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Documents

**Immigrant participation in the
Norwegian Labour Force Survey
2006-2007**

Summary

In this technical report, Statistics Norway presents results on non-response and other quality issues in the Labour Force Survey, with emphasis on immigrant groups. The results are descriptive statistics, and not an analysis of the fundamental causes of non-response.

The LFS participation of immigrant groups is of particular interest at this point, because of new plans for contacting strategies and data collecting methods, and a new survey module about immigrants starting January 2008.

This document is intended as information to LFS staffs that collect and process data or produce official statistics. It may also interest users of LFS statistics and micro data, researchers, OECD, EUROSTAT and statistical institutions.

The main results confirm many earlier findings on immigrant participation in surveys.

- Groups that have higher non-response rate are:
 - Young people, especially males.
 - Residents of Oslo, and to some degree other larger cities.
 - Non-western immigrants, especially those who arrived as adults.
 - Unemployed and people outside the labour market.
 - One-person households and single parent households.
- Contact rate is markedly lower among non-western immigrants.
- Cooperation rates are generally very high, also in immigrant groups.
- Language problems are the most important non-response reasons among non-western immigrants.
- Direct refusals are lower among non-western immigrants than in the general population.
- Non-western immigrants have more proxy interviews and intermittent non-response. These results could concern the data quality in this group more than just looking at non-response rate.

Detailed results and tables are found in chapter 3.

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1 Introduction

The Norwegian Labour Force Survey (LFS) can be described as a large sample survey, with a high response level and thus a good overall quality. On the other hand, the response varies significantly in demographic- and labour market categories. The LFS response and data quality in immigrant groups is of particular interest at this point in time. Statistics Norway had planned to apply some new contact strategies and data collecting methods from January 2008. The new contact- and response-improving techniques are aimed particularly at non-western immigrants and mainly in the Oslo area. The main contact strategy is to make use of non-western immigrants in the interviewer staff to seek out and contact the interview subjects. Other methods for improving response will include face-to-face interviews, whereas the current protocol allows telephone interviews only.

Also starting in January 2008, the Norwegian LFS carries out the EUROSTAT supplementary module "Labour market situation of migrants and their immediate descendants". It is established that non-western immigrants have higher non-response in surveys such as the LFS, and that the non-response is biased with respect to employment and unemployment. This means that the response sample is smaller and less representative, which reduces the quality of LFS-based analyses of the labour market conditions for immigrants.

The labour market situation for immigrants is of considerable interest and Statistics Norway produces register-based statistics of immigrant employment and unemployment. But the LFS includes several important socio-economic variables and other valuable information not found in administrative registers. That means the LFS can be used for labour market integration studies that are not possible using only register-based labour market data. An example is that a register-based unemployment rate for immigrants will be underestimated, because of lower registration rate. On the other hand, since unemployed immigrants also has higher non-response rate, the survey-based unemployment rate for immigrants will be underestimated. In all, improving survey participation among immigrants is an important goal in order to get the most out of the LFS data.

2 Data

The Norwegian LFS was revised in 2006, and there has been published an analysis of non-response in the LFS for the period 2000-2005. For these reasons we have chosen a reference period from January 2006 through 2007.

The data sets used in this analysis combine survey data and register data from several sources, linked at the individual level. The main data sources are:

- LFS survey data for the period 2006-2007, in all eight consecutive quarterly files.
- Combined employment-register, with various labour market variables.
- Central population register, for demographic variables and identification of families.
- National Education Database, which registers formal education.

2.1 Frame and population

The population frame is the CPR (Central Population Register), which is an official administrative register of residents. The data frame is not augmented for instance by using telephone directories or residential visits, so de facto residents who are not registered in the CPR are not sampled in the LFS. On the other hand, immigrants who have returned and are not registered as moved out of the country, are counted as non-response instead of the correct "out of sample frame".

The target population is defined as residents between 15 and 74 years old. Residents are here defined as those expected to live here over 6 months. Currently there is an increasing labour immigration from the new EU-countries. Labour immigrants and others who are short-term residents are supposed to be registered in the CPR, but are not in the population target group.

2.2 Unit

The statistical unit is a person and is identified with a unique ID-number. The same personal ID is used in all administrative registers. The personal ID of a reference person identifies the registered family. There is no direct identification on households, although an address register is under development. Some household data is gathered in the LFS, but are not analyzed here.

2.3 Sample

The survey type is a continuous rotating panel, in which each person participates eight consecutive quarters. There are approximately 12.000 families or 24.000 persons sampled each quarter, of which about 3000 are new replacements. The sampling design is a one-stage cluster sampling. Families are sampled based on the family ID and all persons aged 15-74 years in the sampled families are selected.

The sampling method is a stratified systematic sampling that ensures regional representation by oversampling some lesser-populated counties. The stratification leads to some disproportional lower representation from Oslo, the capital and a separate county. Since Oslo has the highest proportion of immigrants this leads also to undersampling of immigrants. The design weights adjust the regional disproportions, but they do not fully adjust the undersampling of immigrants.

The LFS measures the person's situation during a specified reference week, and data are collected in such a way that all weeks in a year are covered. Each calendar quarter is defined so that it consists of 13 reference weeks. A person who is sampled in a quarter is allocated a reference week from the 13 weeks that quarter. When the same person is interviewed in all the following quarters, the reference week is same of the 13 weeks in each quarter. The interviews are usually completed within 2½ weeks after the reference week.

The panel data plan entails that a quarterly files consists of independent sample units; while sample files from two consecutive quarter has about 7/8 of the units in common. Data from four quarters that are used to estimate annual means consists of about 96.000 records, but about 78.000 independent units. Statistics Norway produces some main labour

market figures each month, from LFS monthly data files. A monthly file consists of about 3.000 units. The system of predetermined intraquarterly reference weeks makes the three months within a quarter independent of each other. Data from any month and the month three months later have 7/8 of the persons in common. Actually data from a reference week in one quarter is independent of all data in the following quarter, except data from the same 13-odd week.

The panel data is beneficial for the precision of net change estimates in labour market figures. In this report we also use the panel data to analyze intermittent non-response.

Administrative information and analysis variables that are used from LFS data are:

- Personal identification number.
- Family identification number.
- Reference time, week, month, quarter and year.
- Wave, which of the eight interviews.
- Response status, interview or not.
- Detailed non-response reasons.
- Proxy interview status.
- Estimation weights.

2.4 Administrative registers

Auxiliary variables from administrative registers are used routinely in the pre- and post-survey processing of LFS data. Also in order to enhance the analysis of non-response, we merge auxiliary information from several administrative registers. The most important administrative registers used here are the Central Population Register, the central employee register, and the National Education Database. Individual characteristics are acquired from registers, such as age, gender, municipality of residence, immigrant status and land of origin (own birth country for immigrant). Employment status and education are both measured in the LFS, but for the non-response group data is collected from administrative registers.

2.5 Data used in this report

The unique personal identification numbers make it possible to merge LFS data with auxiliary variables from administrative registers at a micro level. That means we have access to great many important facts about all the persons sampled in the LFS, even those who do not respond. We construct a data set containing the merged individual information mentioned in the previous sections. The reference time is from January 2006 throughout December 2007. To increase the precision of a subdomain analysis, we have the choice between aggregating data over categories or over time. In this report we present both some results aggregating information in broad categories to analyze changes over time, and some detailed analyses where the time factor is ignored.

2.6 Non-response reasons

In the cases of non-contact or non-response, the interviewers register the reason for this into several predetermined categories. One should perhaps distinguish between what we

call "non-response reasons" which are the categories registered by the interviewer, and "causes of non-response", which is a theoretical concept. We do not intend to prove any hypothesis on the causes of non-response, but we do discuss possible causes of the variation of non-response between different groups. For a practical classification with regards to the planned alternative strategies toward increasing response among immigrants, we identify and discuss some main non-response types. The overall goal is a categorization that gives interesting analyses and results that can be of practical use to improve quality of the LFS statistics.

- **Non-contact.**

The interviewer has not been able to contact any persons in the household. Currently only telephone interviews are carried out, and in a substantial proportion of non-contact cases there is not sufficient contact information. Typically this means missing or outdated phone number, even though new regulations require that all mobile phones should be registered. It is also compulsory that new permanent addresses should be reported to the CPR, but unregistered moves are still a substantial reason for non-contact.

- **Contacted, but not available.**

Contact with the sampled person or someone in the household has been established, but he/she may be temporarily not available because of own or family members illness, work related travel, away on studies, holidays, travel abroad, etc. "Not available" in this context is supposed to be objectively unable to be interviewed, not merely unwilling.

- There are also some people classified as permanently not available. This means that they are not reachable at all, at least not in the data collection period. The reasons for this can be illness, disabilities, elderly who are institutionalized etc.

- **Refusal.**

A significant proportion of objectively available persons refuse to participate in the LFS. This category includes refusal by proxy and any justification given for refusing, which can be found in some detailed categories of non-response reasons. It is possible that LFS non-contact may include a large proportion of implicit or latent refusal. With the advent of technology such as telephones that displays the caller's number, it can be more comfortable to simply not answer the phone than to refuse explicitly. It is also possible that some seemingly plausible reasons, in fact are polite or evasive refusals. Without further investigations we cannot say if such phenomenon are differently distributed in immigrant groups, in such a way that it vary systematically with country of origin. It is conceivable that language and cultural difference can cause a systematic bias in this kind of latent refusals.

- **Language problems.**

Language skills are of course important with regards to immigrants, many of who have a different mother tongue than Norwegian. One thing is the understanding of the interviewers questions and giving understandable answers, which is of course important. But a different language related problem is contacting and motivating the sampled immigrants. It is possible that finding an appropriate motivational angle could be more effective than for instance using resources in translations etc. We propose that "communications skills" are a wider concept than "language skills" in the sense of literal translation abilities. For some themes more than other, it is important to perceive the pragmatic meaning of the questions and answers, and

not just translate the words. Both the communications skills of the interviewer and the possible respondent are vital in gaining useful responses. The same applies to contacting and gaining participation from the respondent.

There are also some sampled persons who are deliberately not contacted or interviewed because they are no longer in the population frame: those who moves abroad, turn 75 years old, or dies. These cases are usually not included in the non-response rate. In a closer analysis of frame coverage of immigrants, one could address the problems of unregistered moves in and out of the country. We suspect that a significant number of returning immigrants do not register the move out of Norway. In that case it constitutes an over-coverage of the sample frame (population register).

2.7 Quality indicators

Thompson et al. (2006) spell out four indicators as essential in coping with non-response:

- Response rate: The number of completed interviews with reporting units divided by the number of eligible units in the sample.
- Refusal rates: The number of units for which the respondent refuses to be interviewed divided by the number of eligible units in the sample.
- Non-contact rates: The number of units for which no respondent was reached divided by the number of eligible units in the sample.
- Number of days used in the field for data collection: This key variable is used as an indicator of resources spent to increase response rates.

For practical reasons, we didn't have the number of days in the data used in this report. In addition to the indicators mentioned, we also calculate the *cooperation rate*. This is used in the UK statistical office's report on the LFS quality, and gives interesting results with regard to immigrants.

In addition we include the amount of proxy interviewing as a survey quality marker. Proxy interviews can introduce measurement errors, but on the other hand it can improve the precision and reduce the bias. For more on the impact of proxy interviews on the LFS quality we refer to a study by Kleven et al. 2008, and an upcoming paper (Villund 2008).

To recapitulate, in the present report, the following indicators are calculated:

- Contact rate (contacted/sample size)
- Cooperation rate (response/contacted)
- Net response (response/sample size)
- Proxy proportion (proxy number/response)

Non-response reasons are classified in the functional groups: non-contact, temporarily not available, permanently not available, refusal, language problems. There are also registered many subtypes of non-response reasons, which are less interesting to this report.

We present one refusal rate relative to the total sample, and another figure that is the refusals as a proportion of the non-response. We hope that this analytical approach can be of use in the efforts to reduce refusal. The overall refusal rate is a good indicator of the

survey quality at a macro level, whereas the refusal proportion of the non-response may be important in targeting specific groups.

2.8 Analysis

There are a lot of different factors that affect the data quality in any survey. In the following subsections, we describe three broad concepts and the variables we have available to indicate the underlying properties. We do not intend to prove the fundamental causes of non-response here, but we wish to discuss some challenges in analyzing immigrant non-response and other data quality issues. The statistical methods used in this report are mostly table analyses and differences in proportions. For an example of a more advanced approach, we refer to Feskens et al. (2007) who have conducted a study of non-response among ethnic minorities using structural equation modelling.

2.8.1 Demography

The non-response varies by age and gender, and we need to identify some functional classification. For some analyses we have chosen a simple classification of men and women in divided in two age groups, for some we use 1-year age groups in order to study non-linear effects.

The household size and composition may also affect response, in that it affects the contactability. In larger households there are higher probability of meeting someone at home. Although there has been proposed to construct a household variable from connecting individual data and address data, we use family size instead for convenience. As the registers contain a number identifying each family, we can construct a family size variable and the number of children younger than 15 years old. There are some errors and omissions. Households can consist of more persons than family members, so using the family size underestimates the number of people living together. Another problem is children with the same family identification, but who do not live with the family. Cohabitants with no children together are not counted as a family in this way, which further underestimates the household size.

2.8.2 Urbanization

Urbanization is associated with higher non-response in survey research, and as such interesting for our study. We do not have a clear-cut definition of the concept urbanization itself, but must rely on indicator variables. Labour market characteristics of urbanization can include higher employment and unemployment rates, higher female labour participation rate, higher educational level and higher turnover rate. Urban aspects related to survey non-contact are more frequent moving, less updated address and telephone information, more single person households. A markedly higher proportion of non-western immigrants live in cities. Socially a city can imply both positive and negative traits, which can lead to more non-contact and non-response. There can be more opportunities to work and meet socially outside home, such as cafés and cultural events, which may reduce the chance of meeting young adults at home. At the same time there may be a greater degree of social isolation and alienation, which may reduce the likelihood of cooperation in a research survey.

Statistics Norway has developed a standard classification of centrality and several other classifications of municipalities. In this document we use a much simpler classification based only on population size of the municipality of residence. Oslo is the capital of

Norway and by far the largest municipality, and by far the highest proportion of non-western immigrants. Oslo is considered a separate class, the twelve other largest municipalities another, and one class including all other of the more than 400 Norwegian municipalities.

2.8.3 Ethnicity

Ethnicity can at least mean that a group of people share common history, language, culture and experiences. In view of the genuine correlation between origin and physical appearance, it would be easy to confuse ethnicity with "race", which is an imprecise description of anatomical differences.

We do not have many variables available as indicators of the diverse concept of ethnicity. In the present analysis we use a very basic classification of western and non-western immigrants. This classification is based on land of birth for immigrants only, not "land of origin" for descendants of immigrants. Western countries are defined as the Nordic countries, Western Europe, USA, Canada and Australia.

This classification can be said to obscure great diversity within the groups and make it hard to discern the influence of immigration itself and the ethnicity effect. However, from a practical view, we do find large variation in LFS non-response using such a classification. The small subgroup size often makes results from a finer partitioning less precise.

Language is an obvious factor in regarding integration, both into the labour market and society in general, such as responding to surveys. We do not have a direct measurement of language skills. The number of years of residence in the new country is often used as an explaining factor. The assertion is that integration takes time, both in terms of learning a language and otherwise getting to know one's way in the new social environment. One should observe an increasing integration by years of residence, and a testable hypothesis is that LFS response should increase with years of residence.

Another related factor is the age at the time immigration. There can be several theories why young people should be more adaptable. Cognitive skills such as learning language, as well as social factors might explain this. Young people have also more to gain by investing in education, in terms of future income, and thereby have a greater motivation.

2.8.4 Labour market variables

Register-based labour market data of each person are linked to the survey data, in order to analyze the non-response bias. What we term informative non-response bias is that the group of people who do not participate in the LFS, have for instance higher unemployment rate and lower employment rate. This means that even though the initial sample is randomly selected, the response group is less representative of the total population with respect to employment and unemployment. This type of bias threatens the accuracy of the estimates. The LFS estimation procedures adjust some non-response bias, using post-stratification by register employment. However this adjustment may have limited effect on the immigrant non-response bias. It is therefore of great interest to find out more on the immigrant non-response bias. The following table documents the classifications of labour market status used in this report:

Binary	Summarized	Detailed
Employed	Employed	Employees
		Self-employed
Other	Unemployed	Unemployed
	Other	Out of workforce
		No information

Some main labour market figures are:

- The number of employed.
- The employment proportion = employed / population age group.
- The number of unemployed.
- The workforce proportion = employed + unemployed / population age group.
- The unemployment rate = unemployed / workforce.

3 Results

3.1 Sample size and response

The response level varies somewhat over time, both short- and long-term. This variation could be attributed to seasonality, such as a lower net response when most people are on holiday, and long-term trends. In addition there is random variation, because of sample error. The response rate is also affected by the planned sample size and the allocation of interview work. That means that the response level may have a variation that is dependent neither on the seasonality nor the sampled people.

The results for the period 2006-2007 show some fluctuations in response level, but no markedly rising trend. The net proportion of response, relative to total sample size, varies between 81 and 90 per cent on a monthly basis. The most prominent pattern is a lower response in the last month of each quarter. In these months there are shorter data collection time limits for completing the quarterly files. In the two first months of each quarter, the interview staffs have time to do some extra effort to contact hard-to-reach people.

Table 3-1: Monthly sample size and response. LFS 2006-2007.

	2006				
	Sample size	Response	Population	Mean weight	Net response
January	7 603	6 513	3 379 396	518.9	85.7
February	7 511	6 455	3 382 267	524.0	85.9
March	9 442	7 760	3 385 132	436.2	82.2
April	7 560	6 782	3 389 058	499.7	89.7
May	7 493	6 542	3 391 976	518.5	87.3
June	9 421	7 640	3 394 899	444.4	81.1
July	7 550	6 768	3 399 478	502.3	89.6
August	9 387	8 217	3 401 742	414.0	87.5
September	7 516	6 267	3 406 014	543.5	83.4
October	7 528	6 783	3 411 427	502.9	90.1
November	9 393	8 272	3 413 754	412.7	88.1
December	7 544	6 362	3 417 277	537.1	84.3
	2007				
	Sample size	Response	Population	Mean weight	Net response
January	7 410	6 525	3 421 552	524.4	88.1
February	7 512	6 620	3 424 366	517.3	88.1
March	9 424	7 906	3 427 145	433.5	83.9
April	7 531	6 665	3 434 018	515.2	88.5
May	9 415	8 203	3 436 953	419.0	87.1
June	7 522	6 074	3 439 759	566.3	80.7
July	7 535	6 580	3 446 977	523.9	87.3
August	9 412	8 321	3 449 317	414.5	88.4
September	7 533	6 202	3 453 470	556.8	82.3
October	7 548	6 647	3 465 479	521.4	88.1
November	9 416	8 257	3 468 058	420.0	87.7
December	7 544	6 233	3 470 573	556.8	82.6

Table 3-2: Quarterly sample size and response. LFS 2006-2007.

	2006				
	Sample size	Response	Population	Mean weight	Net response
1. Quarter	24 556	20 728	3 382 265	163.2	84.4
2. Quarter	24 474	20 964	3 391 978	161.8	85.7
3. Quarter	24 453	21 252	3 402 411	160.1	86.9
4. Quarter	24 465	21 417	3 414 153	159.4	87.5
	2007				
	Sample size	Response	Population	Mean weight	Net response
1. Quarter	24 346	21 051	3 424 354	162.7	86.5
2. Quarter	24 468	20 942	3 436 910	164.1	85.6
3. Quarter	24 480	21 103	3 449 921	163.5	86.2
4. Quarter	24 508	21 137	3 468 037	164.1	86.2

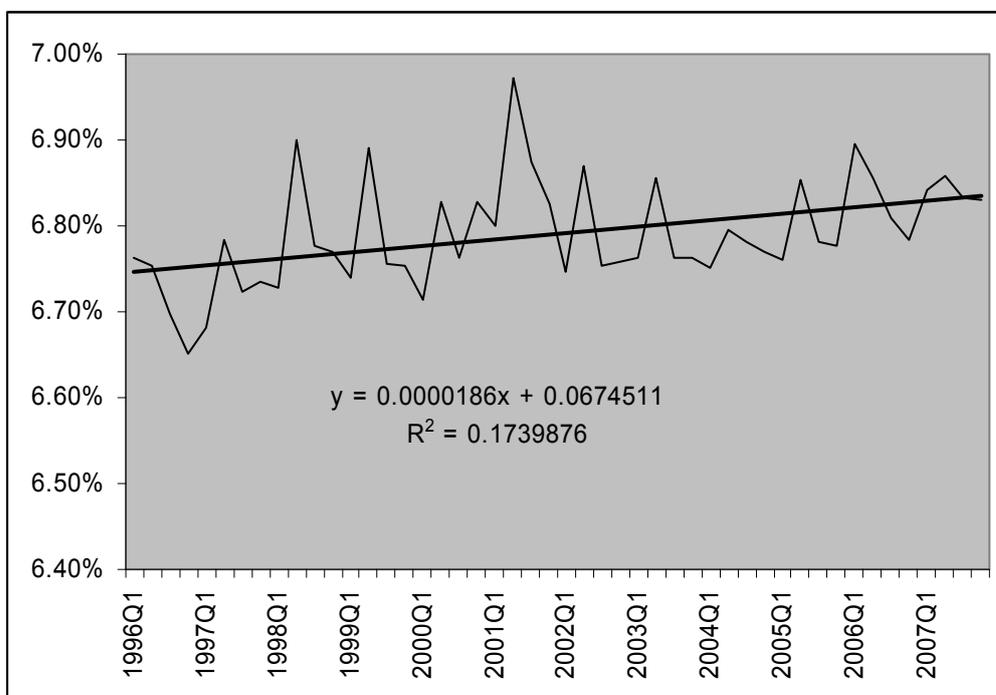
3.1.1 Precision

The Norwegian LFS could be described as a large sample in a small country, which means a relatively high sample fraction compared with other surveys. The sample fraction can often be ignored in smaller surveys, but will impact the precision of a large survey such as the LFS. The sample fraction, and thus the precision, will decrease when the population grow and the sample size is held constant or is reduced by an overall trend of increasing non-response. The large total sample size and the short-term fluctuations might obscure these long-term quality issues. Monitoring of the total LFS quality should therefore address both long term and short-term perspective.

In order to compare the changes in the relative precision level, we use a hypothetical variable with a fixed value. This is easier to compare than the precision of the employment and unemployment figures, which fluctuate with the labour market changes. When one calculates precision for a labour market property that fluctuates, the relative error will vary accordingly and the long-term trend is harder to ascertain. In addition there are random fluctuation due to sample error.

The results show that over the last two years there is no discernable trend. But in the data from 1996 to 2007 there probably is a trend of slowly increasing relative error i.e. decreasing precision.

Diagram 3-3: Precision of fixed proportion of 1%. LFS 1996-2007. Estimated relative standard error. Linear trend.



3.2 Non-response rate

3.2.1 Quarterly figures

Here we summarize some results that by and large are consistent with earlier findings:

- Demography:
 - Men have somewhat higher non-response rate than women.
 - People below 40 years old have higher non-response rate, and less difference between men and women.
 - Overall the difference between the age groups is greater than the gender difference.
- Urbanization:
 - Oslo residents have by far the highest non-response rate.
 - Other cities have higher non-response rate than the small municipalities.
 - The difference between the other cities and the rest of the country is smaller than the difference to Oslo.
- Ethnicity:
 - Immigrants in general have a considerable higher non-response rate.
 - Non-western immigrants have an especially high non-response rate.

Table 3-4: Quarterly non-response in population groups. Per cent.

	2006				2007			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Total	14.4	13.1	11.7	11.0	12.1	12.9	12.1	11.8
Men 15-39 years	17.3	15.0	14.3	13.5	13.9	14.8	14.3	14.6
40-74 years	13.5	12.3	10.8	10.1	11.4	12.0	10.7	11.0
Women 15-39 years	16.1	15.0	13.7	13.1	14.1	15.0	14.1	13.4
40-74 years	11.1	10.6	8.8	8.1	9.7	10.5	9.8	8.9
Oslo residents	22.3	21.7	20.7	19.2	21.5	22.2	21.7	20.2
Large municipalities	16.1	12.9	11.7	10.7	11.8	13.2	11.5	12.0
Other municipalities	12.6	11.9	10.4	9.9	10.8	11.3	10.7	10.5
Not immigrant	13.0	11.7	10.4	9.6	10.7	11.5	10.7	10.6
Western immigrants	22.2	22.9	21.1	18.5	19.5	16.5	18.5	15.4
Non-western immigrants	35.5	33.2	30.5	31.6	32.2	34.2	31.3	29.9

Data for earlier years has shown evidence of some seasonal pattern in that the second quarter often has a higher non-response rate. It could be that the high level in the first quarter in 2006 is a singular event, as the LFS questionnaire was revised and some routines were changed effective from January 2006.

Over the two-year period, there isn't a very obvious trend in the non-response, but on the long-term there is a general trend of decreasing response. At the same time both urbanization and immigration from non-western countries are increasing. Both trends could affect the quality of survey-based statistics.

3.2.2 Detailed results

In order to analyze the bias with respect to labour market characteristic, we wish to discern the influence of each of the variables. To that end, we intersect all the categories of demography, urbanization and ethnicity. Since this results in many small groups, we calculate two-year average figures for 2006-2007. One important result is that place of residence, or more abstractly urbanization, is a strong factor for explaining non-response variation.

- The non-response rate is much high in nearly all groups in Oslo.
- In large municipalities other than Oslo, there is more variation between demographic groups. This is even stronger in the small municipalities.
- Non-response rate among non-western immigrants have a different pattern in the demographic groups that the population total:
 - Generally persons older than 40 years have lower non-response rate. Among non-western immigrants the over 40's have higher non-response rate.
 - Generally women have a lower non-response rate than men. Non-western immigrant women living in Oslo have the highest non-response rate of all.
- Non-response among non-western immigrants varies with municipality size much in the same way as the total population, but at a higher level.
 - All demographic groups among non-western immigrants have higher non-response rate in Oslo than in all other municipalities. There are also

somewhat lower non-response rate in the small municipalities than in the large. This difference is most pronounced among non-western immigrant men under 40, even more than in the general population.

Table 3-5: Average non-response in detailed subgroups. LFS 2006-2007. Per cent.

	Residence municipalities			
	Total	Oslo	Cities/Large	Other/Small
Total	12.4	21.2	12.5	11.0
Men 15-39	14.7	22.2	15.7	13.0
Men 40-74	11.5	22.2	11.7	10.0
Women 15-39	14.3	23.7	13.2	13.0
Women 40-74	9.7	16.6	9.9	8.6
Western immigrants	19.3	26.6	16.8	17.9
Men 15-39	26.4	39.6	22.9	21.5
Men 40-74	18.1	23.4	16.9	17.1
Women 15-39	20.5	26.9	12.9	22.5
Women 40-74	15.2	15.9	15.1	15.1
Non-western immigrants	32.3	44.2	30.6	24.3
Men 15-39	33.8	39.8	39.1	25.5
Men 40-74	36.2	47.7	29.2	28.0
Women 15-39	29.5	42.0	24.3	23.9
Women 40-74	31.3	49.0	28.0	20.7

The table 3-6 offers an overview of the non-response rates in different labour market groups, within the same population groups as table 3-5.

Table 3-6: Average non-response in detailed subgroups by register based labour market status.¹ LFS 2006-2007. Per cent.

	Total	Employee	Self-employed	Unemployed	Not in workforce
Total	12	11	11	21	15
Men 15-39	15	14	15	25	16
Men 40-74	11	10	10	23	15
Women 15-39	14	13	17	19	17
Women 40-74	10	8	10	14	12
Western immigrants	19	16	20	27	26
Men 15-39	26	23	18	33	48
Men 40-74	18	14	26	24	23
Women 15-39	21	16	19	0	33
Women 40-74	15	14	15	33	18
Non-western immigrants	32	28	36	30	38
Men 15-39	34	34	27	33	34
Men 40-74	36	29	40	37	46
Women 15-39	30	27	38	25	33
Women 40-74	31	22	34	26	44
Total	12	11	11	21	15
Oslo	21	18	24	35	28
Cities/Large	13	11	15	18	15
Other	11	10	9	19	13
Western immigrants	19	16	20	27	26
Oslo	27	22	22	34	42
Cities/Large	17	15	38	25	17
Other	18	15	14	22	26
Non-western immigrants	32	28	36	30	38
Oslo	44	37	46	45	54
Cities/Large	31	29	24	25	35
Other	24	22	29	24	28

1) Grey background colour indicates a small group, and an uncertain non-response rate.

3.3 Age and years of residence

In order to take a closer look at the non-linear association between response and age, we calculate average non-response rate in one-year age groups. This reveals that a concave and very skewed curve, with a maximum non-response rate at about 25 years of age. Non-response is generally low in the very young groups, highest among young adults, and decreasing gradually after thirty years of age. Up to about 50 years of age, this pattern is repeated among the non-western immigrants, albeit at a much higher level. But among non-western immigrants over 50 years old, there is a much higher non-response rate, not lower as in the total population. Between 50-74 years old, the non-response increases sharply with age among non-western immigrants, while it decreases slowly in the total population.

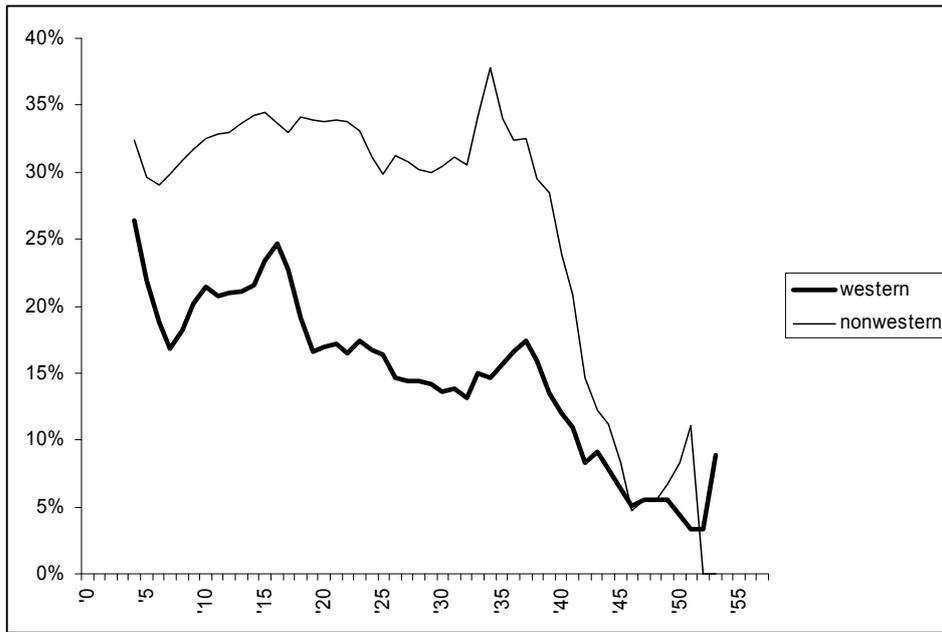
Diagram 3-7: Average non-response by one-year age. LFS 2006-2007. Per cent.



Responding to surveys can be viewed as an indicator of integration. Language is an obvious factor in explaining integration, both into the labour market and society in general. The years of residing in the new country is often used as an explaining factor of adaptation. The assertion is that integration takes time, both in terms of learning a language and otherwise getting to know one's way around in the new social environment. An empirical consequence is that one should observe an increasing integration by the number of years.

Among so-called western immigrants we do indeed observe a steadily decreasing non-response rate, possibly indicating that integration increases with the residence time. However among non-western immigrants the pattern is not as clear, with a considerably higher and more constant level. Only among those with very long resident time, one sees a drop in the additional non-response. Other factors than learning about Norwegian language and society can be at work. Some of this effect may be caused by unregistered return of older immigrants who have retirement benefits from Norway. People moving out of Norway should be registered and classified as "out of frame". In cases where the move is not registered, this is mistakenly classified as non-contact.

Diagram 3-8: Smoothed average non-response by years of residence. LFS 2006-2007. Per cent.



The two preceding results indicates that:

- Age per se is an interesting factor in non-response that has a non-linear pattern in the total population. The general non-response pattern can probably be explained to a large degree by family- and working patterns, although motivation and other issues could be more important among the oldest age groups.
- For non-western immigrants the relationship between age and non-response is more complex. The wave nature of immigration from different countries at different times can create cohort effects. That means in short that a property that seems to be linked to age, in fact is a property of a group of people.
- Years of residence are not a powerful explanation factor in non-response among non-western immigrants.

We propose that the age at immigration and not the present age is the important factor. The life situation when someone migrates has of course bearing on the possibilities for learning a new language and for the integration as a whole. The diagram 3-9 illustrates this. Non-western immigrants who are young when they immigrate have lower non-response rate, and the non-response rate increases with the age at immigration. Both the western and non-western immigrants displays a non-linearity that probably have more to do with immigrant cohorts than age itself.

Diagram 3-9: Smoothed average non-response by age at immigration. LFS 2006-2007. Per cent.



Language problems as reason for non-response are most prominent in non-western immigrant groups, and especially among those over forty years old. Gabrielsen et al. (2005) found that language skills are linked both to the age at immigration and the labour market status. These results are interesting in further studies of the association between language skills and LFS response, as both are linked to the labour market condition of the individual.

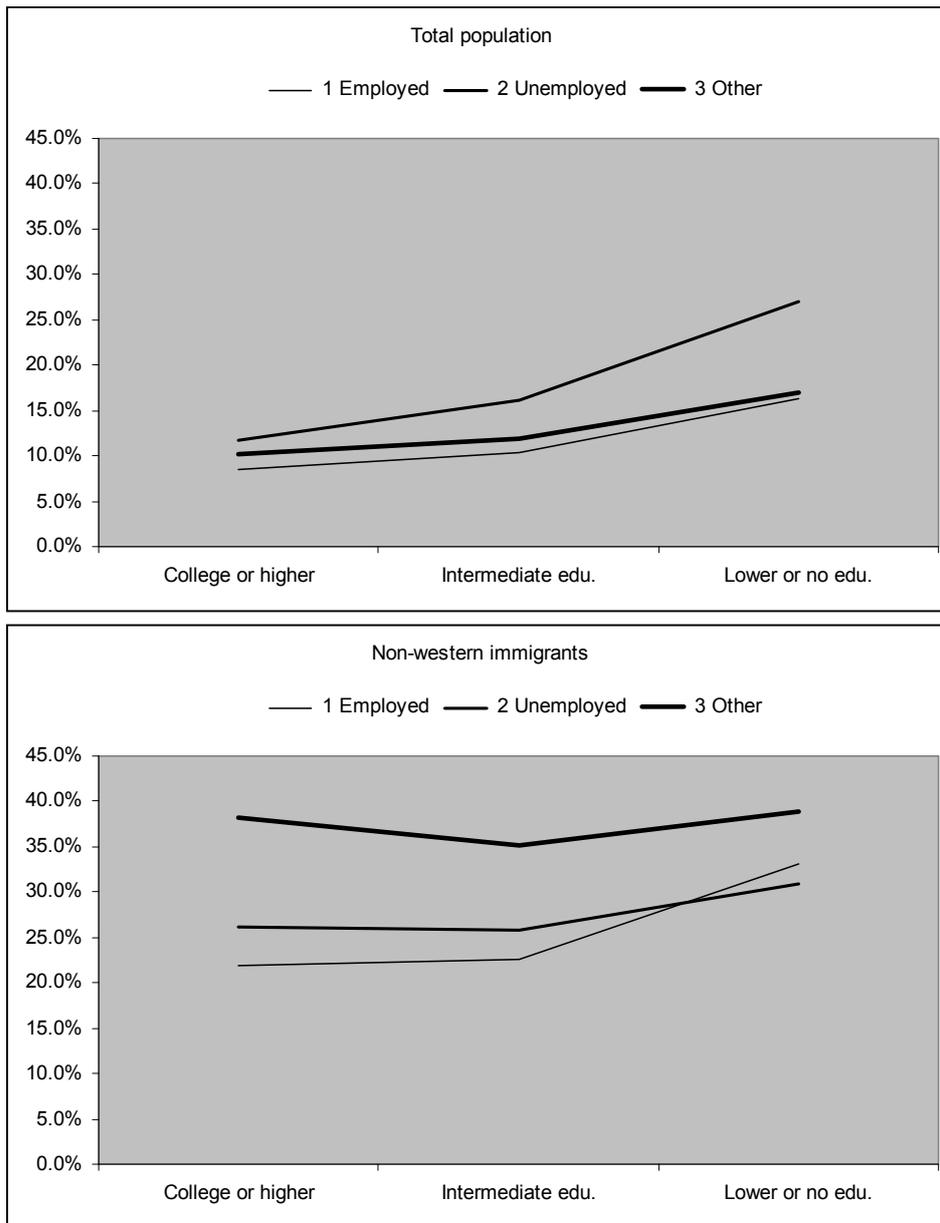
3.4 Education

Higher education is usually associated with higher response rate in surveys, and this is confirmed in the LFS data. Furthermore, the non-response variation with labour market status is smaller when controlling for the level of education. But for non-western immigrants the effect of educational level is less pronounced, and smaller than the effect of labour market status. Non-western immigrants have also higher non-response rate among those not in the workforce, regardless of education. In the general population, the non-response is highest among the unemployed, and with a marked added effect of low education.

Table 3-10: Average non-response by level of education, immigrant and register based labour market status. LFS 2006-2007. Per cent.

	Total	Employed	Unemployed	Other
Total	12	11	21	15
College or higher education	9	8	12	10
Intermediate education	11	10	16	12
Lower or no education	17	16	27	17
Not immigrants	11	10	18	13
College or higher education	8	8	10	8
Intermediate education	10	10	15	11
Lower or no education	14	14	24	14
Western immigrants	19	17	27	26
College or higher education	12	10		23
Intermediate education	17	18		14
Lower or no education	26	22		31
Non-western immigrants	32	29	30	38
College or higher education	25	22	26	38
Intermediate education	26	23	26	35
Lower or no education	35	33	31	39

Diagram 3-11: Average non-response by level of education and register based labour market status, among the general population and non-western immigrants. LFS 2006-2007. Per cent.



3.5 Survey quality indicators

3.5.1 Response and cooperation rates

The cooperation rate is generally high and in many aspects more interesting than the net response proportion. For non-western immigrants the cooperation rate is significantly lower than in the population in general, even though non-contact is a considerable component of the net non-response in this group.

Not surprisingly, explicitly registered language problems are highest in non-western immigrant groups. Non-western immigrants over forty have twice the proportion of reported language problems than the younger group. Gabrielsen et al. (2005) found that language skills are linked both to the age at immigration and the labour market status.

Refusal is markedly lower among contacted non-western immigrants, but the proportion of not known telephone or address is higher. The refusal rate may be underestimated, as we do not know whether those who are not contacted would have refused with the same rate as the contacted.

Table 3-12: Survey response quality indicators. LFS Monthly 2006-2007

		Total sample	Net Response	Refusal	Language problems	Contacted but unavailable	Not known telephone/address	No contact established	Contact rate	Cooperation rate
'2006	Jan	100.0	85.8	1.8	0.4	2.1	1.7	8.2	90.1	95.2
	Feb	100.0	86.4	2.6	0.3	2.4	2.5	6.0	91.6	94.3
	Mar	100.0	82.1	3.5	0.5	2.4	2.2	9.4	88.4	92.8
	Apr	100.0	89.9	1.8	0.4	1.9	2.1	3.8	94.1	95.6
	May	100.0	87.6	1.9	0.3	2.2	2.4	5.5	92.0	95.2
	Jun	100.0	80.8	3.5	0.4	4.2	2.5	8.5	89.0	90.8
	Jul	100.0	89.9	1.5	0.3	1.6	2.1	4.5	93.4	96.3
	Aug	100.0	88.0	2.5	0.3	2.0	2.0	5.1	92.8	94.8
	Sep	100.0	83.4	3.5	0.3	2.4	2.1	8.3	89.6	93.0
	Oct	100.0	90.3	1.3	0.4	1.9	1.9	4.2	94.0	96.1
	Nov	100.0	88.5	2.8	0.4	2.0	2.0	4.2	93.7	94.4
	Dec	100.0	84.4	3.1	0.3	2.4	2.2	7.5	90.3	93.5
'2007	Jan	100.0	88.3	1.9	0.4	2.3	2.4	4.7	92.9	95.1
	Feb	100.0	88.6	2.6	0.4	2.3	2.0	4.2	93.8	94.4
	Mar	100.0	84.2	3.9	0.4	2.2	2.1	7.3	90.6	92.9
	Apr	100.0	89.1	2.0	0.3	2.1	2.4	4.1	93.5	95.3
	May	100.0	87.8	2.6	0.3	1.9	2.1	5.2	92.7	94.8
	Jun	100.0	80.9	4.4	0.2	4.3	2.0	8.2	89.8	90.1
	Jul	100.0	88.4	1.9	0.3	1.6	2.5	5.3	92.3	95.8
	Aug	100.0	89.2	2.2	0.5	1.9	2.4	3.8	93.8	95.1
	Sep	100.0	82.8	4.8	0.3	2.4	2.5	7.3	90.2	91.7
	Oct	100.0	89.2	2.1	0.3	2.0	2.6	3.8	93.6	95.3
	Nov	100.0	88.7	2.1	0.5	2.2	2.6	4.0	93.5	94.9
	Dec	100.0	83.2	4.4	0.2	2.1	2.5	7.6	89.8	92.6

Table 3-13: Composition of non-response reasons. LFS Monthly 2006-2007

		Total Non-response	Refusal	Language problems	Contacted but unavailable	Not known telephone/address	No contact established
'2006	Jan	100.0	13.9	2.7	8.2	13.2	62.0
	Feb	100.0	20.4	2.1	10.8	19.4	47.2
	Mar	100.0	21.1	2.7	7.1	13.0	56.1
	Apr	100.0	20.3	4.9	9.9	23.2	41.8
	May	100.0	16.5	3.0	9.9	21.5	49.1
	Jun	100.0	19.8	2.2	16.3	14.1	47.6
	Jul	100.0	16.2	3.8	9.3	22.4	48.3
	Aug	100.0	23.3	3.2	7.9	18.6	47.0
	Sep	100.0	23.2	2.0	6.7	13.8	54.1
	Oct	100.0	15.2	5.0	10.5	21.5	47.8
	Nov	100.0	27.1	3.7	8.7	19.5	41.0
	Dec	100.0	21.9	1.9	7.9	15.7	52.6
'2007	Jan	100.0	18.2	3.6	11.8	22.4	44.0
	Feb	100.0	24.8	3.8	11.7	19.0	40.7
	Mar	100.0	26.4	2.6	7.4	14.1	49.5
	Apr	100.0	20.1	3.3	11.5	23.7	41.5
	May	100.0	23.3	2.9	8.3	18.9	46.6
	Jun	100.0	24.4	0.9	18.0	11.2	45.6
	Jul	100.0	18.0	2.6	7.6	22.8	49.0
	Aug	100.0	22.8	4.6	9.3	24.1	39.2
	Sep	100.0	29.7	1.8	8.0	15.3	45.2
	Oct	100.0	21.1	3.3	10.7	26.6	38.3
	Nov	100.0	20.7	4.5	10.8	25.2	38.9
	Dec	100.0	27.6	1.2	7.0	16.0	48.3

Table 3-14: Average survey response quality indicators, by immigrant origin. LFS 2006-2007.

	Total sample	Net Response	Refusal	Language problems	Contacted but unavailable	Not known telephone/address	No contact established	Contact rate	Cooperation rate
Total	100.0	86.5	2.7	0.4	2.3	2.2	5.9	91.9	94.2
0 Not immigrant	100.0	87.9	2.7	0.0	2.3	1.8	5.4	92.8	94.7
1 Western	100.0	80.1	2.2	0.8	2.6	6.2	8.1	85.7	93.5
2 Non-western	100.0	67.1	3.6	5.5	2.8	7.7	13.4	78.9	85.1
Men 15-39	100.0	84.2	2.5	0.3	2.1	3.1	7.8	89.0	94.6
0 Not immigrant	100.0	85.8	2.5	0.0	2.1	2.4	7.1	90.4	95.0
1 Western	100.0	72.8	0.7	1.0	2.0	12.2	11.3	76.5	95.2
2 Non-western	100.0	65.5	3.2	3.2	2.2	9.7	16.2	74.1	88.4
Men 40-74	100.0	87.2	2.9	0.3	2.6	2.1	4.9	93.1	93.7
0 Not immigrant	100.0	88.4	2.9	0.0	2.5	1.7	4.4	93.9	94.2
1 Western	100.0	80.5	2.0	1.5	3.7	4.8	7.6	87.7	91.8
2 Non-western	100.0	63.4	3.4	7.5	4.1	8.7	13.0	78.3	80.9
Women 15-39	100.0	85.1	2.7	0.4	1.7	2.5	7.6	89.9	94.6
0 Not immigrant	100.0	86.6	2.6	0.0	1.7	2.0	7.0	91.0	95.2
1 Western	100.0	79.2	2.1	0.5	2.3	6.6	9.4	84.0	94.2
2 Non-western	100.0	69.9	3.5	4.4	2.2	7.0	13.1	79.9	87.5
Women 40-74	100.0	89.1	2.8	0.4	2.6	1.3	3.8	94.9	93.9
0 Not immigrant	100.0	90.2	2.7	0.0	2.6	1.1	3.4	95.5	94.5
1 Western	100.0	84.5	3.4	0.1	2.2	3.6	6.2	90.2	93.7
2 Non-western	100.0	68.4	4.4	8.3	3.2	5.5	10.2	84.3	81.1

Table 3-15: Average composition of non-response reasons, by immigrant origin. LFS 2006-2007

	Total non-response	Refusal	Language problems	Contacted but unavailable	Not known telephone/address	No contact established
Total	100.0	21.9	2.8	9.9	18.0	47.3
0 Not immigrant	100.0	24.4	0.2	10.4	16.4	48.6
1 Western	100.0	11.4	4.0	10.1	32.2	42.3
2 Non-western	100.0	11.0	16.9	6.8	23.9	41.3
Men 15-39	100.0	16.8	1.7	6.9	21.2	53.3
0 Not immigrant	100.0	18.8	0.2	7.6	18.7	54.8
1 Western	100.0	2.5	3.8	4.7	46.2	42.8
2 Non-western	100.0	9.5	9.5	4.2	28.7	48.1
Men 40-74	100.0	25.6	3.0	11.1	18.0	42.3
0 Not immigrant	100.0	28.8	0.1	11.2	16.6	43.3
1 Western	100.0	10.8	8.3	12.9	26.3	41.7
2 Non-western	100.0	9.3	20.7	10.1	24.0	35.9
Women 15-39	100.0	18.9	2.8	8.1	17.3	52.9
0 Not immigrant	100.0	20.7	0.2	8.6	15.5	54.9
1 Western	100.0	10.3	2.2	9.6	32.4	45.6
2 Non-western	100.0	11.7	14.8	5.4	23.6	44.5
Women 40-74	100.0	28.4	3.8	14.7	13.8	39.2
0 Not immigrant	100.0	31.3	0.1	15.7	12.7	40.2
1 Western	100.0	22.3	0.5	13.2	23.6	40.5
2 Non-western	100.0	14.0	26.6	9.4	17.5	32.6

3.5.2 Proxy interviews

The Norwegian LFS uses interview by proxy, which means that a family member gives information on behalf of the interview subject. Interviewing by proxy is a cost-effective way of improving response in the current protocol of the Norwegian LFS.

The proportion of proxy interviews is about 15 per cent, and has a slightly increasing trend the last two years. In the previous ten years the trend in proportion of proxy interviews was slowly but steadily decreasing from around 16 per cent in 1996-1997 to just below 14 per cent in 2005. Proxy interviewing seems to be connected with the overall labour market situation in recent times. This association is illustrated in the diagram 3-16, showing both proxy- and employment level by year. In high employment periods there are more people working over-time and working a long way from home. That means more people are not at home at the time of interview, and the proxy interview rate increases.

Diagram 3-16: Employment and proportion of proxy interviews. LFS Monthly 2006-2007.

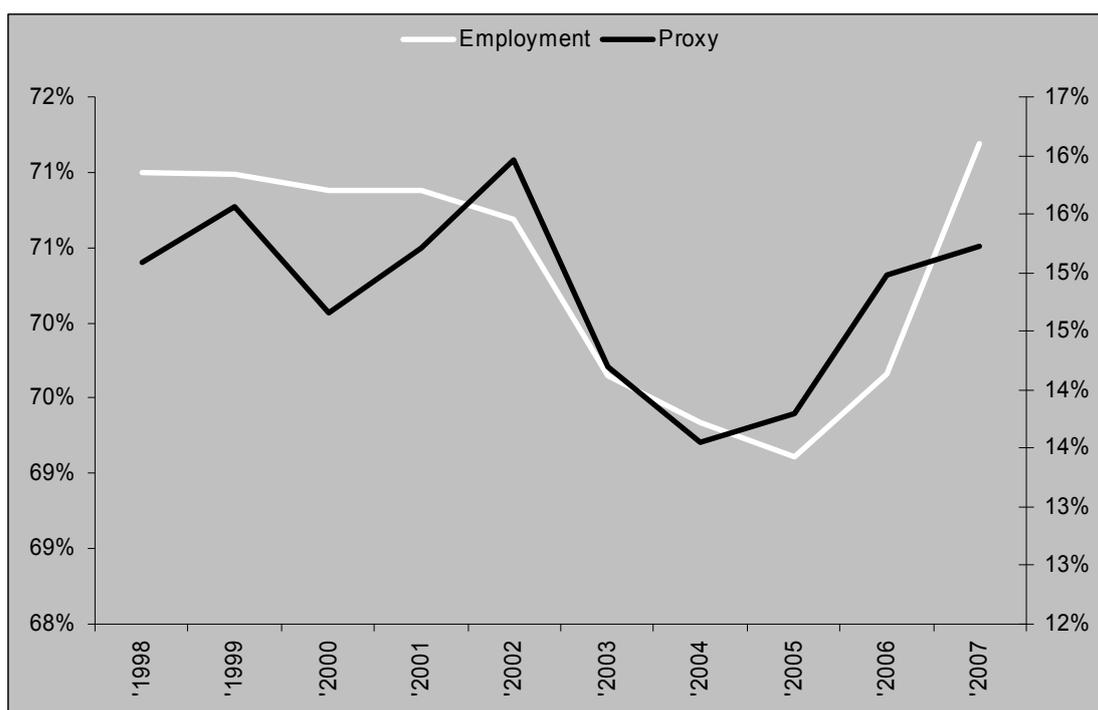


Table 3-17: Proxy interviews. LFS Monthly 2006-2007.

	'2006			'2007		
	Total response	Proxy	Proxy %	Total response	Proxy	Proxy %
Jan	6 514	851	13.1	6 530	930	14.2
Feb	6 456	868	13.4	6 624	1 085	16.4
Mar	7 760	1 177	15.2	7 915	1 167	14.7
Apr	6 784	1 078	15.9	6 677	969	14.5
May	6 544	1 030	15.7	8 226	1 292	15.7
Jun	7 641	1 155	15.1	6 082	805	13.2
Jul	6 771	981	14.5	6 610	1 058	16.0
Aug	8 218	1 232	15.0	8 351	1 266	15.2
Sep	6 267	989	15.8	6 212	971	15.6
Oct	6 785	1 053	15.5	6 682	1 038	15.5
Nov	8 274	1 259	15.2	8 287	1 274	15.4
Dec	6 362	969	15.2	6 250	999	16.0

In the total population, young people have a markedly higher proportion of proxy interviews. In all ages, men have a somewhat higher level of proxy interviews. For non-western immigrants the gender proportions are not only reversed, but also much higher for women. Among non-western immigrants there are smaller differences between the age groups, than in the general population.

The place of residence has some impact on the proxy level generally, but less in immigrant groups. Labour market participation is linked to the probability of a direct interview, where people outside the workforce have a much higher proportion of proxy interviews. This pattern is also present in non-western immigrant groups, especially women.

Table 3-18: Average proportion of proxy interviews, by demographic and labour market factors. LFS 2006-2007.

	Municipality				Labour market status		
	Total	Oslo	Large	Other	Employed	Unemployed	Other
Total	15.1	9.5	15.8	15.6	12.2	12.7	22.6
Men 15-39	18.3	9.9	18.2	19.7	13.8	14.5	32.7
Men 40-74	13.9	8.0	15.3	14.1	12.9	8.7	17.1
Women 15-39	16.3	11.3	17.0	16.9	12.5	14.3	26.5
Women 40-74	11.3	8.9	13.1	11.0	9.8	12.1	14.6
Western immigrant	11	6	13	12	10	14	16
Men 15-39	12	6	14	14	11	8	24
Men 40-74	13	8	15	13	13	8	12
Women 15-39	13	3	16	15	9	0	28
Women 40-74	9	4	9	11	8	42	13
Non-western immigrant	22	19	24	23	18	21	31
Men 15-39	15	13	18	15	13	13	21
Men 40-74	16	8	19	20	14	11	19
Women 15-39	29	26	30	30	23	28	38
Women 40-74	26	27	29	23	18	33	39

3.6 Non-response bias

We include some results on the bias in the non-response group. Simplified expressed, such bias means that those who participate in the LFS are not representative for the total population. Non-response bias affects the statistics quality in general. For instance will the employment be overestimated and the unemployment underestimated. The question here is whether the quality is even worse in immigrant groups.

Two-year averages of register based labour market status by LFS response shows that employed persons are under-represented in the non-response group. Unemployed and especially persons outside the workforce are over-represented in the non-response group. This pattern is very much the same among non-western immigrants than the population total, with possible some additional over-representation of persons outside the workforce. Actually the non-response bias seems worse for Western- than non-western immigrants.

Table 3-19: Average distribution of register based labour market status, by LFS response. LFS 2006-2007. Per cent and difference in percentage points.

	Total	Non-response	Response	<i>Non-response bias</i>
Total sample	100.0	100.0	100.0	0.0
1 Employed	69.8	63.5	70.7	-6.3
2 Unemployed	1.6	2.7	1.5	1.1
3 Other	28.6	33.8	27.9	5.2
Western immigrants	100.0	100.0	100.0	0.0
1 Employed	73.4	64.2	75.6	-9.2
2 Unemployed	2.0	2.9	1.8	0.8
3 Other	24.5	32.9	22.6	8.4
Non-western immigrants	100.0	100.0	100.0	0.0
1 Employed	56.8	50.5	59.8	-6.3
2 Unemployed	6.5	6.0	6.7	-0.5
3 Other	36.7	43.5	33.4	6.8

The non-response bias varies with gender and age groups, and the tables 3-20, 3-21 and 3-22 include comparison of the non-response bias in demographic groups as well as immigrant background.

Table 3-20: Average distribution of register based labour market status, by LFS response, gender and age group. LFS 2006-2007. Per cent and difference in percentage points.

	Total	Non-response	Response	<i>Non-response bias</i>
Total sample	100.0	100.0	100.0	0.0
Employed	69.8	63.5	70.7	-6.3
Unemployed	1.6	2.7	1.5	1.1
Other	28.6	33.8	27.9	5.2
Men 15-39 years	100.0	100.0	100.0	0.0
Employed	73.6	70.6	74.2	-3.1
Unemployed	2.2	3.6	1.9	1.5
Other	24.2	25.8	23.9	1.6
Men 40-74 years	100.0	100.0	100.0	0.0
Employed	73.1	63.9	74.3	-9.2
Unemployed	1.4	2.8	1.2	1.4
Other	25.5	33.3	24.5	7.8
Women 15-39 years	100.0	100.0	100.0	0.0
Employed	70.0	63.8	71.0	-6.2
Unemployed	2.1	2.8	2.0	0.7
Other	27.9	33.4	27.0	5.5
Women 40-74 years	100.0	100.0	100.0	0.0
Employed	66.4	58.2	67.3	-8.2
Unemployed	1.1	1.6	1.0	0.5
Other	32.5	40.2	31.7	7.6

In the LFS Subpopulation of Western immigrants the bias is somewhat larger than in the total sample, but the overall pattern and demographic variation is much the same.

Table 3-21: Average distribution of register based labour market status, by LFS response, gender and age group. Western immigrants 2006-2007. Per cent.

	Total	Non-response	Response	<i>Non-response bias</i>
Western immigrants	100	100	100	0
Employed	73	64	76	-9
Unemployed	2	3	2	1
Other	25	33	23	8
Men 15-39 Years	100	100	100	0
Employed	83	69	87	-13
Unemployed	2	3	2	1
Other	15	28	11	13
Men 40-74 Years	100	100	100	0
Employed	68	60	70	-8
Unemployed	4	5	4	1
Other	28	35	26	7
Women 15-39 Years	100	100	100	0
Employed	74	60	78	-15
Unemployed	0	0	0	0
Other	26	40	22	15
Women 40-74 Years	100	100	100	0
Employed	72	66	73	-6
Unemployed	1	3	1	1
Other	27	31	26	5

In the LFS subpopulation of Non-Western immigrants the unemployment level is markedly larger than in the total sample. But the absolute non-response bias is not higher in the population subgroup. Also the bias for employment is about the same for Non-Western immigrants as the total sample. With the current estimation methods this will cause a general underestimation of unemployment. The adjustment for employment will also cause the unemployment estimates to be adjusted in the right direction, and among them the non-western immigrants.

Table 3-22: Average distribution of register based labour market status, by LFS response, gender and age group. Non-Western immigrants 2006-2007. Per cent.

	Total	Non-response	Response	<i>Non-response bias</i>
Non-western immigrants	100	100	100	0
Employed	57	51	60	-6
Unemployed	7	6	7	-1
Other	37	43	33	7
Men 15-39 years	100	100	100	0
Employed	62	62	63	-1
Unemployed	7	7	7	0
Other	30	31	30	1
Men 40-74 years	100	100	100	0
Employed	57	47	63	-10
Unemployed	6	6	6	0
Other	37	46	31	10
Women 15-39 years	100	100	100	0
Employed	53	48	54	-4
Unemployed	8	6	8	-1
Other	40	45	38	5
Women 40-74 years	100	100	100	0
Employed	56	41	63	-15
Unemployed	4	3	4	-1
Other	40	56	33	16

The main subject of this report is to give information useful in the efforts of improving response in general, and particularly in immigrant groups. The analysis of non-response bias information is hopefully of use in the development of contact and motivational strategies for the data collection. For instance the higher non-response rate among those not employed can be linked to other socio-economic traits or to cognitive issues. An example could be that people with weaker relationship to the labour market have a lower motivation to participate in a survey that is presented with emphasis on employment. Whether the LFS is perceived as a social study or an economic study could affect the motivation in such groups.

3.7 Intermittent non-response

The data collection plan of the Norwegian LFS is a continuously rotating panel, where each person is to participate quarterly in eight consecutive quarters. The protocol makes it possible for a person to drop in and out of the response group, i.e. the same person can be in a response group in one quarter and in non-response group at another time. This sporadic or intermittent non-response means that the response probability is not determined by individual characteristics alone. This means we should not view the "non-response group" as a population subgroup separated from the "response people".

Results on intermittent non-response show a quite different pattern for non-western immigrants. The figures are proportion of non-response events relative to the total possible interviews per person. First we look at average figures, then in table 3-24 we control for the number of possible interviews. In the average proportions, the denominator varies

between 1 and 8 because of the continuously rotating panel, some individuals have just entered and some are on their way out.

The results show that non-western immigrants not only have higher non-response rate in general, but also have a different distribution of intermittent non-response. The proportion of zero non-response events is much lower than in the general population: 47 per cent and 75 per cent respectively. Among non-western immigrants, 32 per cent have two or more non-response events, in comparison to 11 per cent in total. The proportion of exactly one non-response event is also higher.

Diagram 3-23: Intermittent non-response, by immigrant origin. LFS 2006-2007. Per cent.

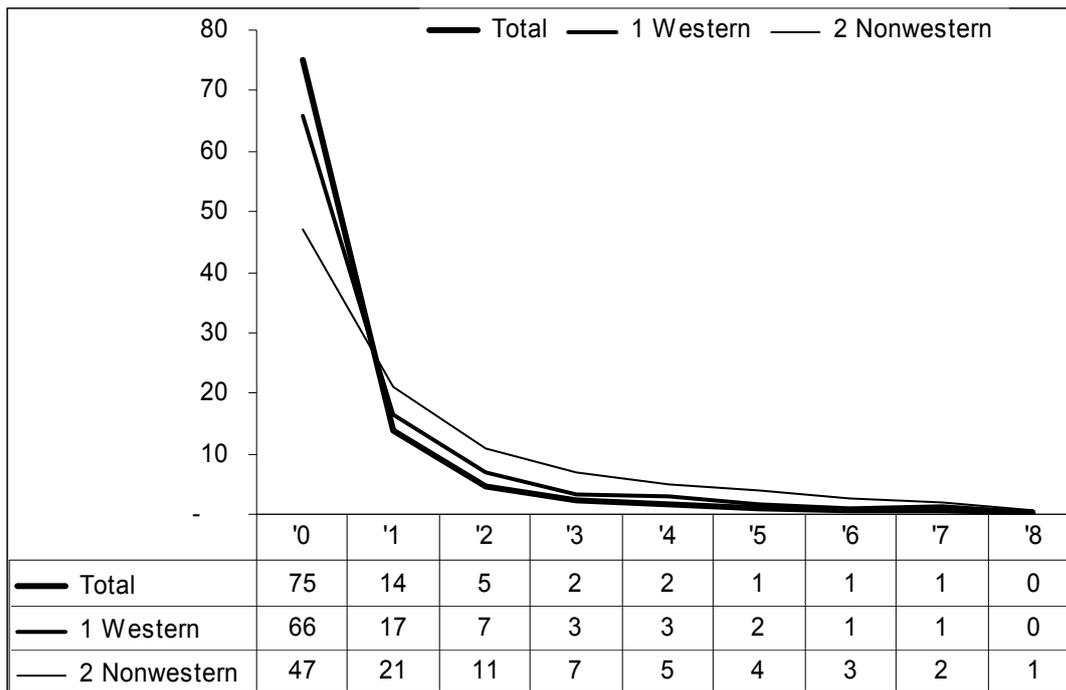


Table 3-24: Intermittent non-response, by number of trials and immigrant origin. LFS 2006-2007. Per cent.

Number of non-response events by possible trials	Total	Not immigrant	Western	Non-western
1 Trial	100	100	100	100
0	85	87	77	60
1	15	13	23	40
2 Trials	100	100	100	100
0	80	81	70	61
1	12	12	18	18
2	8	7	13	21
3 Trials	100	100	100	100
0	77	79	68	54
1	13	12	13	20
2	4	4	5	6
3	6	5	13	20
4 Trials	100	100	100	100
0	74	77	61	46
1	13	13	17	20
2	5	4	9	11
3	3	2	3	7
4	5	4	10	16
5 Trials	100	100	100	100
0	73	76	60	43
1	13	13	18	17
2	5	4	7	12
3	3	2	1	7
4	2	1	5	6
5	4	3	10	15
6 Trials	100	100	100	100
0	71	73	70	40
1	14	14	9	18
2	5	5	9	12
3	2	2	4	6
4	2	2	3	6
5	2	2	1	6
6	4	3	5	12
7 Trials	100	100	100	100
0	68	71	57	30
1	15	14	16	18
2	6	5	8	12
3	3	2	1	8
4	2	2	3	6
5	2	1	2	6
6	2	1	2	8
7	3	3	11	12
8 Trials	100	100	100	100
0	64	66	54	32
1	16	16	18	18
2	7	6	5	14
3	4	3	8	9
4	2	2	2	5
5	2	1	5	4
6	2	2	2	3
7	1	1	0	6
8	3	2	7	9

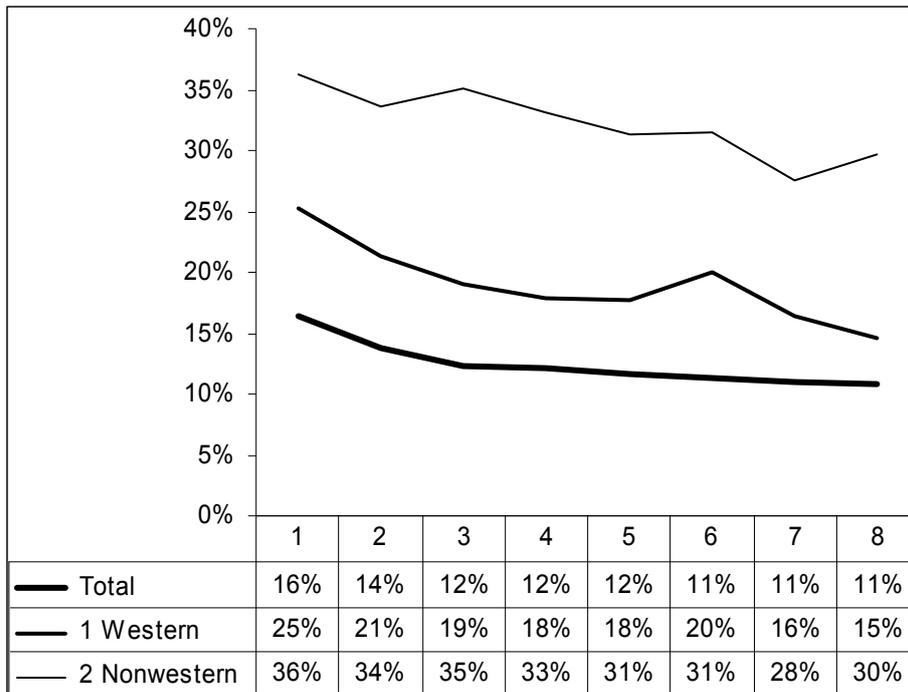
3.8 Panel Attrition

Attrition effect can be defined as increasing non-participating probability by the number of times participating in a panel survey. The size of a survey panel is reduced when people

moves or dies, and it could be that participating in a survey a lot of times "wears out" of interview subject resulting in increasing non-response.

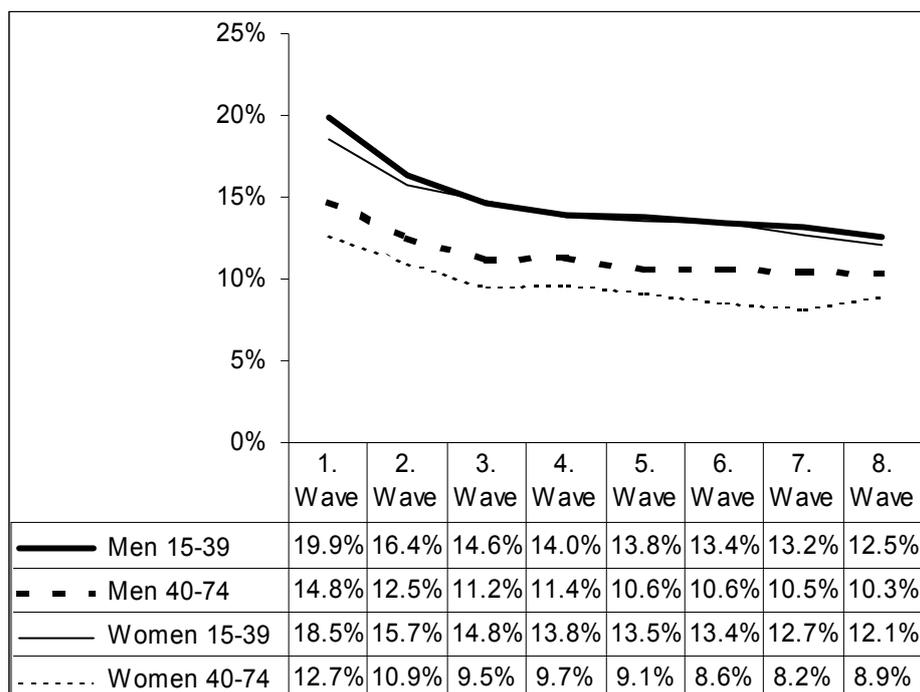
The present LFS data indicates that the non-response decreases by the number of times participating. Non-western immigrants have a steeper decrease in non-response. The reduction from time 1 to time 8 measured in percentage point is 5.5 in total, and 6.6 for non-western immigrants.

Diagram 3-25: Average non-response, by wave and immigrant origin. LFS 2006-2007. Per cent.



The figures suggest little variation in attrition effect between demographic groups. Generally the non-response rate varies more with age than with gender. Gender differences in non-response rate are only pronounced in the higher age groups.

Diagram 3-26: Average non-response, by age, gender and number of times participating. LFS 2006-2007. Per cent.



3.9 Family size and the number of children

There is much interest about family and household structures of non-western immigrants. As the non-western immigrants have a different distribution of family types than the population total, and a higher non-response rate, we are interested in the relative effects of the family structure and the immigrant background itself. The results indicate that the association between family type and non-response seems to be much the same as in the general population. The non-response rate is higher in all types of families with non-western immigrant background. The general results about non-response and family types are:

- One-person families have higher non-response.
- Larger families tend to have lower non-response.
- Families with more young children have higher non-response.

The second and last points seem to contradict, but the last point can be rephrased to give a better explanation: Large families with older children, have lower non-response rate. It can simply be that families with more people over 15 years old are easier to get in touch with, because of a higher probability of someone being at home. The possibility for proxy interviews is also increased in families with more people over 15 years. Single parents with one or more small children can be harder to contact, and are not available for proxy interviews.

Table 3-27: Average non-response by family size, number of children in the family and immigrant status.¹ LFS 2006-2007. Per cent.

	Total	No children	1 child	2 children	3 or more
Total population	12	13	11	10	12
1 person	19	19			
2 persons	10	9	18		
3 persons	10	9	11	15	
4 or more	8	7	7	9	12
Not immigrant	11	12	10	9	8
1 person	18	18			
2 persons	9	8	17		
3 persons	9	8	9	14	
4 or more	7	7	6	7	8
Western immigrant	19	22	13	13	8
1 person	30	30			
2 persons	15	14	21		
3 persons	10	10	10	10	
4 or more	11	5	14	13	8
Non-western immigrant	32	37	26	26	32
1 person	46	46			
2 persons	31	30	37		
3 persons	26	28	25	29	
4 or more	26	18	22	26	32

1) Empty cells indicate impossible combinations.

Table 3-28: Average non-response by family size, immigrant- and register based labour market status.² LFS 2006-2007. Per cent.

	Total	Employed	Unemployed	Other
All families	12	11	21	15
1 person	19	17	28	24
2 persons	10	10	17	10
3 persons	10	10	16	12
4 persons	8	8	16	10
5 or more	9	7	19	12
Not immigrant	11	10	18	13
1 person	18	16	26	21
2 persons	9	9	15	9
3 persons	9	9	13	10
4 persons	7	7	12	8
5 or more	7	6	14	8
Western immigrants	19	17	27	26
1 person	30	28		36
2 persons	15	13		19
3 persons	10	8		17
4 persons	10	9		
5 or more	11	8		
Non-western immigrants	32	29	30	38
1 person	46	40	38	56
2 persons	31	26	25	40
3 persons	26	24	30	30
4 persons	23	20	27	27
5 or more	29	28	25	30

2) Some figures are omitted because of uncertainty in small groups.

Table 3-29: Average non-response by number of children in the family, immigrant- and register based labour market status. LFS 2006-2007. Per cent.

	Total	Employed	Unemployed	Other
All families	12	11	21	15
No children	13	12	22	15
1 child	11	10	18	13
2 children	10	9	20	15
3 children	11	9	18	18
4 children	16	13		22
5 or more	19	13		26
Not immigrant	11	10	18	13
No children	12	11	20	13
1 child	10	9	14	12
2 children	9	8	15	12
3 children	8	7	13	13
4 children	7	6		10
5 or more	7	6		
Western immigrants	19	17	27	26
No children	22	20	28	27
1 child	13	11	40	20
2 children	13	10		30
3 children	8	8		
Non-western immigrants	32	29	30	38
No children	37	31	34	45
1 child	26	25	25	27
2 children	26	23	30	30
3 children	28	25		32
4 children	42	49		38
5 or more	37			

4 Literature

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