

A lot of research is conducted on social inequalities and its effect on health (18). People with higher educational levels, income and a high status profession have on average increased life expectancy and better health, relative to those with lower educational level, income and a low status profession (18). This is known as the social gradient in health. There are clear tendencies that bad health-habits pile up in groups with low socioeconomic status, in opposition to those in groups with higher socioeconomic status (18). In example, marked gradients are found on education for nutrition and physical activity (19). However, the association between alcohol consumption and socioeconomic status is more complex, as women in high social classes have on average higher alcohol consumption, and drink more often than women in lower social classes (20). In lower social classes the social gradient in health is often associated with an increased risk of diseases related to in example diet and diabetes mellitus, smoking and lung cancer (19). In contrast to this, there is an opposite social gradient related to breast cancer, as women in higher social classes have an increased risk of the disease (11).

Health services play a small but important role in social inequalities in health. The primary aim is for everyone to experience the same level of safety for life and health (18). This is a challenge even in Norwegian policy. The use of health services vary with social status and this might strengthen the already existing inequalities (21, 22). Although there is a lack of research on preventive health services, it is known that high-status groups are more frequent users of screening services than low-status groups (23).

## 1.5 Aim of the study

We want to describe factors that might be of relevance to find determinants for participation in the screening programme. With data from the Norwegian Women and Cancer Study we have the opportunity to describe possible associations between demographic, lifestyle and socioeconomic factors, and participation.

1. To investigate if participation in the Norwegian Breast Cancer Screening Programme varies with demographic, lifestyle and socioeconomic factors.
2. To identify if there is an association between the known breast cancer risk factors and the tendency to participate.



## 2 Material and method

### 2.1 The Norwegian Women and Cancer Study

Quantitative research methods are used in this thesis, with data collected in the Norwegian Women and Cancer Study (NOWAC). The NOWAC is a prospective cohort study with a nationwide sample of Norwegian women aged 30-70 years old (24). The subjects were randomly sampled from the Norwegian Central Person Register, and the collection of data began in 1991. The data is collected through different series of self-reported questionnaires of 2-8 pages, with various questions. Over 170 000 Norwegian women have participated over the years (24). The original purpose of the NOWAC was to study the relationship between the use of external and internal hormones and female cancers, particularly breast cancer (24). The study has expanded over the years, by adding questions about diet, sun habits and mammography among others. In addition to this, blood-samples and tumor tissue have been collected (24). The data has been used to shed light on other problems as associations between fish consumption, vitamin D intake, smoking, sun habits and cancer (24). The NOWAC has been validated (25), and a number of articles have been published based on data collected in this study (26, 27).

### 2.2 Selection

The selection used in this cross-sectional study was women who responded on the questionnaires from series 35 from 2003, and series 47 from 2011 (figure 1). Two questions regarding number of children and education were included from series 35, as these questions did not exist in series 47. No subjects were excluded from our cohort from series 47, resulting in a study population of 8938 subjects aged 54-69 years. The questionnaire in series 47 consists of 8 pages and was chosen because it contained the latest data collected on the women in the NOWAC (see appendix). In 2011 the breast cancer screening program had been

operative throughout Norway for 7 years. The questionnaire from series 47 includes questions that are considered to be important in order to shed light on the problem in this thesis.

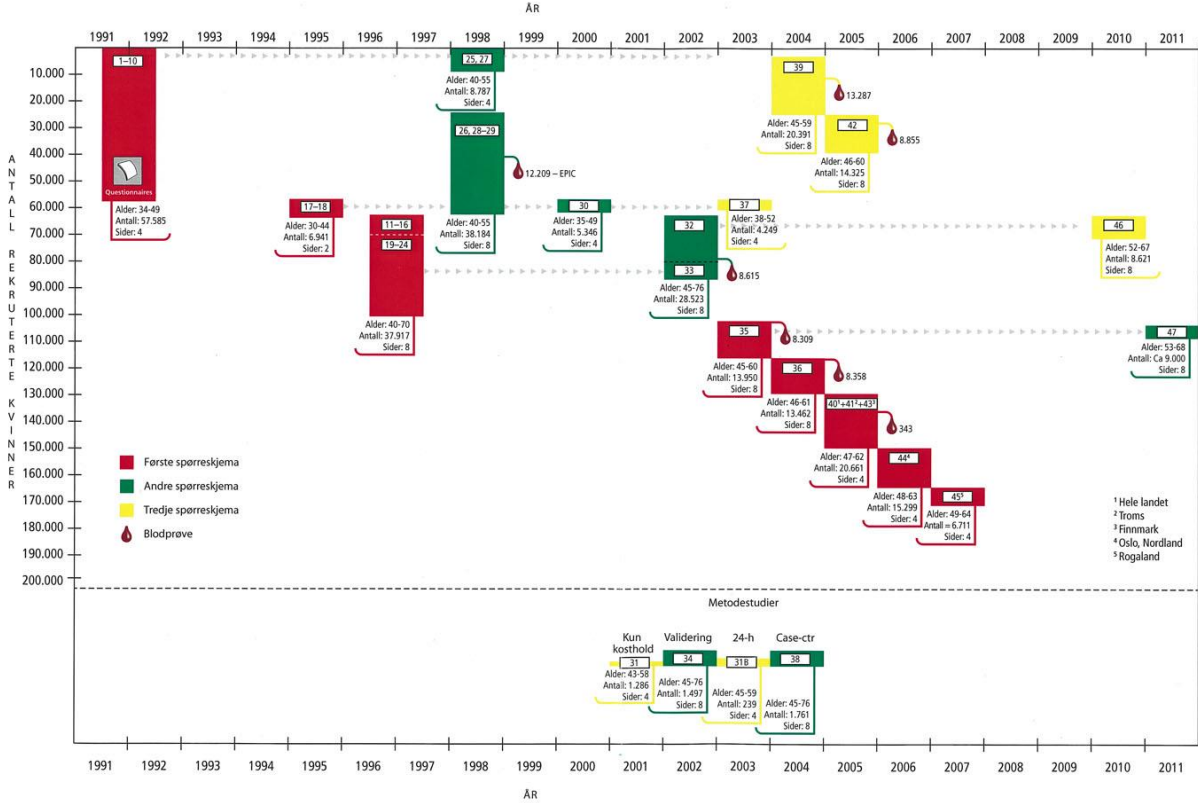


Figure 1: Timeline - The Norwegian Women and Cancer Study



## 2.3 Variables

### 2.3.1 Dependent variable

The variable “How many times have you been examined with mammography after invitation from the Cancer Registry/The National Mammography Screening Program” (continuous) was dichotomized into the variable “Screening” with the categories: participation and no participation. This is the dependent variable, as the outcome of interest was participation in the breast cancer screening program. Participation means that they have taken a mammogram at least once through the Norwegian Breast Cancer Screening Programme. The dependent variable was analyzed against all the independent covariates in the main regression analysis. Missing was included as ‘no participation’ in the screening variable.

### 2.3.2 Independent variables

The following variables were selected as a result of a literature review on the topic, and what information that was available through the questionnaires from series 35 and 47.

#### Demographic factors

##### **Age**

Age (continuous) was dichotomized into the categories: 54-60 years and 61-69 years. The youngest age group was used as the reference group.

##### **Region**

Municipality (municipality number, continuous) was categorized into five regions:

- South-East (includes Østfold, Akershus, Hedmark, Oppland, Buskerud, Vestfold, Telemark, Aust-Agder and Vest-Agder)
- Oslo

- West (includes Rogaland, Hordaland and Sogn og Fjordane)
- Mid (includes Møre og Romsdal, Sør-Trøndelag and Nord-Trøndelag)
- North (includes Nordland, Troms and Finnmark)

Information about municipality and birth year was collected from Statistics Norway and linked to the data file (28). South-East was used as the reference group.

### **Children**

Number of children (continuous) was categorized into three groups: none, 1-2 and 3+. “None” was used as the reference group.

### Lifestyle factors

#### **Smoking**

From the variables ‘Have you smoked more than 100 cigarettes in your life’ and ‘Do you smoke on a daily basis’, the variable ‘Smoking status’ was constructed. It was categorized with three categories: current, former and never. Current smoking was used as the reference group.

#### **Physical activity**

This variable was based on a question where the subjects rated their level of physical activity on a scale from 1-10, where 1 = very low and 10 = high. The original variable was categorized into three groups: low ( $\leq 4$ ), moderate (5-7) and high ( $\geq 8$ ). Low physical activity was used as the reference group.

## **Alcohol**

The first question the subjects needed to answer in regards to alcohol consumption was if they were a teetotaler, followed by a question of average alcohol consumption during the recent year. “If no, how frequent and how much did you drink on average the recent year?”. Subjects answered by ticking the appropriate box: beer, wine, liquor or liqueur. It ranged from never, rarely, 1 per month, 2-3 times per month, 1 per week, 2-4 times per week, 5-6 times per week or 1 or more per day. The original variable was continuous and measured alcohol consumption in grams per day. It was categorized into three groups for comparison between the groups: none (0 grams),  $\leq 3$  units/week (0.01-5.14 g/day) and  $> 3$  units/week (5.15-35.0 g/day). A glass of wine, or 1 unit of alcohol, equals approximately 12 grams of pure alcohol (29).  $\leq 3$  units/week was used as the reference group.

## **Body mass index**

Body mass index was computed from the variables height and weight (calculated with weight in kg/(height in cm \* height in cm/10 000)). Body mass index was categorized into 4 groups: underweight (BMI <18.5), normal (BMI 18.5-24.9), overweight (BMI 25-29.9) and obesity (BMI  $\geq 30$ ), based on World Health Organization’s classification of body mass index (30). Those in the normal weight group were used as the reference group.

## **Hormone replacement therapy**

From the variables ‘Have you ever used hormone replacement therapy’ and ‘Do you use hormone replacement therapy now’ the variable ‘Hormone replacement status’ was constructed and included with three categories: current, former and never . Missing was included as never used hormone replacement therapy in the variable. Current users were the reference group.

### **Breast cancer in mother**

Subjects answered the question whether or not their mother has had breast cancer, by ticking the appropriate box: yes, no or don't know. Those who ticked the yes-box were used as the reference group.

### Socioeconomic factors

#### **Education**

Education in total number of years (continuous) was categorized into three groups: 7-12 years, 13-15 years and 16-30 years, based on the Norwegian school system. The subjects with 7-12 years of education were used as the reference group.

#### **Gross household income**

The subjects answered the question "How much is the gross household income per year" in Norwegian kroner (NOK). The subjects were given seven alternative boxes to tick: up to 150 000, 151 000-300 000, 301 000-450 000, 451 000-600 000, 601 000-750 000, 751 000-900 000 or > 900 000. This variable was collapsed into three groups: 0-300 000, 301 000-600 000 and > 600 000, and the lowest level of income (0-300 000) was used as the reference group.

#### **Health status**

The subjects were given four optional boxes to tick for the question "How do you perceive your own health": very good, good, bad or very bad. These four categories were collapsed into three: bad (very bad + bad), good and very good. Those who perceived their own health as bad were used as the reference group.

## 2.4 Statistical analysis

All statistical analyzes were performed using the statistical package SPSS, version 24.0. Continuous variables or variables with many response categories were dichotomized or categorized, as described under section 2.3. Characteristic variables are reported as count with percentages in each category, to see the distribution of participation/non-participation in all the included variables. A chi-squared test was used to test the association between each covariate against screening (table 1). The significance level was set at 0.05 in all analyzes, and all reported p-values are two-tailed. A multivariate logistic regression model using forward stepwise (likelihood ratio (LR)) selection was chosen as the appropriate method for analyzing the data, with a binary dependent variable. The dependent variable in the analysis was screening, and all the independent covariates included are accounted for under section 2.3. Odds ratios (OR) with 95 % confidence intervals (CI) are provided. OR is different from relative risk (RR), but closely related. RR is a ratio of probabilities which can be expressed in terms of a risk ratio, or estimated by an OR. If the studied disease is rare, then OR and RR is usually comparable. If the disease is more common the OR can overestimate and magnify risk (6). All independent covariates were adjusted for, and entered as three different blocks in the model. Block 1 included the demographic variables, block 2 included lifestyle variables and block 3 included the socioeconomic variables. Variables were included based on previous findings in the literature, and established breast cancer risk factors. The Hosmer-Lemeshow test (Goodness-of-Fit test) was satisfactory with a p-value = 0.062.

## 2.5 Ethics

The Norwegian Women and Cancer study is approved by the Regional Committees for Medical and Health Research Ethics and The Norwegian Data Protection Authority.



## 3 Results

### 3.1 Selection characteristics

See table 1 for distribution of the relevant covariates by participation in the Norwegian Breast Cancer Screening Programme.

Minimum and maximum age among the subjects was 54 and 69 years, respectively. The mean age was 60 years. There was 87 % participation in the age-group 54-60 years, while it was almost 10 percentage points lower participation in the age-group between 61-69 years, with 77.4 % ( $p < 0.01$ ). The majority of the subjects lived in Oslo and the South-East region (56.1 %). The two regions with the highest and lowest participation were West with 84.9 %, and Oslo with 77.8 % ( $p < 0.01$ ). The mean number of children was 2. Subjects with 1-2 children tended to participate a little less (82.0 %) than those with no children (82.5 %), and those with 3+ children (83.3 %).

There was 83.2 % participation for current smokers, 82.2 % for former smokers and 84.4 % for never smokers. For subjects who reported low physical activity there was 82.5 % participation. The participation tended to increase with the next level of activity, to 84.6 %, while it dropped back to 83.0 % in the group with the highest level of activity. The mean intake of alcohol was 2.5 units per week. The group with no alcohol intake had the lowest participation with 78.0 %, while the group with an alcohol intake  $> 3$  units per week had 83.8 % participation ( $p < 0.01$ ). Minimum and maximum BMI was 14.5 and 71.0, respectively. The mean BMI was 25.6, and classifies the average woman in the study as slightly overweight. This group (BMI 25-29.9) had the highest share of participants with 84.2 %, whilst the group with the lowest share of participants had BMI  $< 18.5$ , with 74.6 % ( $p = 0.04$ ). Current users of hormone replacement therapy had 82.8 % participation, while former use had

80.8 %, and never use had 83.4 % participation ( $p= 0.02$ ). Women with a mother who have had a breast cancer diagnose participated less in the national screening programme (78.2 %) than those with mothers without breast cancer (84.1 %) ( $p= < 0.01$ ).

Minimum years of education were 7 years, while maximum was 30 years. Mean years of education was 13.4. Subjects with the highest level of education participated more (84.6 %), than those with the lowest level of education (81.9 %) ( $p= 0.02$ ). The subjects in the lowest income group (0-300 000) participated less than those in the highest income group (> 600 000) with 76.0 % and 85.9 %, respectively ( $p= < 0.01$ ). There was no difference in screening participation inside the Oslo region when income was adjusted for (Data not shown). The participation increased with better health. Those who reported bad health had 78.3 % participation, while those in very good health had 85.6 % participation ( $p= < 0.01$ ).



Table 1: Characteristics of the covariates for breast cancer screening from The Norwegian Women and Cancer Study, 2011 (N=8938)

	<b>No participation</b> (n=1564)	<b>Participation</b> (n=7374)	p-value <sup>a</sup>
	n (%)	n (%)	
<b>Age</b>			< 0.01
54-60 years	618 (13.0)	4134 (87.0)	
61-69 years	946 (22.6)	3240 (77.4)	
<b>Region</b>			< 0.01
South-East	727 (17.5)	3419 (82.5)	
Oslo	193 (22.2)	675 (77.8)	
West	266 (15.1)	1495 (84.9)	
Mid	246 (18.5)	1085 (81.5)	
North	132 (15.9)	700 (84.1)	
<b>Children</b>			0.28
None	133 (17.5)	626 (82.5)	
1-2	898 (18.0)	4081 (82.0)	
3+	533 (16.7)	2667 (83.3)	
<b>Smoking status</b>			0.13
Current	232 (16.8)	1153 (83.2)	
Former	963 (17.8)	4445 (82.2)	
Never	205 (15.6)	1112 (84.4)	
Missing	164 (19.8)	664 (80.2)	
<b>Physical activity<sup>b</sup></b>			0.08
Low	276 (17.5)	1303 (82.5)	
Moderate	730 (15.4)	4023 (84.6)	
High	272 (17.0)	1331 (83.0)	
Missing	286 (28.5)	717 (71.5)	
<b>Alcohol</b>			< 0.01
None	289 (22.0)	1024 (78.0)	
≤ 3 units/ week	744 (16.6)	3745 (83.4)	
> 3 units/ week	452 (16.2)	2337 (83.8)	
Missing	79 (22.8)	268 (77.2)	

Table 1 continues.

	<b>No participation</b> (n=1564)	<b>Participation</b> (n=7374)	p-value <sup>a</sup>
	n (%)	n (%)	
<b>Body mass index</b>			0.04
Underweight < 18.5	29 (25.4)	85 (74.6)	
Normal 18.5-24.9	714 (16.6)	3575 (83.4)	
Overweight 25-29.9	484 (15.8)	2570 (84.2)	
Obesity ≥ 30	208 (17.6)	977 (82.4)	
Missing	129 (43.6)	167 (56.4)	
<b>HRT status<sup>c</sup></b>			0.02
Current	168 (17.2)	811 (82.8)	
Former	535 (19.2)	2252 (80.8)	
Never	861 (16.6)	4311 (83.4)	
<b>Breast cancer mother</b>			< 0.01
Yes	144 (21.8)	517 (78.2)	
No	1194 (15.9)	6314 (84.1)	
Don't know	21 (22.3)	73 (77.7)	
Missing	205 (30.4)	470 (69.4)	
<b>Education</b>			0.02
7-12 years	701 (18.1)	3171 (81.9)	
13-15 years	375 (16.9)	1850 (83.1)	
16-30 years	373 (15.4)	2044 (84.6)	
Missing	115 (27.1)	309 (72.9)	
<b>Gross income<sup>d</sup></b>			< 0.01
0-300 000	264 (24.0)	836 (76.0)	
301 000-600 000	586 (17.0)	2867 (83.0)	
> 600 000	558 (14.1)	3394 (85.9)	
Missing	156 (36.0)	277 (64.0)	
<b>Health status</b>			< 0.01
Bad <sup>e</sup>	157 (21.7)	565 (78.3)	
Good	914 (17.1)	4433 (82.9)	
Very good	376 (14.4)	2238 (85.6)	
Missing	117 (45.9)	138 (54.1)	

<sup>a</sup>The chi-square statistic is significant at the 0.05 level

<sup>b</sup>Measured on a scale from 1-10. Low (≤ 4), Moderate (5-7), High (≥ 8)

<sup>c</sup>Use of hormone replacement therapy

<sup>d</sup>Gross income per household in NOK

<sup>e</sup>Very bad + bad perception of own health

### 3.2 Univariate analysis

Table 2 shows the results from the univariate analyzes between screening and each of the covariates. Those in the highest age group had 49 % lower odds for participating in the screening programme than the youngest age group (OR= 0.51, 95 % CI 0.46 – 0.57). Those living in Oslo had 26 % lower odds for participation (OR= 0.74, 95 % CI 0.62 – 0.89), but living in the West region was associated with 20 % higher odds of participation (OR= 1.20, 95 % CI 1.03 – 1.39) relative to the South-East region. Women with no alcohol consumption had 30 % lower odds for participating (OR= 0.70, 95 % CI 0.60 – 0.82) than those with a consumption  $\leq 3$  units/week. To be underweight gave 41 % lower odds of participation (OR= 0.59, 95 % CI 0.38 – 0.90) than those in the normal weight group. Those with mothers who had not experienced breast cancer had 48 % higher odds of participation (OR= 1.48, 95 % CI 1.21 – 1.79) than those with mothers who have had a breast cancer diagnose. Having the highest level of education (16-30 years) were associated with 21 % higher odds of participation (OR= 1.21, 95 % CI 1.06 – 1.39) than having the lowest level of education (7-12 years). Living in a household with a gross income between 301 000 – 600 000 gave 55 % higher odds for participation (OR= 1.55, 95 % CI 1.31 – 1.82), while an income > 600 000 (1.92, 95 % CI 1.63 – 2.27) gave 92 % higher odds of participation than those in the lowest income group (0 – 300 000). Those who perceived their own health as good had 35 % higher odds of participating (OR= 1.35, 95 % CI 1.11 – 1.63) relative to those who perceived their own health as bad. Those who perceived their own health as very good had 65 % higher odds of participation (OR= 1.65, 95 % CI 1.34 – 2.04) than those who thought they had bad health.

Table 2: Univariate logistic regression with odds ratio (OR) for participation in The Norwegian Breast Cancer Screening Programme (N= 8938)

	Univariate <sup>a</sup>	
	OR	95 % CI
<b>Age</b>		
54-60 years (ref)	1.00	
61-69 years	0.51	0.46-0.57
<b>Region</b>		
South-East (ref)	1.00	
Oslo	0.74	0.62-0.89
West	1.20	1.03-1.39
Mid	0.94	0.80-1.10
North	1.13	0.92-1.38
<b>Children</b>		
None (ref)	1.00	
1-2	0.97	0.79-1.18
3+	1.06	0.86-1.31
<b>Smoking status</b>		
Current (ref)	1.00	
Former	0.93	0.79-1.09
Never	1.09	0.89-1.34
<b>Physical activity<sup>b</sup></b>		
Little (ref)	1.00	
Moderate	1.17	1.00-1.36
Much	1.04	0.86-1.25
<b>Alcohol</b>		
None	0.70	0.60-0.82
≤ 3 units/ week (ref)	1.00	
> 3 units/ week	1.03	0.90-1.17

Table 2 continues.

	Univariate <sup>a</sup>	
	OR	95 % CI
<b>Body mass index</b>		
Underweight < 18.5	0.59	0.38-0.90
Normal 18.5-24.9 (ref)	1.00	
Overweight 25-29.9	1.06	0.94-1.20
Obesity ≥ 30	0.94	0.79-1.11
<b>HRT status<sup>c</sup></b>		
Current (ref)	1.00	
Former	0.87	0.72-1.06
Never	1.04	0.87-1.24
<b>Breast cancer mother</b>		
Yes (ref)	1.00	
No	1.48	1.21-1.79
Don't know	0.97	0.58-1.63
<b>Education</b>		
7-12 years (ref)	1.00	
13-15 years	1.09	0.95-1.25
16-30 years	1.21	1.06-1.39
<b>Gross income<sup>d</sup></b>		
0-300 000 (ref)	1.00	
301 000-600 000	1.55	1.31-1.82
> 600 000	1.92	1.63-2.27
<b>Health status</b>		
Bad <sup>e</sup> (ref)	1.00	
Good	1.35	1.11-1.63
Very good	1.65	1.34-2.04

<sup>a</sup>Univariate analyzes between screening and each of the covariates

<sup>b</sup>Measured on a scale from 1-10. Low (≤ 4), Moderate (5-7), High (≥ 8)

<sup>c</sup>Current or ever use of hormone replacement therapy

<sup>d</sup>Gross income per household in NOK

<sup>e</sup>Very bad + bad perception of own health

### 3.3 Determinants for participation

The covariates children, smoking status, physical activity, body mass index, hormone replacement status, education and health status were excluded in the final regression model as they did not contribute to predicting participation in the Norwegian Breast Cancer Screening Programme.

Table 3 shows the significant associations between the covariates in the final regression model and participation in the screening program. Women in the oldest age group (61-69 years) had 43 % lower odds of participating in the Norwegian Breast Cancer Screening Programme than those in the youngest age group (OR= 0.57, 95 % CI 0.49 – 0.66). Women with a mother who had not experienced breast cancer had 60 % higher odds of participation than those with mothers who have had breast cancer (OR= 1.60, 95 % CI 1.26 – 2.04). The odds of participation increased as the gross income increased. Living in a household with a gross income between 301 000 – 600 000 gave 43 % higher odds of participating than those with a gross income between 0 – 300 000 (OR= 1.43, 95 % CI 1.14 – 1.78). Having an income > 600 000 gave 50 % higher odds of participation relative to those in the lowest income group (OR = 1.50, 95 % CI 1.20 – 1.90). Teetotalers had 31 % lower odds of participating than those who consumed  $\leq 3$  units per week of alcohol (OR= 0.69, 95 % CI 0.56 – 0.86). There were 32 % lower odds for participation for those living in Oslo relative to those in the South-East region (OR= 0.68, 95 % CI 0.54 – 0.86), whilst residency in the West region gave 39 % higher odds of participation (OR= 1.39, 95 % CI 1.11 – 1.73).

Table 3: Multivariate logistic regression with odds ratio (OR) for participation in the Norwegian Breast Cancer Screening Programme (N= 5770)

	Final model <sup>a</sup>	
	Odds ratio	95 % CI
<b>Age</b>		
54-60 years (ref)	1.00	
61-69 years	0.57	0.49-0.66
<b>Region</b>		
South-East (ref)	1.00	
Oslo	0.68	0.54-0.86
West	1.39	1.11-1.73
Mid	0.83	0.68-1.03
North	1.09	0.82-1.46
<b>Alcohol</b>		
None	0.69	0.56-0.86
≤ 3 units/week (ref)	1.00	
> 3 units/week	0.93	0.79-1.10
<b>Breast cancer mother</b>		
Yes (ref)	1.00	
No	1.60	1.26-2.04
Don't know	1.18	0.56-2.32
<b>Gross income<sup>b</sup></b>		
0-300 000 (ref)	1.00	
301 000-600 000	1.43	1.14-1.78
> 600 000	1.50	1.20-1.90

<sup>a</sup>Logistic regression model with forward stepwise (Likelihood Ratio (LR)) selection, mutually adjusted

<sup>b</sup>Gross income per household in NOK

Hosmer-Lemeshow test-, p-value= 0.062.





## 4 Discussion

### 4.1 Main findings

We found a social gradient in participation, with less participation in the Norwegian Breast Cancer Screening Programme in lower social classes. Demographics are also decisive for whether the women participate or not. We also found that lifestyle factors were of less importance for participation in the screening programme.

### 4.2 Comparison with previous findings

Socioeconomic status is mentioned to have an impact on public health, and that high socioeconomic status is associated with better health (31). The results of our study suggest a social gradient in participation, with more participation for women with higher educational levels and with high gross income, compared to lower levels. Income follows educational level and our results shows multicollinearity between the two covariates. Education is excluded from the final model as a result of the stepwise selection. The OR for participation in the highest income group was reduced in the multivariate analysis, after adjusting for the other covariates. Studies conducted in Norway and Sweden found that higher educational levels were associated with an increased risk of breast cancer (32). This was explained by established breast cancer risk factors as higher alcohol consumption among these women, that they have fewer children, and that they use hormone replacement therapy to a greater extent than lower educated women (27, 32). These known risk factors for breast cancer might also influence that higher educational levels and income is associated with higher participation than lower educational levels and less income. Participation in the screening program also implies costs like deductibles, travel expenses and absence from work, which must be partly covered by one self (11). This might be a factor that contributes to less participation among women with low income. We also found that bad health status was associated with less

participation than good health status (table 1). Our finding of less participation in lower social classes, and for women with poorer health, corresponds to other findings that there are social inequalities in Norway. Richer and healthier people are usually more frequent users of health services (23). A Swedish study suggests that low social participation, low sense of control and being under great stress is associated with higher odds of non-participation (33). Considering how substantial impact a cancer diagnosis might have on both the mental and physical health, this might be of importance for the non-participants who experience lack of control and social participation, and are under stress. Some might have chosen not to participate based on their knowledge about overdiagnostics, and the potential unnecessary harm it may cause (11). Other subjects included might have undertaken opportunistic mammography after referral from a physician, and have therefore not participated through the national screening program. We have not included information about the women's use of opportunistic screening in our study.

We found an association between the use of hormone replacement therapy and participation in the screening program (table 1). According to clinical guidelines, women who use menopausal hormone therapy are especially recommended mammography screening in the Norwegian Breast Cancer Screening Programme (34), as it is a known risk factor and has a key role in development and progression of breast cancer (1). 43 % of the women who participated in the Norwegian Breast Cancer Screening Programme between 1996 and 2004 reported to had ever used hormone therapy (16), which corresponds to our finding of 41.5 %. Prescriptions for hormone replacement therapy are most frequent for women in the age-group 55-59 years (35), which corresponds to our finding that the odds of participation are higher in the age-group between 54-60 years than 61-69 years. The higher odds of participation in the lowest age group might also be seen in relations to the average age for breast cancer being

approximately 59 years in Norway (8). Another study conducted in Norway found that women in the age-group 62-67 participated most in the Norwegian Breast Cancer Screening Programme (36). This deviates from our finding. A possible explanation to the difference might be that not all of the women in the oldest age-group in our study had gotten invitations. They could have lived in municipalities where there was no breast cancer screening until it became nationwide in 2004 (7).

Women with a first degree relative diagnosed with breast cancer have an elevated risk of breast cancer compared to women without an affected family member (37). Our findings suggest that family history of breast cancer affects participation in the screening program. The odds of participation are higher if there is no history of breast cancer in their mothers. In Norway, women with known high familial risk of breast cancer is offered more intensive follow-up than public mammography screening (7). Women with detected BRCA1 and BRCA2-gene mutation are offered annual MR-examination of the breasts up to the age of 70 (7), which exclude them from the national screening program. Women with an increased risk of breast cancer based on family history, without detection of gene-mutation, are offered tailored mammography examinations from the age of 30 (7). At the age of 60, these women can be transferred to screening in the Norwegian Breast Cancer Screening Programme with invitations every other year (7). This supports our finding that there is less participation among women with a family history of breast cancer.

Participation in the Norwegian Breast Cancer Screening Programme varies according to counties or regions (8). We found that there was approximately 85 % participation in the West region, and almost 78 % in Oslo. This corresponds to findings in other research where the highest participation is in counties in the west region, while residents in Oslo participate less

through the screening program (8, 36). The lower odds of participation in the Oslo region might be influenced by the many private clinics there, and that some groups of women may have taken advantage of this option. Private screening for breast cancer is a more expensive alternative to the national screening program (11). Cultural background and language barriers might also be a contributory reason to less participation in Oslo, where the highest proportions of immigrants are located in Norway (8). 6 % of women aged 50-69 years had undertaken mammography in a private clinic in 2005 and 2008, on a nationwide basis (8). We did not find a difference in participation based on income level inside of Oslo. Travel expenses might be lower in Oslo as there are shorter distances than in the West region. This does not appear to be decisive for the participation, as it is lower in Oslo than in the western part of Norway.

We found that the average consumption of alcohol was 2.5 units per week, which is a little less than what has been found elsewhere (17). Their finding was that the average alcohol consumption were 3.5 units per week, and their results suggests that about 4 % of the breast cancers in developed countries are attributable to alcohol (17). No alcohol consumption was associated with lower odds of participating in the screening program relative to those with a consumption  $\leq 3$  units per week. Above 50 % of the subjects included in our study reported to consume  $\leq 3$  units of alcohol per week. This might be considered as normal consumption, as the average consumption is shown to be 2.5 units per week. Women with no alcohol consumption were a small group of approximately 15 %. It is not known whether abstaining from alcohol is related to religion, diseases or other. We chose not to include information about diseases in the study. This could be a potential confounder relative to lifestyle and socioeconomic factors, and the odds of participation. Higher odds of participation in the group with normal alcohol consumption might be related to the known association between

drinking alcohol and the risk of breast cancer. We also found a tendency that women with a consumption > 3 units per week participated less than those with a normal consumption, but the results were not statistically significant. Smoking is also a known risk factor for various cancer forms, but smoking has shown inconsistent results on the risk of developing breast cancer (17). We found no association between smoking status and participation in the screening program.

Reproductive patterns have an impact on the risk of breast cancer (1). Women who give birth to her first child after the age of 35 have a particularly high risk of developing breast cancer, relative to those who give birth before the age of 20. High parity seems to have a protective effect on breast cancer (8). We did not find an association between number of children and participation in the Norwegian Breast Cancer Screening Programme in our study, suggesting that the risk associated with parity is not relevant for deciding whether or not to participate.

A meta-analysis conducted in 2013 found that the average breast cancer risk reduction associated with being physically active was 12 % (38). National guidelines in Norway recommend people to be physically active to reduce the risk of developing cancer (39). We found no association between physical activity and participation in the screening program, which suggests that this risk factor is not relevant for participation. There is a known association between body mass index and physical activity (38). We found that underweight women had lower odds of participation than women in the normal weight group. This difference might be related to the difference in risk of breast cancer (40). It could be easier to feel a tumor themselves if being underweight, which could lead to opportunistic screening. The possible discomfort related to the examination if the breasts are very small might also be a contributor to less participation in this group (11). Underweight might be caused by other

diseases, which again can affect the participation rate for various reasons. We found that the average woman in our study was slightly overweight. It is known that the risk of breast cancer increase with weight gain in adulthood (40). We do not have information about any changes in weight, other than that the prevalence of overweight and obesity has increased in Norwegian women during the last decades (41).

### 4.3 Methodological considerations

#### 4.3.1 External validity

The response rate in the NOWAC has varied with length of the questionnaires, geography and age. Several validation studies have been conducted and shown that the distribution of exposures was independent of the response rate (24). A postal survey conducted on non-responders in the NOWAC showed that lack of time and privacy was the most important reasons for not responding to the questionnaires (25). No differences were found in lifestyle-factors when comparing responders to non-responders. No significant differences were found in age and education when the selection of participants from the first to the second mailing was studied. This indicates good external validity (24, 25). The proportion of participants in the Norwegian Breast Cancer Screening Programme in our study corresponds to findings in other research about Norwegian women's participation rate (36). Based on these findings, it is therefore reason to believe that the sample is representative of the female population in Norway in the same age group.

#### 4.3.2 Strengths

Information about age and municipality was collected from Statistics Norway and is unlikely erroneous. Variables as the use of hormone replacement therapy, physical activity and self-reported height and weight (body mass index) is validated, without any measurement errors

found (24, 42). The main variable of interest, screening, has been validated by linkage to the Norwegian Breast Cancer Screening Programme (24). This linkage has shown that 1.7 % of the participants in the Norwegian Breast Cancer Screening Programme answer the question about participation negatively as no participation in the NOWAC questionnaire (unpublished material, Lund E 2017). Selection bias occurs if non-responders differ from responders. The risk of selection bias is reduced by having data from a large nationwide female cohort.

#### 4.3.3 Limitations

Self-reported data from questionnaires are prone to reporting bias. This self-reporting might lead to over-reporting of healthy habits as physical activity and education, and under-reporting of what is considered unhealthy. This might include questions regarding high weight (body mass index) and alcohol consumption. These factors could pose a risk of bias. Matters that subjects can find sensitive or difficult to report might be prone to bias. Over-reporting of physical activity or under-reporting of alcohol consumption might lead to an over- or underestimation of the odds for participating in the breast cancer screening program. Residual confounding might be an issue, as variables not included in the thesis could have an impact on the proportion of participants in the screening program. Not all of the variables have been validated (24).

When participants are compared to non-participants in an invited population, this could introduce systematic error through self-selection (11). This might lead to a distortion of the results away from the true estimate. Women who participate in the screening program differ from non-participants in aspects that are related to their risk of breast cancer and/or the risk of breast cancer mortality (11). The possibility of self-selection therefore constitutes a limitation in the study. Also, the use of opportunistic screening has not been accounted for in this study.





## 5 Conclusion

This study shows that there are differences between participants and non-participants in the Norwegian Breast Cancer Screening Programme. The study reveals that there is less participation in the Oslo region, which can be a result of many private screening clinics, and high immigration rates. There is also a social gradient where poor health is associated with less participation, and that participation increase with increased income. We found that lifestyle factors as smoking, physical activity and body mass index were less important for participation in the screening program.

The study results indicate that measures to increase participation in the screening program should be directed specifically at women in lower social classes, especially considering that these women are likely to be in poorer health in the first place (23, 31). Reduced deductibles for women in low income-groups might be a measure to increase the participation. Also, the aspect of the demographic differences needs to be considered if the aim is to increase the participation in regions as Oslo. From a public health perspective, socioeconomic status is important to take into account when addressing the problem of non-participation in breast cancer screening in Norway. A high participation rate is also favorable in a socioeconomic perspective, considering the resources allocated to the screening programme (43).

### 5.1 Future studies

It might be useful to conduct more research among groups with low socioeconomic status and immigration groups, and their use of preventive health care services in Norway. This would probably give a more nuanced image of the situation as it is today, to the extent that this is feasible.



## 6 References

1. Veronesi U, Boyle P, Goldhirsch A, Orrecchia R, Viale G. Breast Cancer. *Lancet*. 2005;365(9472):1721-1741.
2. Cancer Registry of Norway. Cancer in Norway 2015 – Cancer incidence, mortality, survival and prevalence in Norway. Oslo: Cancer Registry of Norway, 2016.
3. Warriar S, Tapia G, Goltsman D, Beith J. An update in breast cancer screening and management. *Womens Health*. 2016;12(2):229-39.
4. Marmot MG, Altman DG, Cameron DA, Dewar JA, Thompson SG, Wilcox M. The benefits and harms of breast cancer screening: an independent review. *Br J Cancer*. 2013;108(11):2205-2240.
5. Wilson JMG, Jungner G. Principles and practice of screening for disease. Geneva: World Health Organization, 1968.
6. Katz DL, Elmore JG, Wild DMG, Lucan SC. *Jekel's epidemiology, biostatistics, preventive medicine and public health*. 4<sup>th</sup> ed. Philadelphia: Elsevier Saunders; 2014.
7. Wist E, Naume B, Lønning PE, Schlichting E, Aas T. Nasjonalt handlingsprogram med retningslinjer for diagnostikk, behandling og oppfølging av pasienter med brystkreft. Oslo: Norwegian Directorate of Health, 2015.
8. Hagerup-Jenssen T. Mammografiprogrammet i Norge. Evaluering av prøveprosjektet 1996-2000. In: *Forskningrapport vol. 2*. Oslo: Cancer registry of Norway, 2000.
9. Hofvind S, Lee CI, Elmore JG. Stage-specific breast cancer incidence rates among participants and non-participants of a population-based mammographic screening program. *Breast Cancer Res Treat*. 2012;135:291-299.
10. Ertzaas AKO. Mammografiprogrammet. Kvalitetsmanual. Oslo: Cancer Registry of Norway, 2003.
11. The Research Council of Norway. Research-based evaluation of the Norwegian Breast Cancer Screening Program. Final report. Oslo: Division for Society and Health, 2015.
12. Hofvind S, Ursin G, Tretli S, Sebuødegård S, Møller B. Breast cancer mortality in participants of the Norwegian Breast Cancer Screening Program. *Cancer*. 2013;119(17):3106-12.
13. Press DJ, Pharaoh P. Risk factors for breast cancer: a reanalysis of two case-control studies from 1926 and 1931. *Epidemiology*. 2010;21(4):566-572.

14. Hulley S, Furberg C, Barrett-Connor E, Cauley J, Grady D, Haskell W et al. Noncardiovascular disease outcomes during 6.8 years of hormone therapy: Heart and estrogen/progestin Replacement study follow-up (HERS II). *JAMA*. 2002;288(1):58-66.
15. Chlebowski RT, Kuller LH, Prentice RL, Stefanick ML, Manson JE, Gass M et al. Breast cancer after use of estrogen plus progestin in postmenopausal women. *N Engl J Med*. 2009;360(6):573-587.
16. Hofvind S, Møller B, Thoresen S, Ursin G. Use of hormone therapy and risk of breast cancer detected at screening and between mammographic screens. *Int J Cancer*. 2006;118(12):3112-3117.
17. Hamajima N, Hirose K, Tajima K, Rohan T, Calle EE, Heath CW, Jr et al. Alcohol, tobacco and breast cancer- collaborative reanalysis of individual data from 53 epidemiological studies, including 58.515 women with breast cancer and 95.067 women without the disease. *Br J Cancer*. 2002;87(11):1234-1245.
18. Dahl E, Bergsli H, van der Wel KA. Sosial ulikhet i helse: En norsk kunnskapsoversikt. Oslo: Høgskolen i Oslo og Akershus. Fakultetet for samfunnsfag/Sosialforsk, 2014.
19. Strand BH, Næss Ø. Folkehelsens sosioøkonomiske fordeling. In: Mæland JG et al, ed. Sosial epidemiologi. Sosiale årsaker til sykdom og helsesvikt. Oslo: Gyldendal; 2009.
20. Horverak Ø, Bye EK. Det norske drikkemønsteret. En studie basert på intervjudata fra 1973-2004. SIRUS-rapport nr. 2/2007. Oslo: Statens institutt for rusmiddelforskning, 2007.
21. Lian O, Westin S. Bidrar helsetjenesten til sosiale ulikheter I helse? In: Mæland JG et al, ed. Sosial epidemiologi. Sosiale årsaker til sykdom og helsesvikt. Oslo: Gyldendal; 2009.
22. Hansen AH, Halvorsen PA, Ringberg U, Forde OH. Socio-economic inequalities in health care utilisation in Norway: a population based cross-sectional survey. *BMC Health Serv Res*. 2012;12:336.
23. Aas E. Hvem er det som møter frem til screening? *Økonomisk Forum*. 2004;58:34-44.
24. Lund E, Dumeaux V, Braathen T, Hjartåker A, Engeset D, Skeie G et al. Cohort profile: The Norwegian Women and Cancer Study – NOWAC – Kvinner og kreft. *Int J Epidemiol*. 2008;37(1):36-41.

25. Lund E, Kumle M, Braaten T, Hjartåker A, Bakken K, Eggen E et al. External validity in a population-based national prospective study – the Norwegian Women and Cancer Study (NOWAC). *Cancer Causes Control*. 2003;14(10):1001-8.
26. Lund E. The Norwegian Women and Cancer Study. Tromsø: University of Tromsø. Available from: <https://site.uit.no/nowac/publications/articles/> (15.04.17).
27. Braathen T, Weiderpass E, Kumle M, Lund E. Explaining the socioeconomic variation in cancer risk in the Norwegian Women and Cancer Study. *Cancer Epidemiol Biomarkers Prev*. 2005;14(11):2591-2597.
28. Hjartåker A, Lund E. Kohortstudier. In: Laake P et al, ed. *Epidemiologiske og kliniske forskningsmetoder*. Oslo: Gyldendal; 2007.
29. Store norske leksikon. Alkohol – alkohol i organismen. Available from: [https://snl.no/alkohol\\_-\\_alkohol\\_i\\_organismen](https://snl.no/alkohol_-_alkohol_i_organismen) (03.05.17).
30. World Health Organization. BMI Classification. Available from: <http://www.who.int/features/factfiles/obesity/facts/en/> (16.05.17).
31. Norwegian Directorate of Health. *Folkehelsepolitisk rapport 2015*. Oslo: Norwegian Directorate of Health, 2015.
32. Braaten T, Weiderpass E, Kumle M, Adami HO, Lund E. Education and risk of breast cancer in the Norwegian-Swedish women's lifestyle and health cohort study. *Int J Cancer*. 2004;110(4):579-83.
33. Lagerlund M, Sontrop JM, Zackrisson S. Psychosocial factors and attendance at a population-based mammography screening program in a cohort of Swedish women. *BMC Womens Health*. 2014;14(1):33.
34. Norsk helseinformatikk AS. *Norsk Elektronisk Legehåndbok*. Available from: [www.legehandboka.no](http://www.legehandboka.no) (29.05.17).
35. Hofvind S, Sakshaug S, Ursin G, Graff-Iversen S. Breast cancer incidence trends in Norway – explained by hormone therapy or mammographic screening? *Int J Cancer*. 2012;130(12):2930-2938.
36. Sebuødegård S, Sagstad S, Hofvind S. Oppmøte i mammografiprogrammet. *Tidsskr Nor Legeforen*. 2016;136:1448-51.
37. Albrektsen G, Heuch I, Thoresen S, Kvale G. Family history of breast cancer and short-term effects of childbirths on breast cancer risk. *Int J Cancer*. 2006;119(6):1468-1474.
38. Wu Y, Zhang D, Kang S. Physical activity and risk of breast cancer: a meta-analysis of prospective studies. *Breast Cancer Res Treat*. 2013;137(3):869-82.

39. Thune I. Kreft. In: Bahr R, ed. Aktivitetshåndboken. Oslo: Norwegian Directorate of Health; 2009.
40. Keum N, Greenwood DC, Lee DH, Kim R, Aune D, Ju W et al. Adult weight gain and adiposity-related cancers: a dose-response meta-analysis of prospective observational studies. *J Natl Cancer Inst.* 2015;107(2).
41. Jensen A. Overvekt og fedme. Er nordmenn så overvektige? Oslo: Statistics Norway, 2007. Available from: <http://www.ssb.no/helse/artikler-og-publikasjoner/er-nordmenn-saa-overvektige> (01.06.17).
42. Skeie G, Mode N, Henningsen M, Borch KB. Validity of self-reported body mass index among middle-aged participants in the Norwegian Women and Cancer Study. *Clin Epidemiol.* 2015;7:313-23.
43. Törnberg SA. Screening for early detection of cancer – ethical aspects. *Acta Oncol.* 1999;38:77–81.

# Appendix

The Norwegian Women and Cancer Study, questionnaire from series 47 (2011)

<h2 style="margin: 0;">KVINNER OG KREFT</h2> <p>Hvis du samtykker i å være med, sett kryss for JA i ruten ved siden av. Dersom du ikke ønsker å delta kan du unngå puring ved å sette kryss for NEI og returnere skjemaet i vedlagte svarkonvolutt. Vi ber deg fylle ut spørreskjemaet så nøye som mulig.</p> <p>Skjemaet skal leses optisk. Vennligst bruk blå eller sort penn. Du kan ikke bruke komma, forhøy 0,5 til 1. Bruk blokkbokstaver.</p> <p>Med vennlig hilsen Eiliv Lund Professor dr. med</p>	<h2 style="margin: 0;">KONFIDENSIELT</h2> <p style="text-align: right;">Host 2011</p> <div style="border: 1px solid black; height: 50px; width: 100%;"></div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"><p>Jeg samtykker i å delta i <span style="float: right;">JA <input type="checkbox"/></span></p><p>spørreskjemaundersøkelsen <span style="float: right;">NEI <input type="checkbox"/></span></p></div>
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<h3 style="background-color: #008000; color: white; padding: 2px;">Menstruasjon og overgangsalder</h3> <p>Har du regelmessig menstruasjon fremdeles? <span style="float: right;">+</span></p> <p><input type="checkbox"/> Ja</p> <p><input type="checkbox"/> Har uregelmessig menstruasjon</p> <p><input type="checkbox"/> Vet ikke (menstruasjon uteblitt pga. sykdom o.l.)</p> <p><input type="checkbox"/> Vet ikke (bruker hormonpreparat med østrogen)</p> <p><input type="checkbox"/> Nei</p> <p style="text-align: center;">+</p> <p>Hvis Nei;</p> <p>har den stoppet av seg selv? ..... <input type="checkbox"/></p> <p>har du operert vekk eggstokkene? ..... <input type="checkbox"/></p> <p>har du operert vekk livmoren? ..... <input type="checkbox"/></p> <p>annet? ..... <input type="checkbox"/></p> <p>Alder da menstruasjonen opphørte ..... <input style="width: 40px;" type="text"/></p> <p>Har du eller har du hatt smerter eller ømhet i brystene av minst fem dagers varighet før menstruasjonen? ..... <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p> <p>Hvis Ja; i begge brystene? <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p> <p>er/var smerten eller ømheten mindre under og etter menstruasjonen? <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p> <p>forstyrret plagene ditt sosiale liv, yrkesaktivitet eller privatlivet? <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p> <p>Hvor mange år har du hatt slike plager? <input style="width: 40px;" type="text"/></p>	<p>Utfyllende spørsmål til alle som har brukt preparater med østrogen i form av tabletter eller plaster fra 2003 og frem til i dag</p> <p>Har du svart «ja», ber vi deg utdype dette nærmere ved å svare på spørsmålene nedenfor. For hver periode med sammenhengende bruk av samme hormonpreparat håper vi du kan si oss hvor gammel du var da du startet, hvor lenge du brukte det samme hormonpreparatet og navnet på dette. Dersom du har hatt opphold eller skiftet merke skal du besvare spørsmålene for en ny periode. Dersom du ikke husker navnet på hormonpreparatet, sett «usikker». For å hjelpe deg til å huske navnet på hormonpreparatene ber vi deg bruke vedlagte brosjyre som viser bilder av hormonpreparater som har vært solgt i Norge. Vennligst oppgi også nummer på hormontabletten/plasteret som står i brosjyren.</p> <table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th rowspan="2">Periode</th><th rowspan="2">Alder ved start</th><th colspan="2">Brukt samme hormontablett/plaster/ sammenhengende fra 2003</th><th rowspan="2">Navn på hormontablett/plaster (se brosjyre)</th></tr><tr><th>antall år</th><th>antall mnd. nr.</th></tr></thead><tbody><tr><td>1.</td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 100px;" type="text"/></td></tr><tr><td>2.</td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 100px;" type="text"/></td></tr><tr><td>3.</td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 100px;" type="text"/></td></tr><tr><td>4.</td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 100px;" type="text"/></td></tr><tr><td>5.</td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 30px;" type="text"/></td><td><input style="width: 100px;" type="text"/></td></tr></tbody></table> <p>Har du eller har du hatt smerter eller ømhet i brystene ved hormonbehandling av plager i overgangsalderen? ..... <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p> <p>Hvis Ja;</p> <p>er/var smerten eller ømheten i begge bryst? <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p> <p>forsvinner/forsvant plagene ved stopp av hormonbehandlingen? <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p> <p>forstyrret/forstyrret plagene ditt sosiale liv, yrkesaktivitet eller privatlivet? <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p> <p>Byttet du legemiddel? <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p> <p>Hvis Ja, ble du bedre? <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p>	Periode	Alder ved start	Brukt samme hormontablett/plaster/ sammenhengende fra 2003		Navn på hormontablett/plaster (se brosjyre)	antall år	antall mnd. nr.	1.	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 100px;" type="text"/>	2.	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 100px;" type="text"/>	3.	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 100px;" type="text"/>	4.	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 100px;" type="text"/>	5.	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 100px;" type="text"/>
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<h3 style="background-color: #008000; color: white; padding: 2px;">Bruk av hormonpreparater mot plager i overgangsalderen</h3> <p>Har du noen gang brukt østrogentabletter/plaster? ..... <input type="checkbox"/> Ja <input type="checkbox"/> Nei (Gjelder også progestagen/ Tibolon)</p> <p>Hvis Ja; hvor mange år i alt? ..... <input style="width: 40px;" type="text"/></p> <p>Hvor gammel var du første gang du brukte østrogentabletter/plaster? ..... <input style="width: 40px;" type="text"/></p> <p>Bruker du tabletter/plaster nå? ..... <input type="checkbox"/> Ja <input type="checkbox"/> Nei</p>	+
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## Østrogenpreparat til lokal bruk i skjeden

Har du noen gang brukt østrogenkrem/stikkpille?  Ja  Nei

Hvis Ja; bruker du krem/stikkpille nå?  Ja  Nei

## Alternativer til hormonbehandling mot plager i overgangsalderen

Har du noen gang brukt alternativer til hormonbehandling mot plager i overgangsalderen?  Ja  Nei

Hvis Ja; har du brukt noen av følgende:

Soyatilskudd  Ja  Nei

Preparatnavn \_\_\_\_\_

Andre tilskudd for overgangsalder  Ja  Nei

Preparatnavn \_\_\_\_\_

Andre legemidler enn hormoner  Ja  Nei

Preparatnavn \_\_\_\_\_

Akupunktur  Ja  Nei

Homeopati  Ja  Nei

Avspenningsteknikk/trening  Ja  Nei

Andre alternativer, spesifiser:  Ja  Nei

## Sykdom

Har du eller har du hatt noen av følgende sykdommer? (sett ett eller flere kryss)

	Ja	Nei	Hvis ja: Alder ved start
Kreft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Høyt blodtrykk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Hjertesvikt/hjertekrampe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Hjerteinfarkt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Slag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Depresjon (oppsøkt lege)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Hypothyreose/lavt stoffskifte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Sukkersyke (diabetes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>

Hvis ja på sukkersyke, hvilken type:

Type 1  Aldersdiabetes  Svangerskap

Behandles du i dag med (sett ett eller flere kryss):

Insulin  Legemidler  Kost

For følgende tilstander ber vi deg krysse av for hvilket år tilstanden oppsto første gang

	før 04	04	05	06	07	08	09	10	11
Muskelsmerter (myalgi)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fibromyalgi/Fibrositt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kronisk tretthetssyndrom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ryggsmerter ukjent årsak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nakkeslengskade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Osteoporose (benskjørhet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Brudd

Underarmen (håndledd)

Lårhalsen

Ryggvirvel (kompresjon)

## Selvopplevd helse

Oppfatter du din egen helse som? (Sett ett kryss)

Meget god  God  Dårlig  Meget dårlig

## Høyde og vekt

Hvor høy er du i dag? (i hele cm)

Hvor mye veier du i dag? (i hele kg)

## Røykevaner

Har du i løpet av livet røykt mer enn 100 sigaretter til sammen?  Ja  Nei

Hvis Ja, ber vi deg fylle ut for perioden 2003–2011 hvor mange sigaretter du i gjennomsnitt røykte pr. dag.

	Antall sigaretter pr. dag						
	0	1–4	5–9	10–14	15–19	20–24	25+
2003–2007	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2008–2011	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Hvor gammel var du da du tok din første sigarett?

Røyker du daglig nå?  Ja  Nei

Hvis Nei, hvor gammel var du da du sluttet?

Røyker du av og til nå?  Ja  Nei

Røykte noen av dine foreldre da du var barn?  Ja  Nei

Hvis Ja, hvor mange sigaretter røykte de til sammen pr. dag? (Antall)



## Fysisk aktivitet

Vi ber deg angi din fysiske aktivitet etter en skala fra svært lite til svært mye ved 14 års alder, ved 50 års alder og i dag. Skalaen nedenfor går fra 1–10. Med fysisk aktivitet mener vi både arbeid i hjemmet og i yrkeslivet samt trening og annen fysisk aktivitet som turgåing ol.

Alder	Svært lite										Svært mye									
14 år	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
50 år	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
I dag	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10

Vi er interessert i informasjon om ulike former for fysisk aktivitet i dagliglivet. Spørsmålene gjelder tiden du har brukt på fysisk aktivitet de siste 7 dagene. Vennligst svar på alle spørsmålene uansett hvor fysisk aktiv du er. Tenk på aktiviteter du gjør på jobb, som en del av hus- og hagearbeid, for å komme deg fra et sted til et annet og aktiviteter på fritiden (rekreasjon, mosjon og sport).

Tenk på alle svært anstrengende aktiviteter du har drevet med de siste 7 dagene. Svært anstrengende aktivitet er aktivitet som krever hard innsats og får deg til å puste mye mer enn vanlig. Ta bare med aktiviteter som varer minst 10 minutter i strekk.

1. Hvor mange dager i løpet av de siste 7 dager har du drevet med meget anstrengende aktivitet som tunge løft, gravearbeid, aerobics, løp eller rask sykling?

Dager i uken .....

Ingen meget anstrengende aktivitet *Gå til spørsmål 3*

2. Hvor lang tid brukte du vanligvis på svært anstrengende aktivitet en av disse dagene? .....
- |                      |                      |                          |
|----------------------|----------------------|--------------------------|
| timer pr.<br>dag     | minutter<br>pr. dag  | Vet<br>ikke              |
| <input type="text"/> | <input type="text"/> | <input type="checkbox"/> |

Tenk på all middels anstrengende aktivitet du har drevet med de siste 7 dagene. Middels anstrengende aktivitet er aktivitet som krever moderat innsats og får deg til å puste litt mer enn vanlig. Ta bare med aktiviteter som varer minst 10 minutter i strekk.

3. Hvor mange dager i løpet av de siste 7 dagene har du drevet med middels anstrengende fysisk aktivitet som å bære lette ting, jogge eller sykle i moderat tempo? Ikke ta med gange.

Dager i uken .....

Ingen *Gå til spørsmål 5*

4. Hvor lang tid brukte du vanligvis på middels anstrengende fysisk aktivitet på en av disse dagene? .....
- |                      |                      |                          |
|----------------------|----------------------|--------------------------|
| timer pr.<br>dag     | minutter<br>pr. dag  | Vet<br>ikke              |
| <input type="text"/> | <input type="text"/> | <input type="checkbox"/> |

Tenk på tiden du har brukt på å gå de siste 7 dagene. Dette inkluderer gange på jobb og hjemme, gange fra ett sted til et annet eller gange som du gjør på tur eller som trening på fritiden.

5. Hvor mange dager i løpet av de siste 7 dagene gikk du i minst 10 minutter i strekk?

Dager i uken .....

Ingen *Gå til spørsmål 7*

6. Hvor lang tid brukte du vanligvis på å gå en av disse dagene? .....
- |                      |                      |                          |
|----------------------|----------------------|--------------------------|
| timer pr.<br>dag     | minutter<br>pr. dag  | Vet<br>ikke              |
| <input type="text"/> | <input type="text"/> | <input type="checkbox"/> |

Tenk på all tid du har tilbrakt sittende på ukedagene i løpet av de siste 7 dagene. Inkluder tid du har brukt på å sitte på jobb, hjemme, på kurs og på fritiden. Dette kan tilsvare tiden du sitter ved et arbeidsbord, hos venner, mens du leser eller sitter eller ligger for å se på TV.

7. Hvor lang tid brukte du på å sitte en vanlig hverdag i løpet av de siste 7 dagene? .....
- |                      |                      |                          |
|----------------------|----------------------|--------------------------|
| timer pr.<br>dag     | minutter<br>pr. dag  | Vet<br>ikke              |
| <input type="text"/> | <input type="text"/> | <input type="checkbox"/> |

## Brystkreft i nærmeste familie

Har noen nære slektninger hatt brystkreft?

	Vet			Alder ved start
	Ja	Nei	ikke	
Datter .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Mor .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Søster .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>

## Mammografiundersøkelse

Har du vært til undersøkelse av brystene med mammografi? .....  Ja  Nei

Hvis Ja, hvor gammel var du? (hele år) .....

første gang	siste gang
<input type="text"/>	<input type="text"/>

Hvor mange ganger har du vært undersøkt?

- etter invitasjon fra Kreftregisteret/  
Det nasjonale mammografiprogrammet .....
- etter henvisning fra lege .....
- uten henvisning fra lege .....
- som del av egen forsikring/ gjennom  
arbeidsplass .....
- gjennom frivillige organisasjoner .....

## Kosthold

Vi er interessert i å få kjennskap til hvordan kostholdet ditt er vanligvis. Kryss av for hvert spørsmål om hvor ofte du i gjennomsnitt siste året har brukt den aktuelle matvaren, og hvor mye du pleier å spise/drikke hver gang.

## Drikke

Hvor mange glass melk drikker du vanligvis av hver type? (Sett ett kryss pr. linje)

	aldri/sjelden	1-4 pr. uke	5-6 pr. uke	1 pr. dag	2-3 pr. dag	4+ pr. dag
Helmelk (søt, sur).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lettmelk (søt, sur).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ekstra lettmelk.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skummet (søt, sur)....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Hvor mange kopper kaffe/te drikker du vanligvis av hver sort? (Sett ett kryss for hver linje)

	aldri/sjelden	1-6 pr. uke	1 pr. dag	2-3 pr. dag	4-5 pr. dag	6-7 pr. dag	8+ pr. dag
Kokekaffe, presskanne ..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Traktekaffe.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Espresso.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Latte.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pulverkaffe.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Svart te.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grønn te.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Bruker du følgende i kaffe

Sukker (ikke kunstig søtstoff).....	<input type="checkbox"/>	Ja	<input type="checkbox"/>	Nei
Melk eller fløte.....	<input type="checkbox"/>	Ja	<input type="checkbox"/>	Nei

Bruker du følgende i te

Sukker (ikke kunstig søtstoff).....	<input type="checkbox"/>	Ja	<input type="checkbox"/>	Nei
Melk eller fløte.....	<input type="checkbox"/>	Ja	<input type="checkbox"/>	Nei

Hvor mange glass vann drikker du vanligvis?

(Sett ett kryss for hver linje)

	aldri/sjelden	1-6 pr. uke	1 pr. dag	2-3 pr. dag	4-5 pr. dag	6-7 pr. dag	8+ pr. dag
Springvann/flaskevann.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Hvor mange glass juice, saft og brus drikker du vanligvis?

(Sett ett kryss for hver linje)

	aldri/sjelden	1-3 pr. uke	4-6 pr. uke	1 pr. dag	2-3 pr. dag	4+ pr. dag
Appelsinjuice.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annen juice.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saft/brus med sukker.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saft/brus sukkerfri.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Yoghurt/kornblanding

Hvor ofte spiser du yoghurt (1 beger)? (Sett ett kryss)

<input type="checkbox"/>	Aldri/sjelden	<input type="checkbox"/>	1-3 pr. uke
<input type="checkbox"/>	4-6 pr. uke	<input type="checkbox"/>	1 + pr. dag

Hvor ofte spiser du kornblanding, havregryn eller müsli? (Sett ett kryss)

<input type="checkbox"/>	Aldri/sjelden	<input type="checkbox"/>	1-3 pr. uke
<input type="checkbox"/>	4-6 pr. uke	<input type="checkbox"/>	1 + pr. dag

## Brødmat

Hvor mange skiver brød/rundstykker og knekkebrød/skonrokker spiser du vanligvis?

(½ rundstykke = 1 brødskeive) (Sett ett kryss for hver linje)

	aldri/sjelden	1-4 pr. uke	5-7 pr. uke	2-3 pr. dag	4-5 pr. dag	6+ pr. dag
Grovt brød.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kneipp/halfint.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fint brød/baguett.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knekkebrød o.l.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Nedenfor er det spørsmål om bruk av ulike påleggstyper. Vi spør om hvor mange brødskeiver med det aktuelle pålegget du pleier å spise. Dersom du også bruker matvarene i andre sammenhenger enn til brød (f. eks. til vafler, frokostblandinger, grøt), ber vi om at du tar med dette når du besvarer spørsmålene.

På hvor mange brødskeiver bruker du?

(Sett ett kryss pr. linje)

	aldri/sjelden	1-3 pr. uke	4-6 pr. uke	1 pr. dag	2-3 pr. dag	4+ pr. dag
Syltetøy.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brunost, helfet.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brunost, halvfet/mager..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hvitost, helfet.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hvitost, halvfet/mager...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rekesalat, italiensk o.l....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Kjøttpålegg

(Sett ett kryss pr. linje)

	aldri/sjelden	1-3 pr. uke	4-6 pr. uke	1 pr. dag	2-3 pr. dag	4+ pr. dag
Leverpostei.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Magert (kokt skinke o.l.)..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fett (salami, fenalår o.l.)..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

På hvor mange brødskeiver pr. uke har du i

gjennomsnitt siste året spist? (Sett ett kryss pr. linje)

	aldri/sjelden	1 pr. uke	2-3 pr. uke	4-6 pr. uke	7-9 pr. uke	10+ pr. uke
Makrell i tomat, røkt makrell.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kaviar.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sild/Ansjos.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laks (gravet/røkt).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annet fiskepålegg.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Dersom du bruker fett på brødet, hvor tykt lag

pleier du å smøre på? (En kuvertpakke med margarin veier 12 gram). (Sett ett kryss)

<input type="checkbox"/>	Skrapet (3 g)	<input type="checkbox"/>	Tynt lag (5 g)
<input type="checkbox"/>	Godt dekket (8 g)	<input type="checkbox"/>	Tykt lag (12 g)

**Hva slags fett bruker du vanligvis på brødet?**  
(Sett gjerne flere kryss)

- Bruker ikke fett på brødet
- Smør
- Hard margarin (f. eks. Melange)
- Myk margarin (f. eks. Soft, Vita)
- Smørblandet margarin (f.eks. Bremyk)
- Brelett
- Lettmargarin (f. eks. Soft light, Vita Lett)
- Margarin med olivenolje (f. eks. Brelett oliven, Soft oliven)

**Frukt og grønnsaker**

**Hvor ofte spiser du frukt?** (Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr. mnd	1 pr. 5-6 uke	2-4 pr. uke	5-6 pr. 1 uke	1 pr. pr.dag	2+ pr.dag
Epler/pærer.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appelsiner o.l.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bananer.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annen frukt.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor ofte spiser du kokt potet?** (Sett ett kryss pr. linje)

	aldri/ sjelden	1-4 pr. mnd	5-6 pr. uke	1 pr. dag	2 pr. dag
Kokt.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor mange poteter spiser du hver gang?**

- (Sett ett kryss)
- 0  1  2  3-4  5-6  7+

**Hvor ofte spiser du stekt, fritert eller most potet**

(Sett ett kryss pr. linje)

	aldri/ sjelden	1-4 pr. mnd	5-6 pr. uke	1 pr. dag	2 pr. dag
Stekt, fritert, most...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor ofte spiser du ulike typer grønnsaker?**

(Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2 pr. uke	3 pr. uke	4-5 pr. uke	6-7 pr. uke
Gulrøtter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kål.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kålrot.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brokkoli/blomkål.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blandet salat.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tomat.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grønnsakblanding..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Løk.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bønner.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Erter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Andre grønnsaker...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**For de grønnsakene du spiser, kryss av for hvor mye du spiser hver gang.** (Sett ett kryss for hver sort)

Gulrøtter.....	<input type="checkbox"/> ½ stk	<input type="checkbox"/> 1 stk	<input type="checkbox"/> 1 ½ stk	<input type="checkbox"/> 2+ stk.
Kål.....	<input type="checkbox"/> ½ dl	<input type="checkbox"/> 1 dl	<input type="checkbox"/> 1 ½ dl	<input type="checkbox"/> 2+ dl
Kålrot.....	<input type="checkbox"/> ½ dl	<input type="checkbox"/> 1 dl	<input type="checkbox"/> 1 ½ dl	<input type="checkbox"/> 2+ dl
Brokkoli/blomkål....	<input type="checkbox"/> 1-2 buketter	<input type="checkbox"/> 3-4 buketter	<input type="checkbox"/> 5+ buketter	
Blandet salat.....	<input type="checkbox"/> 1 dl	<input type="checkbox"/> 2 dl	<input type="checkbox"/> 3dl	<input type="checkbox"/> 4+ dl
Tomat.....	<input type="checkbox"/> 1/4 stk	<input type="checkbox"/> ½ stk	<input type="checkbox"/> 1 stk	<input type="checkbox"/> 2+ stk.
Grønnsakblanding..	<input type="checkbox"/> ½ dl	<input type="checkbox"/> 1 dl	<input type="checkbox"/> 2 dl	<input type="checkbox"/> 3+ dl
Bønner.....	<input type="checkbox"/> 1-2 ss	<input type="checkbox"/> 3-4 ss	<input type="checkbox"/> 5-6 ss	<input type="checkbox"/> 7+ ss
Erter.....	<input type="checkbox"/> 1-2 ss	<input type="checkbox"/> 3-4 ss	<input type="checkbox"/> 5-6 ss	<input type="checkbox"/> 7+ ss

**Ris, spaghetti, grøt, suppe**

**Hvor ofte bruker du ris og spaghetti/makaroni?**

(Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr. mnd	1 pr. uke	2 pr. uke	3+ pr. uke
Ris.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spagetti, makaroni, nudler.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor ofte spiser du grøt ?** (Sett ett kryss pr. linje)

	aldri/ sjelden	1 pr. mnd	2-3 pr. mnd	1 pr. uke	2-6 pr. uke	1+ pr. dag
Risengrynsgrøt.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annen grøt (havre o.l.)....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor ofte spiser du suppe?** (Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr. mnd	1 pr. uke	2 pr. uke	3+ pr. uke
Som hovedrett.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Som forrett, lunsj eller kveldsmat.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Fisk**

Vi vil gjerne vite hvor ofte du pleier å spise fisk, og ber deg fylle ut spørsmålene om fiskeforbruk så godt du kan. Tilgangen på fisk kan variere gjennom året. Vær vennlig å markere i hvilke årstider du spiser de ulike fiskeslagene.

	aldri/ sjelden	like mye hele året	vinter	vår	sommer	høst
Torsk, sei, hyse, lyr..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steinbit, flyndre, uer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laks, ørret.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Makrell.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sild.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annen fisk.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Med tanke på de periodene av året der du spiser fisk, hvor ofte pleier du å spise følgende til middag?**

(Sett ett kryss pr. linje)

	aldri/sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
Kokt torsk, sei, hyse, lyr.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stekt torsk, sei, hyse, lyr.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steinbit, flyndre, uer.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laks, ørret.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Makrell.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sild.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annen fisk.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Dersom du spiser fisk, hvor mye spiser du vanligvis pr. gang?** (1 skive/stykke = 150 gram)

Kokt fisk (skive).....	<input type="checkbox"/> 1	<input type="checkbox"/> 1,5	<input type="checkbox"/> 2	<input type="checkbox"/> 3+
Stekt fisk (stykke).....	<input type="checkbox"/> 1	<input type="checkbox"/> 1,5	<input type="checkbox"/> 2	<input type="checkbox"/> 3+

**Hvor mange ganger pr. år spiser du fiskeinnmat?**

(Sett ett kryss pr. linje)

	0	1-3	4-6	7-9	10+
Rogn.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fiskelever.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Dersom du spiser fiskelever, hvor mange spise-skjeer pleier du å spise hver gang?** (Sett ett kryss)

1  2  3-4  5-6  7+

**Hvor ofte bruker du følgende typer fiskemat?**

(Sett ett kryss pr. linje)

	aldri/sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
Fiskekaker/pudding/boller.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plukkfisk/fiskegrateng.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frityrisk/fiskepinner.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Andre fiskeretter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor stor mengde pleier du vanligvis å spise av de ulike rettene?** (Sett ett kryss for hver linje)

Fiskekaker/pudding/boller (stk.) (2 fiskeboller=1 fiskekake).....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4+
Plukkfisk, fiskegrateng (dl).....	<input type="checkbox"/> 1-2	<input type="checkbox"/> 3-4	<input type="checkbox"/> 5+	
Frityrisk, fiskepinner (stk.).....	<input type="checkbox"/> 1-2	<input type="checkbox"/> 3-4	<input type="checkbox"/> 5-6	<input type="checkbox"/> 7+

**I tillegg til informasjon om fiskeforbruk er det viktig å få kartlagt hvilket tilbehør som blir servert til fisk. Hvor ofte bruker du følgende til fisk?**

	aldri/sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
Smeltet/fast smør.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smeltet/fast margarin.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seterrømme (35%).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lettrømme (20%).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saus med fett (hvit/brun).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saus uten fett (hvit/brun).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**For de ulike typene tilbehør du bruker til fisk, vær vennlig å kryss av for hvor mye du vanligvis pleier å spise.**

Smeltet/fast smør (ss).....	<input type="checkbox"/> 1/2	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4+
Smeltet/fast margarin (ss).....	<input type="checkbox"/> 1/2	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4+
Seterrømme (ss).....	<input type="checkbox"/> 1/2	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4+
Lettrømme (ss).....	<input type="checkbox"/> 1/2	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4+
Saus med fett (dl).....	<input type="checkbox"/> 1/4	<input type="checkbox"/> 1/2	<input type="checkbox"/> 3/4	<input type="checkbox"/> 1	<input type="checkbox"/> 2+
Saus uten fett (dl).....	<input type="checkbox"/> 1/4	<input type="checkbox"/> 1/2	<input type="checkbox"/> 3/4	<input type="checkbox"/> 1	<input type="checkbox"/> 2+

**Hvor ofte spiser du skaldyr (f. eks. reker, krabbe og skjell)?** (Sett ett kryss)

Aldri/sjelden  1 pr. mnd  
 2-3 pr. mnd  1+ pr. uke

**Hva bruker du vanligvis å steke i når du steker fisk og/eller tilbehør til fisk:** (sett ett kryss)

Steker uten fett  Soyaolje  
 Smør  Rapsolje  
 Fast margarin  Olivenolje  
 Flytende margarin  Solsikkeolje  
 Annen olje (spesifiser) \_\_\_\_\_

## Kjøtt

**Hvor ofte spiser du reinkjøtt?**

Aldri/sjelden  1 pr. mnd.  2-3 pr. mnd.  
 1 pr. uke  2-3 pr. uke  4+ pr. uke

**Hvor ofte spiser du følgende kjøtt- og fjærkreretter?**

(Sett ett kryss for hver rett)

	aldri/sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
Steik (okse, svin, får).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Koteletter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biff.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kjøttkaker, karbonader.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pølser.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gryterett, lapskaus.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pizza med kjøtt.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kylling med skinn.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kylling uten skinn.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bacon, flesk.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Andre kjøttretter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Dersom du spiser følgende retter, oppgi mengden du vanligvis spiser:** (Sett ett kryss for hver linje)

Steik (skiver).....  1  2  3  4  5+

Koteletter(stk.).....  1/2  1  1 1/2  2+

Kjøttkaker, karbonader (stk.).....  1  2  3  4+

Pølser (stk. à 150g).....  1/2  1  1 1/2  2+

Gryterett, lapskaus (dl)  1-2  3  4  5+

Pizza m/kjøtt (stykke à 100 g).....  1  2  3  4+

**Hvilke sauser bruker du til kjøttretter og pastaretter?**

(Sett ett kryss pr. linje)

	aldri/ sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
Brun saus.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sjysaus.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tomatsaus.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saus med fløte/rømme.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor mye bruker du vanligvis av disse sausene?**

Brun saus (dl).....  1/4  1/2  3/4  1  2+

Sjysaus (dl).....  1/4  1/2  3/4  1  2+

Tomatsaus (dl).....  1/4  1/2  3/4  1  2+

Saus med fløte/rømme (dl)  1/4  1/2  3/4  1  2+

**Hvor ofte spiser du bakevarer som boller, kaker, wienerbrød eller småkaker** (Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. 2-3 uke	2-3 pr. 1 uke	4-6 pr. uke	1+ pr. dag
Gjærbakst (boller o.l.).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wienerbrød, kringle.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kaker.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pannekaker.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vafler.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Småkaker, kjeks.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lefser, lomper.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor ofte spiser du dessert?** (Sett ett kryss pr. linje)

	aldri/ sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2-3 pr. uke	4+ pr. uke
Putting sjokolade/karamell.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Riskrem, fromasj.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kompott, fruktgrøt, hermetisk frukt.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jordbær (friske, frosne).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Andre bær (friske, frosne).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor ofte spiser du sjokolade?** (Sett ett kryss)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-3 pr. uke	4-6 pr. uke	1+ pr. dag
Mørk sjokolade.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lys sjokolade.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Dersom du spiser sjokolade, hvor mye pleier du vanligvis å spise hver gang?** Tenk deg størrelsen på en Kvikk-Lunsj sjokolade, og oppgi hvor mye du spiser i forhold til den.

1/4  1/2  3/4  1  1 1/2  2+

**Hvor ofte spiser du snacks?** (Sett ett kryss)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-3 pr. uke	4-6 pr. uke	1+ pr. dag
Potetchips.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Peanøtter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Andre nøtter.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annen snacks.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Andre matvarer**

**Hvor mange egg spiser du vanligvis i løpet av en uke?** (stekte, kokte, eggerøre, omelett) (Sett ett kryss)

0  1  2  3-4  5-6  7+

**Hvor ofte spiser du iskrem?** (til dessert, Krone-is osv.)

Sett ett kryss for hvor ofte du spiser iskrem om sommeren, og ett kryss for resten av året

	aldri/ sjelden	1 pr. mnd.	2-3 pr. mnd.	1 pr. uke	2+ pr. uke
Om sommeren.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resten av året.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor mye is spiser du vanligvis pr. gang?**

(Sett ett kryss)

1 dl  2 dl  3 dl  4+ dl

**Tran og fiskeoljekapsler**

**Bruker du tran (flytende)?**

Ja  Nei

**Hvis ja; hvor ofte tar du tran?** Sett ett kryss for hver linje.

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-6 pr. uke	daglig
Om vinteren.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resten av året.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Hvor mye tran pleier du å ta hver gang?**

1 ts  1/2 ss  1+ss

**Bruker du tranpiller/fiskeoljekapsler?**

Ja  Nei

### Hvis ja; hvor ofte tar du tranpiller/fiskeoljekapsler?

Sett ett kryss for hver linje.

	aldri/ sjelden	1-3 pr. mnd	1 pr. uke	2-6 pr. uke	daglig
Om vinteren.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resten av året.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Hvilken type tranpiller/fiskeoljekapsler bruker du vanligvis, og hvor mange pleier du å ta hver gang?

Navn: \_\_\_\_\_

Antall:  1  2  3+

## Kosttilskudd

### Bruker du kosttilskudd (vitaminer/mineraler)?

Ja  Nei

### Hvis ja, hvor ofte bruker du kosttilskudd?

(Sett ett kryss pr. linje)

Navn på kosttilskudd	aldri/ sjelden	1-3 pr. mnd	1 pr. uke	2-6 pr. uke	daglig
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Alkohol

### Er du totalavholdskvinne?

Ja  Nei

### Hvis Nei; hvor ofte og hvor mye drakk du i gjennomsnitt siste året? (Sett ett kryss for hver linje)

	aldri/ sjelden	1 pr. mnd	2-3 pr. mnd	1 pr. uke	2-4 pr. uke	5-6 pr. uke	1 pr. dag	2+ pr. dag
Øl (½ l.).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vin (glass).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brennevin (drink).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Likor/Hetvin (glass).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Sosiale forhold

### Hvor mange personer er det i ditt hushold?

1  2  3  4  5+

### Hvor høy er bruttoinntekten i husholdet pr. år?

inntil 150.000 kr.  601.000-750.000 kr.  
 151.000-300.000 kr.  751.000-900.000 kr.  
 301.000-450.000 kr.  over 900.000 kr.  
 451.000-600.000 kr.

## Solvaner

### Hvor mange ganger pr. år er du blitt forbrent av solen slik at du har fått svie eller blemmer med avflassing etterpå?

Årstall	Aldri	Høyst 1 g. pr. år	2-3 g. pr. år	4-5 g. pr. år	6 eller flere g. pr. år
2003-2011.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Hvor mange uker i gjennomsnitt pr. år har du vært på badeferie 2003-2011?

Årstall	Aldri	1 uke	2-3 uker	4-5 uker	7 uker eller mer
I syden.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I Norge.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Hvor ofte har du solt deg i solarium?

Årstall	Aldri	Sjelden	1 g. pr. mnd.	2 g. pr. mnd.	3-4 g. pr. mnd.	Oftere enn 1 g. pr. mnd.
2003-2011.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Hvor ofte dusjer eller bader du?

	mer enn 1 g. dagl	1 g. dagl.	4-6 g. pr. uke	2-3 g. pr. uke	1 g. pr. uke	2-3 g. pr. mnd.	sjelden/ aldri
Med såpe/ shampo.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uten såpe/ shampo.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Når bruker du krem med solfaktor? (sett evt. flere kryss):

i påsken  i Norge eller utenfor syden  
 solferie i syden  aldri

### Hvilken solfaktor bruker du i disse periodene?

Faktor	Ingen	1-4	5-9	10-14	15-29	30+
Påsken.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I Norge eller utenfor syden.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solferie i syden.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Hvor ofte bruker du følgende hudpleiemidler?

(Sett ett kryss pr. linje)

	aldri/ sjelden	1-3 pr. mnd.	1 pr. uke	2-4 pr. uke	5-6 pr. uke	1 pr. dag	2+ pr. dag
Ansiktskrem ..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Håndkrem.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Body lotion....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Parfyme.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Til slutt vil vi spørre deg om ditt samtykke til å kontakte deg på nytt pr. post. Vi vil hente adressen fra det sentrale personregister.....

Ja  Nei

Er du villig til å avgi en blodprøve?.....  Ja  Nei

**Takk for at du ville delta i undersøkelsen**