

Elisabeth Gulløy and Tor Morten Normann

Sexual identity and living conditions

Evaluation of the relevance of living conditions and data collection

Reports In this series, analyses and annotated statistical results are published from various surveys. Surveys include sample surveys, censuses and register-based surveys.

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Preface

In Statistics Norway's survey of living conditions concerning health in the autumn of 2008, a number of questions were asked as a pilot survey of sexual attraction and sexual identity. This was preceded by a development project in which we investigated both the relevance of the topics to living conditions and the methodological challenges of surveying these topics. The development project is documented in Gulløy, Haraldsen and Normann (2009).

In this report we present analyses of the correlations between sexual attraction and identity and living conditions. We also present documentation from the data collection and an analysis of data quality as well as the effects of including these questions in the living conditions survey.

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Abstract

Statistics Norway's Survey of Living Conditions 2008 was the first to contain questions on sexual attraction and sexual identity. The survey mainly concerned health, and was based on a gross sample of 10,000 persons aged 16 years and over. 6,465 persons were interviewed.

This report will present evidence for a correlation between sexual identity and certain indicators on living conditions. Under certain circumstances, persons attracted to the same or both sexes and persons identifying themselves as gay, lesbian or bisexual are exposed to reduced living conditions. However, the correlations are largely uncertain, and will only in a few cases justify conclusions that are statistically significant. The main reason for this is the limited number of observations in groups reporting sexual attraction to the same sex, or a non-heterosexual identity.

The report also illustrates that inclusion of questions on sexual attraction and identity did not result in reduced quality due to an increase of non-response in the living conditions survey as a whole. There was, however, a relatively high proportion of item non-response in questions on sexual attraction and identity. The most negative effect was for questions on sexual identity. An analysis of non-respondents also indicates a risk of measurement error, due both to item non-response and under-reporting.

The aim of this project, which includes methodological development prior to data collection, the data collection itself and the present evaluation report, was to determine whether or not questions on sexual identity should be made a standard component of Statistics Norway's surveys on living conditions in the future. In contrast to other groups in the population, the group of persons with same-sex attraction or a non-heterosexual identity cannot be objectively defined. In order to define this group, we have to rely on questions put to the respondents. This also presupposes that the quality of the questions is good in order to yield high data quality. Due to the uncertain relationship between sexual identity and living conditions, and the risk of measurement error, the conclusion of this project is that these questions should not be included as a standard component of the living conditions surveys on a regular basis in the future. This does not mean that the questions may not be asked in the survey again at some stage. If so, one should be aware of the importance of the sample size necessary in order to obtain significant results. At the same time, a certain degree of measurement error is to be expected. Finally, we would like to emphasise that the inclusion of these questions in no way reduced the general quality of the living conditions survey.

Sammendrag

Denne rapporten viser at det finnes belegg for å hevde at seksuell tiltrekning og seksuell identitet kan ha sammenheng med enkelte levekårsindikatorer. Personer som er tiltrukket av samme eller begge kjønn og personer som identifiserer seg som homofile, lesbiske eller bifile kan i enkelte tilfeller sies å være utsatt for svekkede levekår. Sammenhengene er likevel stort sett usikre, og gir bare i få tilfeller grunnlag for statistisk sikre slutninger. Dette skyldes i all hovedsak at antallet observasjoner i grupper med tiltrekning til samme kjønn eller en ikke-heterofil identitet er svært lite.

Rapporten viser også at inkludering av spørsmål om seksuell tiltrekning og identitet ikke har hatt negativ innvirkning på resten av levekårsundersøkelsen i form av økt frafall. Spørsmålene om seksuell tiltrekning og identitet er imidlertid noe beheftet med partielt frafall. Størst betydning har dette for seksuell identitet. En analyse av frafallet viser at det er en fare for målefeil, både på grunn av partielt frafall og underrapportering.

Dette prosjektet, som inkluderer både utviklingsprosjektet forut for datafangsten, selve datafangsten og denne evalueringsrapporten, har som formål å utrede om seksuell identitet skal inngå fast i Statistisk sentralbyrås levekårsundersøkelse framover. Det å definere grupper med tiltrekning til samme kjønn eller en ikke-heterofil identitet kan ikke gjøres med objektive kriterier som vi ofte kan gjøre for andre grupper. Vi er avhengige av å spørre respondentene, og derfor også avhengig av at spørsmålene er gode og gir tilstrekkelig datakvalitet. På grunn av liten mulighet for å finne signifikante sammenhenger med levekår og på grunn av faren for målefeil, er konklusjonen fra dette prosjektet at spørsmål om seksuell tiltrekning og seksuell identitet ikke blir en fast del av levekårsundersøkelsen. Det betyr ikke at spørsmålene ikke kan inkluderes i undersøkelsen igjen ved en senere anledning, men en må da være oppmerksom på at utvalgets størrelse vil være avgjørende for å kunne trekke signifikante konklusjoner, samtidig som en må forvente en viss målefeil. Vi vil understreke at spørsmålene ikke på noen måte har svekket kvaliteten i levekårsundersøkelsen generelt

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1. Sexual identity and living conditions

Statistics Norway's decision as to whether or not to include questions on sexual identity in its Survey of Living Conditions 2008 rested on whether a correlation could be demonstrated between sexual identity and certain key aspects of living conditions. A review of research on living conditions among gays and lesbians was consequently a core component of the development project (Gulløy, Haraldsen and Normann 2009). A great deal of previous research in this field employs methods other than those on which our own was based. The qualitative component of the research is outside of our field of expertise, and the quantitative component is based largely on samples that are not representative of the Norwegian adult population, although we also had access to research findings based on representative data from outside of Norway. The review of the studies available demonstrated the likelihood that sexual identity is of relevance in surveys of differences in living conditions, and that it might therefore come under what Statistics Norway regards as its remit for its living conditions surveys, which is to reveal differences in living conditions among different social groups in society and to identify at-risk groups. Our conclusion was thus that we should include questions on sexual identity in our nationally representative sample survey as a pilot project. The inclusion of these questions on a permanent basis would depend on the outcomes of Survey of Living Conditions 2008 and an evaluation of the data collection itself. Both aspects are discussed in this report.

One important aspect of the development project was the discussion of how sexual identity may be operationalised and what dimensions should be included. Although we will not be citing the discussion in its entirety, we chose to measure sexual attraction and sexual identity. Questions on identity were put only to individuals who had already responded that they felt sexually attracted to the same or both sexes (see Appendix for details of questions). But this actually gives us more options when we come to compile the tables. In this report, we decided to survey sexual attraction and sexual identity separately. For the living conditions surveys, it is also important to emphasise that individuals who have not made substantive responses to the questions – i.e. by answering “don't know” and “do not wish to respond” are regarded as missing units in the variable of sexual attraction. In other words, such respondents are not included in the percentage base. There is obviously, in this group, a potential for under-reporting of sexual attraction to the same sex. For sexual identity, we interpreted non-substantive answers as belonging in the category of “unsure”. We did so since these persons had already responded that they are sexually attracted to the same sex, but were unable or unwilling to respond to the question concerning their sexual identity.

1.1. Overview of proportions

The first categorisation we use in Table 1.1 is sexual attraction. This is not the same as sexual identity, but, based on the development project, we decided to include this as a factor in our survey. Attraction may be more transient and circumstantial than identity, but the two phenomena are obviously closely connected. For practical purposes, sexual identity is divided into four categories: heterosexual, gay/lesbian, bisexual and unsure. Table 1.1 shows sexual attraction and identity, by gender.

Around 97 per cent of respondents to the question on sexual attraction in Survey of Living Conditions 2008 responded that they are only attracted to the opposite sex. These are categorised as heterosexual when we come to sexual identity. This means that we chose not to put identity questions to individuals who responded that they were attracted only to the opposite sex. Just under one per cent responded that they are only attracted to the same sex and this proportion was the same among both women and men. One per cent also responded that they were attracted to both sexes, and this appears to apply to a larger proportion of women than men. The difference however is not large enough to be statistically significant, at 0.95 level.

There is also a larger proportion of women than men who do not feel attracted to either sex. However, this is clearly linked to age. The proportion of heterosexuals is higher than the proportion attracted only to the opposite sex. This means that a number of individuals who are attracted to the same sex, still class themselves as heterosexual. The proportion of gays and lesbians is fairly similar, but it would appear that the proportion of bisexuals is slightly higher among women than among men, although the difference is small and uncertain. A total of 0.3 per cent of respondents are categorised as “unsure”. This means that, while they feel attracted to the same sex, they are either unwilling or unable to sort themselves within the identities we defined in the questionnaire.

Table 1.1. Sexual attraction and sexual identity by gender, per cent. Persons aged 16 years and over, 2008

	Male	Female	Total
Only the opposite sex	97,8	95,9	96,8
Only the same sex	0,8	0,8	0,8
Both sexes	0,7	1,4	1,0
No attraction	0,7	2,0	1,3
<i>No. of persons</i>	3 117	3 189	6 306
Heterosexual	98,9	98,3	98,6
Gay, lesbian or bisexual	0,9	1,5	1,2
Gay	0,6		0,3
Lesbian		0,7	0,4
Bisexual	0,2	0,8	0,5
Unsure	0,3	0,2	0,3
<i>No. of persons</i>	3 097	3 141	6 238

In the development project, we reviewed other data on sexual identity showing how the proportions varied depending on categorisation and designations applied. Based on our review of other data sources, we posited that we might get from 2 to 8 per cent non-heterosexuals in a cross-sectional sample such as the living conditions survey. Table 1.1 demonstrates that the actual result is slightly less than expected. This may to some extent be attributable to underreporting, but may also be due to weaknesses in other sample surveys dealing with the same topic. Perhaps the most reliable cross-sectional source of data reviewed in the development study was the Swedish 2005 Public Health Policy Report (Swedish National Institute of Public Health 2005). This covered the Swedish population aged 16-64 years and was conducted in the form of a self-administered postal questionnaire. In the Swedish survey, a somewhat different categorisation of non-heterosexual identities was employed than the one we finally settled on, but the results are still fairly similar. The Swedish results showed 98 per cent heterosexuals, but also had a proportion in the category “heterosexual with occasional gay/lesbian inclinations”. Our data finding of 98.6 per cent heterosexuals is consistent with the Swedish findings.

Table 1.2 also shows that the younger generation more commonly feels sexually attracted to both sexes. But again, the differences are relatively small and uncertain. For sexual identity, there is a relatively clear tendency for the younger generation to more commonly categorise themselves as gay, lesbian or bisexual. Among individuals aged 67 years and over, very few have placed themselves in any of these categories. There may well be a methodological factor implicated here, since individuals who responded that they do not feel any sexual attraction were not asked the identity question. This may have resulted in some under-reporting of gay, lesbian and bisexuals among the most senior respondents.

Table 1.2. Sexual attraction and sexual identity by age, per cent. Persons aged 16 years and over, 2008

	16-24 years	25-44 years	45-66 years	67-79 years	80- years	Total
Only the opposite sex	96,5	97,5	98,5	95,8	83,1	96,8
Only the same sex	1,0	1,0	0,7	0,3	0,7	0,8
Both sexes	2,0	1,2	0,5	0,7	1,0	1,0
No attraction	0,4	0,2	0,3	3,3	15,2	1,3
<i>No. of persons</i>	875	2 189	2 340	636	266	6 306
Heterosexual	97,6	98,1	99,2	99,1	99,1	98,6
Gay, lesbian or bisexual	2,3	1,6	0,7	0,3	0,0	1,2
Gay	0,4	0,5	0,2	0,1	0,0	0,3
Lesbian	0,4	0,5	0,3	0,0	0,0	0,4
Bisexual	1,5	0,6	0,1	0,2	0,0	0,5
Unsure	0,1	0,3	0,1	0,6	0,9	0,3
<i>No. of persons</i>	871	2 185	2 333	618	231	6 238

Source: Survey of Living Conditions 2008, Statistics Norway.

Other research in this field has claimed an over-representation of non-heterosexuals in central urban areas and large towns. In our data, we find partial, but again statistically uncertain, evidence of this (Table 1.3). The proportion that is attracted to the same or both sexes is somewhat higher in the largest urban settlements than elsewhere, and the proportion of gay, lesbians or bisexuals is also somewhat higher.

Table 1.3. Sexual attraction and sexual identity by area of residence, per cent. Persons aged 16 years and over, 2008

	Sparsely populated areas	Densely populated areas, less than 2,000 inhabitants	Densely populated areas, 2,000 to 20,000 inhabitants	Densely populated areas, 20,000 to 100,000 inhabitants	Densely populated areas, 100,000 or more inhabitants	Total
Only the opposite sex	96,9	97,3	96,8	97,4	96,0	96,8
Only the same sex	0,9	0,0	0,9	0,6	1,3	0,8
Both sexes	0,7	1,1	0,8	0,9	1,7	1,0
No attraction	1,4	1,5	1,6	1,2	1,1	1,3
<i>No. of persons</i>	1 273	525	1 627	1 401	1 425	6 251
Heterosexual	98,7	99,1	98,7	99,0	97,7	98,6
Gay, lesbian or bisexual	1,1	0,7	1,0	0,9	1,9	1,2
Gay	0,4	0,0	0,2	0,3	0,6	0,3
Lesbian	0,3	0,0	0,4	0,2	0,6	0,3
Bisexual	0,4	0,7	0,4	0,4	0,8	0,5
Unsure	0,2	0,3	0,3	0,2	0,4	0,3
<i>No. of persons</i>	1 257	521	1 605	1 387	1 414	6 184

Source: Survey of Living Conditions 2008, Statistics Norway.

A survey conducted by NOVA, a Norwegian social research institute, in 1998 (Hegna et al. 1999) showed that gays and lesbians had a considerably higher level of educational attainment than the rest of the population. Our data, however, do not support this assertion. In the different educational attainment categories shown in Table 1.4, there are only minor differences in the proportions that are attracted only to the same sex, although the proportion is largest in the group with higher educational attainment. However, the proportion that is attracted to both sexes is higher in the group with only compulsory lower-secondary education, but this is connected with the fact that this proportion is also high among the youngest respondents. Sexual identity does not produce major differences either. If we consider gays, lesbians or bisexuals as one, we find no high over-representation of this group among those with higher education.

Our results thus show that less than two per cent of the population aged 16 years and over are attracted to either the same or both sexes and that just over one per cent categorise themselves as gay, lesbian or bisexual. Women feel attracted to both sexes more than men do and the proportion of bisexuals is consequently higher among women. The young are more commonly attracted to the same sex than are their seniors, and the proportion of gays, lesbians or bisexuals is higher

among the young than among their seniors (which is indicative of under-reporting). Sexual attraction and identity appear to be fairly evenly distributed in the population in terms of place of residence and educational attainment. Given that the proportions are essentially low, and our sample is limited, the slight differences discussed here will be subject to some uncertainty. We should also emphasise that this is not in any way a definitive representation of the magnitude of the proportions in the population as a whole. Measuring sexual attraction and identity presents a number of methodological challenges, and the risk of measurement error cannot be excluded. We have discussed this earlier and will be returning to it in Chapter 2. We should also emphasise that a precise estimate of proportion was in any case **not** the primary aim of collecting data on sexual attraction and identity in the living conditions survey. As stated, the principal aim for us is to examine the extent to which sexual attraction and identity correlate with key aspects of living conditions. The survey covers some of the main aspects of living conditions that are typically addressed in connection with sexual identity. In the following, we will therefore be looking at correlations between sexual attraction and identity and certain indicators of living conditions.

Table 1.4. Sexual attraction and sexual identity by educational attainment, per cent. Persons aged 16 years and over, 2008

	Compulsory lower secondary education	Upper secondary	Higher education	Total
Only the opposite sex	94,9	97,9	97,6	96,9
Only the same sex	0,8	0,6	1,0	0,8
Both sexes	1,5	0,7	0,8	1,0
No attraction	2,8	0,7	0,6	1,3
<i>No. of persons</i>	1 526	2 566	1 868	5 960
Heterosexual	98,3	99,0	98,6	98,7
Gay, lesbian or bisexual	1,3	0,9	1,3	1,1
Gay	0,3	0,3	0,6	0,4
Lesbian	0,3	0,3	0,3	0,3
Bisexual	0,7	0,3	0,4	0,5
Unsure	0,4	0,1	0,2	0,2
<i>No. of persons</i>	1 488	2 550	1 857	5 895

Source: Survey of Living Conditions 2008, Statistics Norway.

1.2. Self-assessed health and long-term illness

Previous research from Norway has shown that both lesbians and gays to a lesser extent than the rest of the population rate their own health as good or very good (Hegna et al. 1999), but it has also been indicated that the general rating of own health does not worsen with increasing health to the same extent among gays and lesbians as in the population generally. Swedish data have also demonstrated somewhat poorer general health among gays and lesbians than among the rest of the population, but here the difference is attributed primarily to the poor health of lesbian women in mid-life. Gay men had equally as good general health as heterosexual men. In our data, we can examine this by applying a variable for self-assessed health, shown in Table 1.5, which shows self-assessed health by both sexual attraction and identity. Interpretation of the table is hampered by the fact that the number of observations in the columns for attraction to the same sex, and gays, lesbians and bisexuals is low. This makes the differences uncertain, and means that we lose the possibility of further breakdown, by age, for example.

This also means that none of the differences we find in self-assessed health by sexual attraction and identity (Table 1.5) is statistically significant. We illustrate this here by breaking with the general rule that states we should not present percentages for groups with fewer than 25 observations. Had we observed the rule, we would have had many blank cells in the table. We have therefore chosen to present proportions in small groups since this is primarily a report designed to evaluate the usefulness of data collection. Among women, the differences in proportions are not that large for those who rate their own health as good or very good, irrespective of whether they are sexually attracted to only the opposite sex or

to both sexes. Among men, the proportion who rate their own health as good or very good is low among those who are only attracted to the same sex, but this finding is subject to uncertainty owing to the limited number of observations.

Eight in ten heterosexuals rate their own health as good or very good. Among gays/lesbians, the proportion is almost the same, but the number of observations is too small to be indicative of any differences between heterosexuals and gays/lesbians. Again, eight in ten bisexuals rate their own health as good or very good. And here also, the number is limited and the gender differences are thus uncertain. If we aggregate the figures for gay, lesbian and bisexuals, the number is somewhat greater. We see that men in this group tend more often to rate their own health as neither good nor bad as opposed to good, when we compare them with heterosexual men. The proportion with very good health is however similar. Among women, we find a certain difference when it comes to the relationship between good and very good health, with lesbian and bisexual women somewhat more rarely than heterosexuals rating their health as good. For the “unsure” category, the number of observations is too small to offer any indication of differences in self-assessed health.

Table 1.5. Self-assessed health by gender and sexual attraction and sexual identity, per cent. Persons aged 16 years and over, 2008

		Very good	Good	Neither good nor poor	Poor	Very poor	No. of persons
Only attracted to the opposite sex	Male	38	45	12	4	1	3 051
	Female	35	44	14	6	1	3 073
	Total	36	45	13	5	1	6 124
Only attracted to the same sex	Male	28	39	18	15	0	25
	Female	28	48	15	10	0	23
	Total	28	43	17	12	0	48
Attracted to both sexes	Male	52	19	25	4	0	18
	Female	22	58	15	5	0	43
	Total	32	45	18	5	0	61
Heterosexual	Male	38	45	12	4	1	3 063
	Female	35	44	15	6	1	3 090
	Total	36	45	13	5	1	6 153
Gay, lesbian or bisexual	Male	37	35	20	8	0	25
	Female	25	58	15	2	0	44
	Total	29	49	17	4	0	69
Gay/lesbian	Male	31	43	15	11	0	19
	Female	27	56	13	4	0	20
	Total	29	50	14	7	0	39
Bisexual	Male	54	11	35	0	0	6
	Female	23	60	18	0	0	24
	Total	30	48	22	0	0	30
Unsure	Male	27	37	25	11	0	8
	Female	21	43	13	23	0	16
	Total	23	41	18	19	0	24

Source: Survey of Living Conditions 2008, Statistics Norway.

One way of controlling for whether sexual attraction and identity do in fact affect self-assessed health, while also controlling for other variables affecting health, is to perform a multivariate analysis. This also increases our chances of obtaining significant results. Cross tables may mask underlying effects, and here in particular we would mention age as a possible underlying variable in the area of health because young individuals are somewhat over-represented among individuals who feel attraction to the same sex or who are gay, lesbian or bisexual.

Table 1.6 shows the results of a logistic regression, in which we have taken good health (the categories of good and very good combined) as the dependent variable and examined how gender, age, education and sexual attraction affect the probability of reporting poor health (neither good nor bad, poor or very poor). Gender, age and educational attainment all affect self-assessed health. And although the number of observations is limited, we also see that sexual attraction partly has some effect. The fact of being attracted to both sexes or not feeling any sexual attraction has no significance. However, being attracted to only the same sex produces a greater probability of reporting poor self-assessed health, controlled for

gender, age and education. The odds are 2.46 compared with 1 which it would have been if the probability was the same as for the reference category. Both age and educational attainment, however, have greater significance.

Table 1.6. Logistic regression, likelihood of having poor self-assessed health by sexual attraction, gender, age and educational attainment. Persons aged 16 years and over, 2008

	Reference category: Females, 16-24 years old, higher education and only attracted to the opposite sex					
	Estimate	Standard error	Chi square	Significance	Odds estimate	Confidence interval, odds
Intercept	-1,1	0,11	103,7	<,0001		
Only the same sex	0,5	0,22	5,38	0,0204	2,46	1,45 4,16
Both sexes	-0,09	0,22	0,16	0,6874	1,36	0,81 2,29
No attraction	-0,02	0,18	0,02	0,8929	1,45	0,97 2,17
Male	-0,14	0,03	24,84	<,0001	0,76	0,68 0,85
25-44 years	-0,42	0,06	58	<,0001	1,92	1,53 2,41
45-66 years	0,34	0,05	47,27	<,0001	4,1	3,3 5,1
67-79 years	0,25	0,07	12,87	0,0003	3,75	2,92 4,8
80- years	0,92	0,09	115,22	<,0001	7,34	5,55 9,72
Compulsory lower secondary education ..	0,53	0,04	161,44	<,0001	3,24	2,75 3,81
Upper secondary education	0,12	0,04	9,31	0,0023	2,15	1,84 2,51

Source: Survey of Living Conditions 2008, Statistics Norway. *Significance greater than 0.05 indicates that the variable does not produce a significant effect at the 0.95 level.

For sexual identity we performed a similar logistic regression in an attempt to isolate any effects on self-assessed health. For this, identity was aggregated, with gays, lesbians and bisexuals combined in a single group. The conclusion we drew from the results in Table 1.7 is relatively simple: gender, age, and educational attainment affect the likelihood of rating one's own health as poor, while sexual identity has no statistically certain significance. This may seem anomalous since we found a significant negative effect on health from being attracted only to the same sex in Table 1.7. One possible explanation of the absence of effect here may be that we have grouped gays and lesbians with bisexuals. However, we also checked whether splitting up these identities would produce an effect, and found that they would not. Moving on from sexual attraction to sexual identity, the small correlation we found has now disappeared. One possible explanation for this may be that some of those individuals who are attracted to the same sex still categorise themselves as heterosexual, or are unable to place themselves within any of the categories.

Table 1.7 .Logistic regression, likelihood of having poor self-assessed health by sexual identity, gender, age and educational attainment. Persons aged 16 years and over, 2008

	Reference category: Females, 16-24 years old, higher education and heterosexual					
	Estimate	Standard error	Chi square	Significance	Odds estimate	Confidence interval, odds
Intercept	-1,03	0,19	30,56	<,0001		
Only the same sex	0,03	0,24	0,02	0,8975	1,62	0,98 2,67
No attraction	0,42	0,34	1,53	0,2158	2,39	0,91 6,31
Male	-0,14	0,03	24,62	<,0001	0,76	0,68 0,84
25-44 years	-0,42	0,06	57,46	<,0001	1,93	1,53 2,42
45-66 years	0,33	0,05	44,23	<,0001	4,07	3,27 5,06
67-79 years	0,23	0,07	10,53	0,0012	3,69	2,87 4,74
80- years	0,95	0,09	114,63	<,0001	7,58	5,7 10,08
Compulsory lower secondary education ..	0,53	0,04	162,13	<,0001	3,24	2,75 3,82
Upper secondary education	0,11	0,04	7,61	0,0058	2,12	1,81 2,47

Source: Survey of Living Conditions 2008, Statistics Norway. *Significance greater than 0.05 indicates that the variable does not produce a significant effect at the 0.95 level.

Although physical health is not given strong emphasis in research in sexual identity and health, the Swedish findings demonstrated that it was somewhat more common for gays and lesbians to report long-term illness than the population at large

(Swedish National Institute of Public Health 2005). Survey of Living Conditions 2008 also contained questions on long-term illness¹.

Four in ten of those attracted only to the opposite sex report that they have a long-term illness (Table 1.8). The proportion for those attracted to both sexes is slightly higher, but the difference is uncertain. The proportion for those attracted to the same sex is even higher, just over five in ten, but this difference, compared with that for those attracted only to the opposite sex, is also too small to be certain. We are unable to draw any conclusions concerning gender differences owing to the limited number of observations, but among women, those who are attracted to both sexes report long-term illness more often than women attracted to the opposite sex.

Those who are attracted only to the opposite sex are categorised as heterosexual. In addition, there are a few who categorise themselves as heterosexual in spite of (also) being attracted to the same sex. Consequently, we have four in ten heterosexuals reporting long-term illness. The proportion is marginally higher among bisexuals, and even higher among gays and lesbians, but our results do not support any conclusion that there are differences in long-term illness among individuals with different sexual identities.

Table 1.8. Long-term illness by gender and sexual attraction and sexual identity, per cent. Persons aged 16 years and over, 2008

		Long-term illness	No. of persons
Only the opposite sex	Male	37	3051
	Female	43	3073
	Total	40	6124
Only the same sex	Male	66	25
	Female	41	23
	Total	54	48
Both sexes	Male	22	18
	Female	58	43
	Total	46	61
Heterosexual	Male	37	3063
	Female	43	3090
	Total	40	6153
Gay, lesbian or bisexual	Male	51	25
	Female	44	44
	Total	47	69
Gay/lesbian	Male	61	19
	Female	37	20
	Total	49	39
Bisexual	Male	24	6
	Female	50	24
	Total	44	30
Unsure	Male	73	8
	Female	61	16
	Total	65	24

Source: Survey of Living Conditions 2008, Statistics Norway.

Once again, we did a logistic regression to control for gender, age and education. This shows, somewhat contrary to the simple cross table, that sexual attraction is to some extent a significant factor for long-term illness. Individuals who feel sexual attraction only to the same sex have a greater probability of reporting long-term illness as compared with the reference group. This is more or less the same as we found for self-assessed health. While attraction to both sexes does not have any significant effect, feeling no sexual attraction whatsoever actually yields a higher risk of long-term illness, as compared with the reference group. Not surprisingly, however, age is the most significant factor for risk of long-term illness.

¹ In this report, the total percentage with long-term illness will deviate from that stated in official statistics based on Survey of Living Conditions 2008 (see for example <http://statbank.ssb.no/statistikkbanken/>). This is because the figures are based solely on the initial question: *Do you have a long-term illness or medical condition, any congenital disorder or suffer any ill effects after an injury?* The survey examines this in more detail with additional questions to elicit responses concerning long-term illness. The present report does not take this into account.

Table 1.9. Logistic regression, likelihood of having long-term illness by sexual attraction, gender, age and educational attainment. Persons aged 16 years and over, 2008

Reference category: Females, 16-24 years old higher education and only attracted to the opposite sex							
	Estimate	Standard error	Chi square	Significance	Odds estimate	Confidence interval, odds	
Intercept	0,06	0,1	0,36	0,5482			
Only the same sex	0,6	0,2	9	0,0027	2,48	1,52	4,04
Both sexes	0,15	0,18	0,64	0,422	1,57	1,02	2,43
No attraction	-0,44	0,17	6,55	0,0105	0,87	0,59	1,3
Male	-0,12	0,02	27,55	<,0001	0,79	0,72	0,86
25-44 years	-0,49	0,04	124,81	<,0001	1,43	1,22	1,67
45-66 years	0,1	0,04	5,69	0,017	2,56	2,2	2,99
67-79 years	0,4	0,06	45,35	<,0001	3,46	2,87	4,18
80- years	0,83	0,09	93,59	<,0001	5,3	4,16	6,76
Compulsory lower secondary education ..	0,22	0,03	42,13	<,0001	1,61	1,42	1,82
Upper secondary education	0,03	0,03	1,11	0,2926	1,33	1,19	1,49

Source: Survey of Living Conditions 2008, Statistics Norway. *Significance greater than 0.05 indicates that the variable does not produce a significant effect at the 0.95 level.

A multivariate analysis in which sexual identity is applied as an independent variable yields results similar to those for sexual attraction. The fact of having a non-heterosexual identity does not affect the likelihood of reporting long-term illness. However, it is the case that those who are categorised as unsure and cannot be placed within our categories are at greater risk of long-term illness than others, including when controlled for gender, age and educational attainment. These are the individuals who feel an attraction to the same or both sexes, but who have not placed themselves within one of the four sexual identities defined in the question (heterosexual, gay, lesbian or bisexual).

Table 1.10. Logistic regression, likelihood of having long-term illness by sexual identity, gender, age and educational attainment. Persons aged 16 years and over, 2008

Reference category: Females, 16-24 years old higher education and heterosexual							
	Estimate	Standard error	Chi square	Significance	Odds estimate	Confidence interval, odds	
Intercept	0,59	0,23	6,77	0,0093			
Gay, lesbian or bisexual	-0,15	0,26	0,34	0,5605	1,99	1,32	2,99
Unsure or not stated.....	0,99	0,44	5,05	0,0247	6,19	1,73	22,13
Male	-0,12	0,02	26,63	<,0001	0,79	0,73	0,87
25-44 years	-0,49	0,04	124,09	<,0001	1,45	1,24	1,7
45-66 years	0,09	0,04	4,62	0,0317	2,58	2,21	3,02
67-79 years	0,41	0,06	45,15	<,0001	3,55	2,94	4,29
80- years	0,85	0,09	90,09	<,0001	5,51	4,29	7,08
Compulsory lower secondary education ..	0,23	0,03	44,81	<,0001	1,63	1,44	1,85
Upper secondary education	0,03	0,03	0,88	0,3469	1,33	1,19	1,49

Source: Survey of Living Conditions 2008, Statistics Norway. *Significance greater than 0.05 indicates that the variable does not produce a significant effect at the 0.95 level.

Previous research from Norway has shown that lesbian women and gay men to a lesser extent than the rest of the population rate their personal health as being good or very good (Hegna et al 1999), and Swedish research indicates that lesbian women in mid-life have poorer general health which means that gays and lesbians as a whole fare less well than the rest of the population (Swedish National Institute of Public Health 2005). Our data from Survey of Living Conditions 2008 provides only partial evidence to support this conclusion. When we categorise respondents by sexual identity, we find little effect on rating of general health. The proportions reporting good or very good health are not that different when we compare heterosexuals with gays, lesbians and bisexuals. The proportion with unsure or non-stated identity is very low, so the fact that few in this group report good or very good health must be interpreted with extreme caution. A multivariate analysis in which we also controlled for gender, age and educational attainment duly revealed that sexual identity has no effect on self-assessed health. However, when

we apply sexual attraction as the category rather than identity, we find a certain tendency for those who are attracted only to the same sex to be more likely to report poor health. This then gives us some evidence in support of previous research, although we do not have a means of examining the findings in more detail by breaking them down into different age groups.

Swedish findings have also established that gays and lesbians are more prone to long-term illness than others (Swedish National Institute of Public Health 2005). We employed questions on long-term illness to investigate this by both sexual attraction and identity. Bivariate tables indicated that the proportion with long-term illness is higher among persons attracted to the same sex and/or who do not categorise themselves as heterosexual. These differences are also difficult to establish with certainty since they are minor and the number of observations is limited.

Multivariate analyses in which we also controlled for gender, age and educational attainment did however demonstrate that persons who feel sexually attracted only to the same sex have a greater likelihood of reporting long-term illness than others. When we then went on to look at sexual identity in a corresponding multivariate analysis, the outcomes were interesting in that those who categorise themselves as gay, lesbian or bisexual are at no greater risk of long-term illness than heterosexuals. However, we did find that those who were unwilling or unable to put themselves in any of these categories (but who are attracted to the same sex) have a significantly greater risk of reporting long-term illness than heterosexuals.

1.3. Mental health

Research in sexual identity and health focuses more extensively on mental rather than physical health. Findings indicate that the process of acknowledging that one is non-heterosexual may be a source of mental distress for some individuals. In addition, gays and lesbians have been, and continue to be, a marginalised group in society that has faced and still faces prejudice and stigmatisation.

Swedish data reveal that among gays and lesbians there is twice as high a proportion with reduced mental wellbeing as among heterosexuals. This emerges notably from questions on worrying, agitation and anxiety along with stress and sleeping problems (Swedish National Institute of Public Health 2005). NOVA's report on living conditions and quality of life among gays and lesbians also reveals that gays and lesbians are somewhat more at risk of symptoms of mental complaints than the general population (Hegna et al. 1999). Due to a lack of representativity, however, we question the findings based on these data. Non-representative data also indicate that lesbians and gays who are 'in the closet' tend more frequently to have mental problems and that those who are open about their sexual orientation fare better (Moseng 2002, 2005b). It has also been pointed out that persons who live alone suffer poorer health than those who cohabit, and it is commonly assumed that the proportion of single-person households is higher among gays and lesbians than in the rest of the population. Our material also shows a larger proportion of single persons among those who are not heterosexual (see later section). The question for us is thus whether we find mental health effects from differing sexual attraction and sexual identity in our data. We are not in a position to examine the difference between open and concealed identity.

In order to examine whether our data provide any basis for conclusions concerning the mental health of gays, lesbians and bisexuals, we have selected two different indexes. These do not in any way provide an exhaustive picture of the mental health of these categories, and are intended only as indications of what the data may yield in terms of analytical value in this field.

The first index is composed of five different questions concerning long-term or recurrent complaints in the last three months (preceding the interview date). The

complaints are: 1. subdued or depressed, 2. irritable or aggressive, 3. lack of concentration, 4. sleep disturbances and 5. tiredness or fatigue. Table 1.11 shows the proportions of persons with at least one of these complaints.

Among persons attracted only to the opposite sex, and/or heterosexuals, almost one in three report that they have suffered at least one of these complaints in the last three months, and the proportion is considerably higher among women than among men. Again, due to the limited number of observations, it is difficult to say with certainty which men are most at risk, but it would appear that men who are attracted to men, and who regard themselves as homosexual or bisexual more commonly suffer symptoms of mental complaints than others. Among women we find some of the same tendency, although it would appear that women who are attracted to both sexes and/or categorise themselves as bisexual are more at risk than both heterosexuals and those who are attracted only to women.

Table 1.11. Had long-term or recurring symptoms of mental complaints in the last 3 months, by gender, sexual attraction and sexual identity, per cent. Persons aged 16 years and over

	Male	Female	Total	No. of persons
Only the opposite sex	25	40	32	6 125
Only the same sex	36	46	41	48
Both sexes	22	71	55	61
No attraction	36	50	46	72
Heterosexual	25	40	32	6 154
Gay, lesbian or bisexual	42	59	53	69
Gay	43	-	43	19
Lesbian	-	47	47	20
Bisexual	37	71	63	30
Unsure	13	78	43	15

Source: Survey of Living Conditions 2008, Statistics Norway.

Again, the recurring problem of a limited number of observations means that a cross table is not able to reveal significant differences between groups. As in the case of self-assessed health and long-term illness, we have therefore also in this case carried out a logistic regression analysis in which we examine the likelihood of reporting at least one symptom depending on gender, age and education as well as sexual attraction and identity.

Tables 1.12 and 1.13 show the results for, respectively, sexual attraction and sexual identity. The first table shows that persons who are attracted only to the same sex are not significantly at greater risk of symptoms of mental complaints compared with the reference group (attracted to the opposite sex). However, those attracted to both sexes are at greater risk of experiencing such symptoms. There are also significant effects for those who do not feel any attraction, but here the effect is very small and tending in the direction of a lesser risk of symptoms. In line with what we saw in Table 1.11, men are at considerably lower risk of symptoms than women (reference group). Apart from these conclusions, the age-group 25-44 is at somewhat greater risk of symptoms compared with the reference group (16-24 years), but we get no significant increases for the age-groups aged 45 years and over. Persons who have completed only compulsory lower secondary education are also at greater risk of symptoms than the reference group (higher education), while further education does not give rise to any certain effect in relation to the reference category.

Table 1.13, naturally enough, produces the same results for gender, age and education as Table 1.12 since we have only replaced sexual attraction with identity, and for practical purposes the two are very similar variables. We have combined gays, lesbians and bisexuals into a single group and compare this group with heterosexuals (reference category). This results in a considerably higher risk of symptoms of mental complaints. For those categorised as unsure, we find no significant effect.

Table 1.12. Logistic regression, likelihood of having symptoms of poor mental health by sexual attraction, gender, age and educational attainment. Persons aged 16 years and over, 2008

Reference category: Females, 16-24 years old higher education and only attracted to the opposite sex							
	Estimate	Standard error	Chi square	Significance	Odds estimate	Confidence interval, odds	
Intercept	-0,373	0,097	14,82	0,0001			
Only the same sex	0,199	0,201	0,98	0,3222	1,73	1,06	2,82
Both sexes	0,534	0,183	8,53	0,0035	2,42	1,57	3,73
No attraction	-0,384	0,172	5,00	0,0253	0,97	0,65	1,43
Male	-0,346	0,024	214,89	<,0001	0,50	0,46	0,55
25-44 years	-0,133	0,045	8,86	0,0029	1,13	0,97	1,32
45-66 years	-0,021	0,043	0,22	0,6354	1,27	1,09	1,48
67-79 years	-0,017	0,062	0,08	0,7798	1,27	1,05	1,54
80- years	0,427	0,083	26,45	<,0001	1,98	1,57	2,51
Compulsory lower secondary education ..	0,366	0,035	108,45	<,0001	2,05	1,80	2,34
Upper secondary education	-0,013	0,032	0,17	0,6821	1,41	1,25	1,58

Source: Survey of Living Conditions 2008, Statistics Norway. *Significance greater than 0.05 indicates that the variable does not produce a significant effect at the 0.95 level.

Table 1.13. Logistic regression, likelihood of having symptoms of poor mental health by sexual identity, gender, age and educational attainment. Persons aged 16 years and over, 2008

Reference category: Females, 16-24 years old higher education and heterosexual							
	Estimate	Standard error	Chi square	Significance	Odds estimate	Confidence interval, odds	
Intercept	-0,350	0,179	3,83	0,0504			
Gay, lesbian or bisexual	0,668	0,216	9,57	0,002	2,80	1,85	4,24
Unsure or not stated....	-0,305	0,335	0,83	0,3632	1,06	0,41	2,78
Male	-0,347	0,024	214,19	<,0001	0,50	0,46	0,55
25-44 years	-0,138	0,045	9,53	0,002	1,13	0,97	1,33
45-66 years	-0,026	0,044	0,36	0,5506	1,27	1,09	1,48
67-79 years	-0,030	0,064	0,23	0,634	1,26	1,04	1,53
80- years	0,459	0,086	28,36	<,0001	2,06	1,62	2,62
Compulsory lower secondary education ..	0,378	0,035	113,82	<,0001	2,08	1,82	2,37
Upper secondary education	-0,025	0,032	0,59	0,4428	1,39	1,23	1,57

Source: Survey of Living Conditions 2008, Statistics Norway. *Significance greater than 0.05 indicates that the variable does not produce a significant effect at the 0.95 level.

The other index we employ in measuring reduced mental health is also a list of symptoms, the Hopkins Checklist (see box). Here we look at proportions with an average score of more than 1.75. This is a standard threshold value, and in this case, those over this score are regarded as having mental problems. The questions incorporated in this scale were included in a self-administered postal questionnaire form sent out to the respondents. The response rate for this questionnaire was lower than for the interview itself, which means that we have even fewer observations for this indicator than for the preceding ones. This therefore sets certain limitations on the breakdowns we can make in the tables.

The Hopkins Symptoms Checklist-25 (HSCL-25)

The Hopkins Symptoms Checklist (HSCL-25), a well-known and much used screening instrument, was developed at Johns Hopkins University in the 1950s. HSCL-25 is a symptom inventory of 25 questions to screen for symptoms of anxiety and depression.

The scale for each question includes four categories of response (“Not at all”=1, “A little”=2, “Quite a bit”=3 and “Extremely”=4). The total score is the average of all 25 questions. In addition, a depression score can be calculated, as the average of the last 15 questions on depression. Here we look at proportions with a total score of 1.75 or more. It has been consistently shown that the total score is highly correlated with severe emotional distress of unspecified diagnosis.

Among heterosexuals and persons attracted only to the opposite sex, one in ten score higher than the threshold value for HCL-25. This does not necessarily mean that one in ten has mental problems, but that he or she does have *symptoms associated with* mental problems. Among persons attracted only to the same sex, one in four score higher than the threshold value, while the score for persons attracted by both sexes is a full one in three. The same score is also found when we look at gays, lesbians or bisexuals.

Table 1.14. HCL above 1.75 on average by gender and sexual attraction and sexual identity, per cent. Persons aged 16 years and over, 2008

	Male	Female	Total	No. of persons
Only the opposite sex	8	12	10	4 316
Only the same sex	38	10	25	37
Both sexes	7	44	33	39
No attraction	14	3	5	38
Heterosexual	8	12	10	4 335
Gay, lesbian or bisexual	33	32	32	49
Gay	43		43	15
Lesbian		6	6	14
Bisexual	0	54	39	20
Unsure or not stated	0	30	15	12

Source: Survey of Living Conditions 2008, Statistics Norway.

In order to apply HCL-25 in a logistic regression, we assigned those with a score of 1.75 or less the value 0, while those averaging over 1.75 were assigned the value 1. We have then applied gender, age and education together with, respectively, sexual attraction and sexual identity, to examine what affects mental health when measured by this method (Tables 1.15 and 1.16).

Table 1.15 shows many of the same patterns in physical health as we saw in Table 1.12 where we used other symptoms. Men are less at risk than women (reference category) and to some extent it would also appear that persons in the age-group 25-44 years are slightly more at risk, while persons aged 67-79 are somewhat less at risk than persons aged 16-24 (reference category). Persons with only compulsory lower secondary education are also more at risk compared with persons with higher education. In regression with sexual attraction as the causal variable, we also get significant increases for both attraction to the same sex and to both sexes as compared with attraction to only the opposite sex. Persons who are attracted to either only the same sex or both sexes thus have a greater probability of scoring over the threshold for the HCL-25 scale than those attracted only to the opposite sex. The fact of not feeling sexual attraction to either sex actually also has a significant effect, but tending in the opposite direction, that is, producing less risk of mental symptoms. This squares well with the indications in the cross table above (1.14).

In the analysis of sexual identity we have again grouped gays, lesbians and bisexuals together (Table 1.16). The results for gender, age and educational attainment are the same as when we apply sexual attraction (Table 1.15). Similar to our finding for persons attracted to the same or both sexes, gays, lesbians or bisexuals are at significantly greater risk of suffering mental symptoms compared with heterosexuals, and the effect is relatively large if we compare the odds estimates. Again, this squares with what we saw pointers to in the cross table. We also attempted regression analysis with a finer breakdown of identity (gays, lesbians and bisexuals separately), but this gave us only significant effects for sexual identity for gays. For lesbians and bisexuals, there were no effects. This may be due partly to the fact that this gives us fewer observations in the groups. The fact of responding "unsure" to identity has no significant effect, which may be due, among other factors, to the extremely limited number of observations in this group.

Table 1.15. Logistic regression, likelihood of having HCL-25 above 1.75 by sexual attraction, gender, age and educational attainment. Persons aged 16 years and over, 2008

Reference category: Females, 16-24 years old higher education and only attracted to the opposite sex

	Estimate	Standard error	Chi square	Significance	Odds estimate	Confidence interval, odds	
Intercept	-2,05	0,159	167,12	<,0001			
Only the same sex	0,82	0,248	10,84	0,001	3,39	1,98	5,79
Both sexes	0,76	0,243	9,71	0,0018	3,19	1,90	5,34
No attraction	-1,17	0,390	9,00	0,0027	0,46	0,17	1,25
Male	-0,27	0,038	52,88	<,0001	0,58	0,50	0,67
25-44 years	0,41	0,074	31,47	<,0001	1,08	0,87	1,34
45-66 years	0,07	0,075	0,80	0,3706	0,77	0,62	0,95
67-79 years	-0,76	0,137	30,91	<,0001	0,33	0,23	0,48
80- years	-0,05	0,151	0,13	0,7193	0,68	0,46	1,01
Compulsory lower secondary education ..	0,60	0,054	124,30	<,0001	3,04	2,46	3,76
Upper secondary education	-0,10	0,053	3,35	0,0671	1,51	1,23	1,86

Source: Survey of Living Conditions 2008, Statistics Norway. *Significance greater than 0.05 indicates that the variable does not produce a significant effect at the 0.95 level.

Table 1.16. Logistic regression, likelihood of having HCL-25 above 1.75 by sexual identity, gender, age and educational attainment. Persons aged 16 years and over, 2008

Reference category: Females, 16-24 years old higher education and only attracted to the opposite sex

	Estimate	Standard error	Chi square	Significance	Odds estimate	Confidence interval, odds	
Intercept	-1,95	0,286	46,41	<,0001			
Gay, lesbian or bisexual	0,88	0,313	7,95	0,0048	4,04	2,60	6,28
Unsure or not stated....	-0,37	0,556	0,45	0,5045	1,15	0,23	5,82
Male	-0,28	0,038	55,97	<,0001	0,57	0,49	0,66
25-44 years	0,42	0,075	31,87	<,0001	1,10	0,89	1,37
45-66 years	0,08	0,076	1,03	0,311	0,78	0,63	0,98
67-79 years	-0,73	0,138	28,23	<,0001	0,35	0,24	0,50
80- years	-0,09	0,157	0,30	0,5809	0,67	0,44	1,00
Compulsory lower secondary education ..	0,61	0,055	126,71	<,0001	3,10	2,51	3,84
Upper secondary education	-0,09	0,053	3,16	0,0753	1,53	1,24	1,88

Source: Survey of Living Conditions 2008, Statistics Norway. *Significance greater than 0.05 indicates that the variable does not produce a significant effect at the 0.95 level.

As in the case of self-assessed health and long-term illness, the analyses for mental health are also hampered by the limited number of observations after breakdown by sexual attraction and identity. The result is that the indications we find of reduced mental health among persons attracted to the same or both sexes, and who identify themselves as gay, lesbian or bisexual become uncertain. This is especially the case when we set up simple percentage breakdowns. Slightly more certainty in the results is obtained from multivariate analyses. These allow us to establish that there are certain effects to indicate that the groups examined here are at increased risk of having symptoms of impaired mental health.

1.4. Social contact

There is little in Norwegian research to indicate that gays and lesbians have less social contact than others. Swedish data, however, has shown that gays and lesbians tend more often to lack a close friend than the general population (Swedish National Institute of Public Health 2005). A Norwegian study from 1998, on the other hand, shows that nine in ten gays and lesbians have close friends at their place of residence, and that their social networks are made up of an equal mix in terms of sexual orientation (Hegna et al. 1999). An indirect correlation between sexual identity and social contact may exist in the fact that there is a relatively high proportion of single-person households among lesbians and gays (ibid.). Statistics Norway has previously shown that persons living alone are more at risk of problems surrounding living conditions generally than others (Mørk 2006), although we also know that social contact among persons living alone has increased in the last two decades (Rønning 2006).

Our data certainly gives the impression that the proportion of persons living alone is relatively high among those who are attracted to the same or both sexes or who identify themselves as gay, lesbian or bisexual (Table 1.17). The fact that the proportion is high among those who responded that they are not attracted to either sex is due to this being a group with a high average age, and also where the proportion of single person households is high (Normann 2009).

Table 1.17. Proportion of persons living alone, by sexual attraction and sexual identity, persons aged 16 years and over, 2008

	Percentage of persons living alone	No. of persons
Only the opposite sex	22	6 125
Only the same sex	46	48
Both sexes	41	61
No attraction	65	72
Heterosexual	22	6 154
Gay, lesbian or bisexual	46	69
Gay	61	19
Lesbian	37	20
Bisexual	42	30
Unsure	22	15

Source: Survey of Living Conditions 2008, Statistics Norway.

But the fact that a person lives alone does not necessarily say anything about how much social contact he or she has. This then means we have to look at more concrete indicators. We selected a total of seven indicators in the area of 'friends and family' and in Table 1.18 show the proportions by sexual attraction and sexual identity. We would stress again that since the number of observations is limited, the differences between groups are uncertain.

Table 1.18. Social contact by sexual attraction and sexual identity, per cent. Persons aged 16 years and over, 2008

	Only the opposite sex	Only the same sex	Both sexes	No attraction	Heterosexual	Gay, lesbian or bisexual	Gay	Lesbian	Bisexual	Unsure or not stated	Total
Contact with family - monthly or more frequently	84	66	77	82	84	68	62	67	72	73	84
Contact with parents - monthly or more frequently	79	71	65	50	79	67	65	82	59	55	78
Weekly contact with friends	72	73	81	60	72	79	76	70	88	76	72
Monthly contact with friends	21	17	9	24	21	13	20	21	3	18	21
Less frequently, or lacking good friend outside the family	7	10	10	17	7	7	4	9	8	7	7
Lacking close friend	5	4	12	17	5	5	0	0	13	13	5
Have friends in the neighbourhood	90	88	84	79	90	87	91	91	82	93	90
Have friends in other places	8	9	9	15	8	9	9	9	10	0	8
Lacking friends	2	3	7	6	2	3	0	0	8	7	2
Not married/co-habiting and lacking close friend	2	2	9	16	2	3	0	0	8	7	2
No-one to get help from for major personal problems	2	4	0	4	2	1	4	0	0	7	2
No. of persons	6119	48	60	72	6148	68	19	20	29	15	6299

Source: Survey of Living Conditions 2008, Statistics Norway.

Contact with parents obviously requires that one's parents are still alive and the percentage base is therefore made up of persons who have living parents, and, by contact, we mean that the individuals actually meet each other. Just under eight in ten heterosexuals have contact with their parents at least once a month. This proportion is lower in groups who are sexually attracted to the same sex and/or categorise themselves as non-heterosexual. The proportion among those who do not feel attracted to either sex or those who define themselves as bisexual is markedly low. The differences as regards contact with family are generally somewhat smaller, but it would appear to be a general trend that persons who are attracted to the same sex have less family contact than others.²

² In this context, family means parents, siblings and children over 16 with whom the person does not live.

A key aspect of social contact is interaction with friends. Here, the result for persons attracted to the same sex is better. Generally speaking, they have just as frequent or more frequent contact with friends as do persons attracted only to the opposite sex, or heterosexuals. However, there would appear to be a tendency for persons attracted to the same sex to be over-represented among those who have contact with friends more rarely than on a monthly basis, or who lack a good friend outside of the family.

A person whom one is close to and can speak to in trust may be found both within and outside of the family. Around five per cent, or one in twenty, of the population lack a close friend. If we look at sexual attraction, this affects primarily persons who are attracted to both sexes or do not feel any sexual attraction at all. Persons attracted only to the same sex are however less at risk of this than the population generally. When we then turn to identity, we find that 13 per cent of bisexuals lack a close friend, but that the proportion decreases if we aggregate bisexuals with gays and lesbians.

If we go a step further and look at who has someone they can rely on to stand by them if they have major personal problems, the tendency is the same as for close friend. Just less than two per cent of the population lacks someone they can really rely on to be there for them. We find a higher proportion among bisexuals, which is reduced when we aggregate with gays and lesbians.

In order to be able to control for the effects of other underlying variables in the area of social contact, we did logistic regression analyses. For these, we selected three indicators for social contact in which Table 1.18 gave indications of differences. In the first of these, we look at the proportion that does not have contact with family at least monthly. In the second, we look at the proportion that has contact with friends less than monthly or that lacks a good friend, and in the third we look at the proportion that lacks a close friend. In addition to sexual attraction and sexual identity, we employed the following background variables: gender, age-group versus living alone and educational attainment. We have not included the tables of results here, partly because they take up a lot of space, but mainly because sexual attraction and identity proved to have little significance for social contact.

Our analyses show firstly that neither gender nor age have any significant effect on the risk of lacking family contact. The fact of living alone does however produce an increased risk, and the higher the level of educational attainment, the greater the risk of having little family contact. Sexual attraction has relatively little influence on family contact. The only significant result is the finding that persons who do not feel sexual attraction to anyone are at greater risk of having little family contact. When we move on to examine sexual identity, we find that non-heterosexuals as a group are not at greater risk of limited family contact, but that bisexuals have a significantly greater risk of limited family contact compared with the reference category (heterosexual). These are thus somewhat differing findings to those obtained from looking only at percentages in Table 1.18, and are due to the fact that other variables have also come into play. The limited number of observations in some of the groups will also be affecting the results. We are therefore unable to discount that other groups than those isolated here also have a greater or lesser risk of limited family contact, but our data do not permit such conclusions.

There are a number of factors influencing lack of monthly contact with friends, or the lack of a close friend. Firstly, men are at greater risk of lacking this than women, and generally the risk would appear to increase with age. Low-level educational attainment (compulsory education only) is also associated with a greater risk of having infrequent contact or lacking a good friend, and while the fact of living alone has a significant effect (although this depends somewhat on which other variables we include in the analysis), persons living alone are at less risk of limited contact with friends or lacking a close friend than others. Table 1.18 indicates that there are no major differences determined by sexual attraction and

identity in this field, and this is also confirmed by the multivariate analysis. Neither sexual attraction nor sexual identity have any significant effect on the risk of having only rare contact with friends or lacking a close friend.

From the comparison of percentages in Table 1.18, we did find however that persons attracted by both sexes and persons who feel no attraction, and hence also bisexuals and non-categorised persons, appear to be at greater risk of lacking a close friend as compared with the population as a whole. Hardly any gays and lesbians appeared to lack a close friend. The multivariate analyses here, however, show the same as for friendship above. Neither sexual attraction nor sexual identity have significant influence on the risk of lacking a close friend. Again, we can establish that men are more at risk than women and that the risk increases with age. In addition, persons living alone are more at risk than others, and the risk is greater among persons with low educational attainment.

For the item 'social contact', our findings overall indicate that sexual attraction and identity have little effect. Comparison of straight percentage shares indicate that there are some differences, but again, any certain conclusions are fraught by the limited number of observations. The few observations may also make it difficult to find significant results in multivariate analyses.

1.5. Physical assault, threats and discrimination

One in five Swedish non-heterosexual men reported that they had been physically assaulted within the last 12 months (Swedish National Institute of Public Health 2005). This is four times higher than among other men. Combined with an increased actual risk of physical assault, Swedish data also indicate that gays and bisexuals are more afraid of being the victims of physical assault than others. Norwegian research has found that lesbian women are slightly more at risk of physical assault than women generally, but, unlike the Swedish findings, no differences were found between heterosexual and non-heterosexual men. But if we look at threats of physical assault, the picture becomes more negative for gays and lesbians. It is stressed that young gay men especially are more at risk of threats of physical assault than the population in general (Hegna et al. 1999).

Related to this, gays, lesbians and bisexuals report that they are more frequently the victims of offensive treatment than others (Swedish National Institute of Public Health 2005). Discrimination against gays and lesbians has also been a key topic in public debate in recent years, and is also pertinent to living conditions surveys even though discrimination is difficult to measure.

In Survey of Living Conditions 2008, three questions were asked concerning physical assault, threats and fear of physical assault. Tables 1.19, 1.20 and 1.21 show the proportions that are at risk of these three. All three phenomena are relatively rare and the percentage exposed in different groups therefore shows insufficient variation for the differences to be statistically certain given that the number of observations is so limited in each group. However, we will now point up a few trends, and will later look at whether this produces reliable effects in multivariate analyses.

Just under three per cent of the population report that they have been physically assaulted in the last 12 months, and this is somewhat more common among men than among women. If we look at sexual attraction, we find that persons who are not only attracted by the opposite sex are more likely to report that they have been physically assaulted than others. This would appear to be especially the case for persons attracted only to the same sex. Broken down by sexual identity, we find that among men this is largely only true for bisexuals. Gay men report hardly any physical assault. Among women, both lesbians and bisexuals report relatively high risk of physical assault compared with heterosexuals. This makes our findings comparable with those previously made in Norwegian research, but contrary to the Swedish findings.

Table 1.19. Victim of physical assault during the last 12 months, persons aged 16 years and over, 2008. Per cent

	Male	Female	Total	No. of persons
Only the opposite sex	3	2	3	6 125
Only the same sex	6	8	7	48
Both sexes	4	5	5	61
No attraction	4	0	1	72
Heterosexual	3	2	3	6 154
Gay, lesbian or bisexual	3	9	7	69
Gay	0		0	19
Lesbian		9	9	20
Bisexual	14	9	10	30
Unsure	0	0	0	15
Total	3	2	3	6 457
<i>No. of persons</i>	3 165	3 292	6 457	

Source: Survey of Living Conditions 2008, Statistics Norway.

Table 1.20. Victims of threat(s) that was/were serious enough to cause fear during the last 12 months, persons aged 16 years and over, 2008. Per cent

	Male	Female	Total	No. of persons
Only the opposite sex	3	4	4	6 125
Only the same sex	6	11	9	48
Both sexes	0	7	5	61
No attraction	0	0	0	72
Heterosexual	3	4	4	6 154
Gay, lesbian or bisexual	0	11	7	69
Gay	0		0	19
Lesbian		13	13	20
Bisexual	0	9	7	30
Unsure	0	18	8	15
Total	3	4	4	6 457
<i>No. of persons</i>	3 165	3 292	6 457	

Source: Survey of Living Conditions 2008, Statistics Norway.

In the population as a whole, a slightly higher proportion report threats of physical assault than having sustained actual assault. Here we find that women are more at risk than men. Among women, we also find that those who are not only attracted to the opposite sex are also more frequently the victims of threats. Among men we also find the same tendency, although it applies only to men who are attracted to men, and not men attracted to both sexes. When these findings are broken down by sexual identity, we find that hardly any non-heterosexual men report threats of physical assault. This then means that those men who are attracted only to men and who report threats define themselves as heterosexuals. This may be an arbitrary effect, but goes to illustrate some of the problems in dealing with a limited number of observations and uncertain findings. Among women, the findings are more consistent in that lesbian and bisexual women more frequently report threats than do heterosexual women. Our findings do not therefore concur with previous findings based on other data, but we do not have any means of breaking them down further, by age, for example. The uncertainty in our data also means that we are cautious about drawing conclusions based on a simple cross table.

Table 1.21. Much or some anxiety of physical assault when going out alone in one's neighbourhood, persons aged 16 years and over, 2008. Per cent

	Male	Female	Total	No. of persons
Only the opposite sex	4	11	7	6 125
Only the same sex	18	28	23	48
Both sexes	5	22	17	61
No attraction	14	11	12	72
Heterosexual	4	11	7	6 154
Gay, lesbian or bisexual	7	19	14	69
Gay	10		10	19
Lesbian		16	16	20
Bisexual	0	21	16	30
None of the categories	14	66	37	15
Total	4	11	2	6 457
<i>No. of persons</i>	3 165	3 292	6 457	

Source: Survey of Living Conditions 2008, Statistics Norway.

The third phenomenon concerns anxiety of physical assault when going out alone in one's neighbourhood. As might be expected, a higher proportion of the population reports anxiety about assault than the proportion that is actually the victim of physical assault or threats of assault. A total of 7 per cent of the population over age 16 reports much or some anxiety of physical assault, and the proportion is considerably higher among women than among men. Among men, we find especially high proportions among those who are attracted only to the same sex or who feel no attraction. But homosexual men and men who do not fall within our identity categories tend to report more anxiety than heterosexual men, while hardly any bisexual men reported fear of assault. Among women, we find that especially those who are sexually attracted only to the same or to both sexes report fear, and that this is reflected in the fact that non-heterosexual women feel fear more than others. Overall, it would thus appear that persons attracted to the same sex and non-heterosexuals are more anxious about physical assault than others.

In order to perform more robust tests to ascertain statistically reliable findings, for the issue of physical assault, threats and anxiety of assault we also carried out multivariate analyses. In addition to sexual attraction and identity, we applied gender, age, place of residence, living alone and educational attainment as potential causal variables. In this context, we are mostly concerned with sexual attraction and identity, and with respect to these factors, our multivariate analyses are more or less consistent. These factors have a non-significant effect, with one exception, on the extent of risk of physical assault, threats or anxiety of assault in our data material. Consequently, we have not included the tables of findings from the analyses.

The risk of physical assault is to a greater extent attributable to the factors of gender, place of residence, living alone and educational attainment in our material. Men are more at risk than women, persons resident in Oslo and other large municipalities (more than 40,000 inhabitants) are more at risk than others, persons living alone are more at risk and persons with low educational attainment are more at risk of physical assault than persons with a high level of educational attainment.

The findings for threat of physical assault show some of the same patterns as for actual assault. Living alone and having a low level of educational attainment increase the risk of threats of physical assault. Gender also has some effect, but the opposite effect of what we found for physical assault. Women are more at risk than men. However, the effect of place of residence is less clear. In addition, age plays a certain role in that persons under the age of 25 are more at risk than other age-groups, although the findings are not entirely consistent.

If we then move on to anxiety of physical assault, we find the only significant effect of sexual identity. Persons who do not categorise themselves as heterosexual, gay, lesbian or bisexual report more anxiety of physical assault than others. In other words, these are individuals attracted to the same sex, but who are unable to or decline to place themselves within one of our categories of sexual identity. In addition, we see that men are less anxious about the risk of physical assault than women, and there is also a tendency for persons residing in cities or large municipalities, Oslo especially, to be more anxious than others. Age, however, does not appear to have any significance, although living alone and low educational attainment increase the tendency to be more anxious than others of the risk of physical assault.

Our two analysis methods; one, bivariate cross tables; the other, logistic regression, thus yield somewhat differing results in terms of sexual attraction and identity in relation to physical assault and threats. Once again, we find differences in the proportions who are at risk based on our simple cross tables, but the number of observations is too small for us to find significant differences. This then also means that we find no significant effects in the multivariate analysis and can therefore neither confirm nor disprove any differences in risk.

Discrimination is a difficult concept in interview-based surveys. There will always be discussions of how this can be operationalised and measured, but given that we based our survey on interviews, we have had to rely on subjective experience of the situation. Whether this would qualify as discrimination in a legal context is a different matter altogether (Tronstad 2009). In Survey of Living Conditions 2008, there were just a few questions concerning discrimination in different contexts. We have included two tables here. The first shows the proportion that experienced discrimination on grounds of sexual identity, and not surprisingly this shows that persons who are either attracted to the same sex or who define themselves as non-heterosexual have more experience of this than others. In itself this is not of interest. What is interesting is perhaps that just less than 6 per cent of all homosexuals, lesbians and gays have experienced such discrimination. Whether this proportion is high or low can only be determined on the basis of prior assumptions. We also note that discrimination is experienced particularly by gays and lesbians, and not by bisexuals. This pattern is also seen in that the proportion is higher among those attracted only to the same sex than among those attracted to both sexes. As elsewhere in this report, we must emphasise that the number of observations is small and that the differences between groups are uncertain.

Table 1.22. Proportion having experienced discrimination based on sexual identity during the last 12 months, by sexual attraction and sexual identity. Persons aged 16 years and over, 2008

	Per cent	No. of persons
Only the opposite sex	0	6 125
Only the same sex	9	48
Both sexes	4	61
No attraction	0	72
Heterosexual	0	6 154
Gay, lesbian or bisexual	6	69
Gay	10	19
Lesbian	9	20
Bisexual	0	30
Unsure	0	15
Total	0,2	6 238

Source: Survey of Living Conditions 2008, Statistics Norway.

In order to fill out the picture slightly, we have also looked at other types of discrimination which all respondents in the living conditions survey were interviewed about. We looked at what proportion experienced this as a whole. We found that the difference between heterosexuals and others and between those attracted only to the opposite sex and others is actually greater than when we were looking solely at discrimination based on sexual identity. This might indicate that persons who are attracted to the same sex or who state their identity as non-heterosexual experience more discrimination without the cause being so readily identifiable. If we aggregate all types of discrimination, we also find that the differences shift slightly towards what we might refer to as the non-heterosexual group. Bisexuals are however also relatively subject to discrimination, on a level with gays. Lesbians however are the most at risk.

In addition to these questions on discrimination that were put to everyone in the living conditions survey, a few additional questions were also put on problems concerning family, friends and colleagues to persons defining themselves as non-heterosexual. From the responses, it would appear that non-heterosexuals mainly experience problems concerning family, and have lesser problems concerning friends. One in four lesbian women experienced problems concerning family, while the same was true for just under one in seven of gay men. The proportion experiencing problems concerning friends is almost the same for gays and lesbians; 15 and 13 per cent respectively, while if we look at the relationship with colleagues, problems are commonest among gay men (one in four), while for lesbians the figure was just under one in six. Bisexuals more rarely report problems in relation to other people than gays and lesbians.

Table 1.23. Proportion having experienced some form of discrimination* during the last 12 months by sexual attraction and sexual identity. Persons aged 16 years and over, 2008

	Percent	No. of persons
Only the opposite sex	7	6125
Only the same sex	22	48
Both sexes	17	61
No attraction	4	72
Heterosexual	7	6154
Gay, lesbian or bisexual	23	69
Gay	19	19
Lesbian	31	20
Bisexual	19	30
Unsure	15	15
Total	6,8	6238

Source: Survey of Living Conditions 2008, Statistics Norway. * Due to age, gender, health, disability, ethnicity, religion, sexual identity, other.

For the aspects of discrimination and negative treatment, we did not perform any multivariate analyses because different types of discrimination are closely linked with differing characteristics in individuals. It would however appear that a number of non-heterosexuals suffer discrimination on account of their identity, and it would also appear that they tend more frequently to be at risk of discrimination generally, although the differences in relation to other groups are uncertain. Here other factors may come into play. At the personal level, we also see that a number of non-heterosexuals experience problems in relation to family especially, but also to friends and colleagues.

1.6. Lifestyle and living habits

Data from the Swedish survey referred to here reveal risk-level consumption of alcohol among a higher proportion of gays/lesbians and bisexuals than in the population as a whole. However, there is also a larger proportion of teetotallers. In the case of alcohol consumption, the Swedish data indicate greater spread among gays/lesbians and bisexuals than in the general population. Norwegian data point to the same tendency.

Swedish and Norwegian data also show more or less the same for narcotics, that is, that drug-taking is commoner among gays/lesbians and bisexuals than in the population generally. This may also be connected with settlement patterns. In Sweden, daily smoking is more common among gays/lesbians and bisexuals, while the use of *snus*³ – oral tobacco – is less common than in the population as a whole (Swedish National Institute of Public Health, Hegna et al. 1999).

Survey of Living Conditions 2008 contains data on lifestyle and living habits. This includes questions on smoking, alcohol consumption and drug-taking. For the latter especially, one may assume that there is a high risk of under-reporting. To counter this risk, the questions on alcohol and drugs were asked in a self-administered questionnaire form sent out after the standard interview. This means however that the number of observations for these questions is even lower than for questions asked during the interview.

Table 1.24 shows smoking and use of oral tobacco. The number of daily smokers has followed a declining trend over the last few decades. In 2008, 22 per cent of the adult population responded that they smoked on a daily basis. The proportion is around ten percentage points higher among persons who are attracted either only to the same sex or to both. If we then look at identity, we find that this proportion is raised by gays, that is men. Almost half of gay men report that they are daily smokers. Among bisexuals the proportion is also high, while lesbians are closer to the average for the population. Given that cross tables do not produce significant

³ Snus is a moist powder tobacco product consumed by placing it under the lip. The sale of snus is illegal in the EU, but due to exemptions is manufactured and consumed in Sweden and Norway.

results for this aspect, and in order to control for other factors that might lead to and influence smoking, we also carried out a multivariate analysis with sexual attraction and sexual identity as causal variables together with gender, age and educational attainment. We do not have a separate table showing this, but when we used persons attracted only to the opposite sex/heterosexuals, women, aged 16-24 years and high educational attainment as reference categories, we found that being attracted to the same or both sexes leads to increased probability of being a smoker (daily or occasional). Among sexual identities, only gay identity produces significant effects with increased probability of smoking, that is, in line with the findings from the cross table.

In the population as a whole, the proportion of oral tobacco users is far smaller than smokers with just under one in ten using oral tobacco daily or occasionally. When we break the data down by sexual attraction, we find slightly higher proportions among persons who are not attracted to the same or both sexes compared with those who are only attracted to the opposite sex, but the difference is not very great. When we look at sexual identity, we do however find the interesting tendency that *snus* is used by lesbians and bisexuals, but not by gay men. Here again we performed a multivariate analysis like the one for smoking, but neither for sexual attraction nor for sexual identity did we find significant results to give any indication of the probability of *snus* usage. We are therefore more uncertain of the results for use of *snus* than for smoking.

Table 1.24. Smoking and use of oral tobacco by sexual attraction and sexual identity. Persons aged 16 years and over, per cent, 2008

	Non-smokers	Occasional smokers	Smoke daily	Use snus daily	Use snus occasionally	Do not use snus	No. of persons
Only the opposite sex	69	9	22	7	4	89	6123
Only the same sex	52	16	32	8	8	85	48
Both sexes	53	15	32	9	6	84	61
No attraction	94	0	6	3	1	96	72
Heterosexual	69	9	22	7	4	89	6152
Gay, lesbian or bisexual	49	14	37	11	6	84	69
Gay	40	12	47	0	11	89	19
Lesbian	55	18	27	18	0	82	20
Bisexual	51	13	36	13	6	81	30
Unsure	74	5	20	0	0	100	15
Total	69	9	22	7	4	89	

Source: Survey of Living Conditions 2008, Statistics Norway.

The self-administered questionnaire sent out in connection with the living conditions survey includes a number of questions concerning use of alcohol and drugs. The results, by sexual attraction and sexual identity, are presented in Table 1.25. We recall that previous research found greater spread in alcohol consumption among non-heterosexuals than among heterosexuals, but find little in our own data to support this finding. According to our data, persons who do not feel sexual attraction and those who are categorised as being unsure of their sexual identity drink less than others; they are more commonly teetotalers, tend to drink less often and are rarely inebriated. 13 per cent of the population has not had any alcohol in the last 12 months. The proportion is slightly higher among persons attracted to both sexes and among lesbians and bisexuals, but is almost nil among gay men. However, the differences are too slight to be certain. If we look at the proportions that stated that they drank to the point of inebriation, we find an even spread of slightly higher proportions among those attracted to the same or both sexes and gays, lesbians and bisexuals. Gays and lesbians also stand out when it comes to frequent inebriation. With respect to drugs we find that those who stand out are mainly those attracted to both sexes and/or bisexuals. They report more frequent use of hash, marijuana or hard drugs in the last 12 months, and more of them tend to have tried hard drugs at some time or other. Persons attracted to the same sex and gays stand out slightly, but not so much in the case of drug use in the last 12 months.

For use of alcohol and hard drugs, we also performed multivariate analyses to look for reliable correlations with sexual attraction and identity. Again, we have to conclude that the data are too limited to be reliable. The only effect we were able to find for these areas is that persons who are attracted to both sexes drink more than the reference group (attracted only to the opposite sex). Other than that, we find no significant correlations. Although the cross table shows relatively clear indications that persons attracted to the same sex and non-heterosexuals have what we might term 'greater risk-behaviour' in relation to intoxicants, our data affords no basis for drawing definitive conclusions in this area.

Table 1.25. Use of alcohol and drugs in the last 12 months, by sexual attraction and sexual identity, persons aged 16 years and over, per cent, 2008

	Drank no alcohol	Drank alcohol max. once a week	Drank alcohol several times a week	Has not been inebriated	Inebriated up to 2-3 times per month	Inebriated at least once a week	Has used hash or marijuana recently	Has taken hard drugs	Has at some time or other taken hard drugs	No. of persons
Only the opposite sex	13	68	19	49	44	7	3	1	4	4269
Only the same sex	11	61	28	34	50	16	7	2	11	37
Both sexes	17	52	30	27	54	19	21	10	18	38
No attraction	49	45	6	98	2	0	0	0	0	36
Heterosexual	13	68	19	49	44	7	3	1	4	4287
Gay, lesbian or bisexual	10	62	27	23	57	19	15	7	17	49
Gay	0	58	42	13	54	32	15	4	18	15
Lesbian	15	71	14	40	61	0	0	0	6	14
Bisexual	16	61	23	22	58	20	25	15	24	20
Unsure or not stated	63	37	0	79	21	0	7	0	0	12
Total	13	68	19	49	44	7	4	1	4	

Source: Survey of Living Conditions 2008, Statistics Norway.

2. Findings from the data collection – evaluation of methodology

Questions concerning sexual identity have not been included previously in the Norwegian living conditions surveys. The development project had several objectives;

- to identify satisfactory operationalisations of sexual identity in the context of living conditions,
- to identify satisfactory operationalisations for Norwegian conditions,
- on the basis of the operationalisations, to design questions and responses for effective measurement of the phenomenon,
- ... worded in such a way that as many as possible respond to the questions without reacting negatively,
- to identify the ideal thematic location within the questionnaire and the best way of presenting the questions to the respondent,
- and to identify effective procedures for data collection, including the best methodology

The questions were to be recognised as valid. To achieve this, it became clear early on that we would need to distinguish between sexual attraction and sexual identity. Attraction is a transient and unpredictable feeling, tending to be more physical in nature. Identity is bound up with self-image and defines the individual in relation to other people. The questions had to indicate clearly that we keep these different dimensions of sexuality distinct from each other.

Reliability had to be as high as possible. We wanted to achieve responses also from those who might be unsure of their own sexuality, and from those who are used to keeping their sexual identity a secret. We also had an aim, in asking about this topic, of not putting off, or alienating, respondents. Older persons and persons of immigrant origin are the groups one assumed would be most likely to object to questions of this nature in a survey.

Finally, it was important that the questions did not introduce any new bias in the survey for the estimates of the ordinary phenomena measured in the living conditions survey, and to minimise the introduction of any bias for the estimates of the extent of non-heterosexual attraction and identity. The extent of unit non-response and item non-response is an important (but not the sole) indicator of such bias. Any sequential effects might also cause bias if the introduction of questions on sexuality had the effect of influencing subsequent responses in a certain direction.

The pilot survey was thus intended to make it possible to investigate these correlations to determine any consequences of including questions on sexual identity on a regular basis in the annual living conditions survey.

2.1. The development project: sensitivity and privacy issues

Based on the experiences from the development process, a summary was made of various proposals to prevent non-response and bias in the living conditions survey as a result of the questions asked about sexual identity (Gulløy, Haraldsen and Normann 2009). Below, we present the main results and the measures proposed for resolving these challenges.

The main problem for the respondents did not appear to be that the questions were sensitive, but rather why they needed to be asked at all. Accordingly, one of the measures was to demonstrate the relevance of asking questions on sexual identity. This was attempted in several ways:

- by locating the questions in the questionnaire section on *living habits*, between the topics of diet and discrimination
- by introducing the section on living habits by means of a preamble to make the interviewee aware of the change of topic⁴; *“The questions that follow below concern how your way of living affects your quality of life.”*
- by making the section on sexuality start with a question on how this affects the interviewee’s quality of life

Originally it was also proposed that the preamble should serve as a filter question so that individuals who responded that sexuality had little or no effect on their quality of life should be directed around this section and thus skip the next questions. The thinking was that this would be a good solution for e.g. elderly persons/widows/widowers in that they could avoid having to consider a question that might be difficult to answer because it is completely irrelevant or perceived as intrusive.

Another measure was to take account of the need for privacy by protecting the interviewee against the risk of anyone listening in on the responses. Besides the standard privacy protection routines, we sought to provide for this by *letting the interviewee state the numbers in front of each response category* so that he or she was not obliged to reiterate the full wording of the responses out loud (applied only to telephone interviews).

In addition, we gave interviewees the option – if they were reluctant or directly refused to answer the questions – of responding to the questions by postal questionnaire form which they could complete in privacy. In addition, in the postal questionnaire they would be able to look through the questions before deciding whether or not to respond. In the latter case, they could then skip these questions, but still return the questionnaire.

It was however important to ensure that it was not the interviewer who determined who was to be offered the postal option, but that this was elicited by the question-skip structure itself. Accordingly, there were questions as to whether the respondent preferred to receive these questions in a postal questionnaire instead, after each of the three questions concerning sexuality. The option was to be made available to those who stated explicitly that they did not wish to respond to the questions. The disadvantage of this is the certain amount of additional work it required in data collection with different versions of the questionnaire for different sections of the sample. However, we did not expect a great many questionnaires to be involved.

The question-skip structure was also designed to avoid putting questions concerning sexual identity and any problems arising from that to the vast majority of respondents. The first of these were only put to persons who felt sexually attracted to the same or both sexes, while the questions on social problems were only put to individuals who stated that they were gay/lesbian/bisexual.

The development project revealed that the interviewers were somewhat sceptical about asking questions concerning sexuality in the interview surveys. In the pilot, this was countered by a strategy of coaching interviewers in asking the questions and incorporating it into a course on sensitive questions in general. The decision was also made to conduct a special appraisal session for the interviewers after the survey was completed, in the form of focus groups with the interviewers on their experiences. Finally, it was also important, as mentioned above, that the interviewer should not be assigned responsibility for determining who was to be offered a postal questionnaire and who was not.

⁴ Applicable only to the interview version of the questionnaire.

2.2. The development project: efforts to ensure satisfactory response quality

The development project identified several problems concerning the wording of the questions, and the questions underwent several rounds of testing before we settled on the final wording. Many foreign loan words and terms not commonly used in certain population groups made the questions overly heavy, especially if the interviewee was to hear them read aloud by an interviewer. Moreover, research findings from other countries suggested that there are a number of problems involving comprehension of such questions among respondents with low educational attainment or weak language skills (see Wilmot 2007, Betts 2007).

To improve response quality, two slightly different versions were created: one for the interview and one for the postal questionnaire. The oral interview version was less wordy and used “men” and “women” respectively.⁵ In addition, the postal questionnaire omitted the complicated question-skip structure between question 2 (Sid2) and question 3 (Sid3), which meant e.g. that men who stated that they were sexually attracted to men or to both sexes were then asked questions as to whether they were gay or bisexual.

Another measure to improve response quality was to acknowledge that not all questions might be relevant to all interviewees (“do not feel sexual attraction to anyone”) or that they did not feel the stated categories matched how they would define themselves. Question 3 (Sid3), concerning the respondent’s sexual identity, was in effect a yes/no question. If none of the stated “labels” matched, there was the option of responding “No, none of the categories”.

2.2.1. Wording of questions and data collection

The final wording of the questions was as follows;

Sid1

To what extent do you feel that your sexuality affects your quality of life?
Would you say it affects it....

- 1... a great deal
- 2 ... somewhat
3. ... slightly or not at all
4. DO NOT WISH TO ANSWER

If Sid1 is not equal to 4

Sid2

Which sex do you feel attracted to? Would you say...
READ THE NUMBERS IN FRONT OF EACH RESPONSE CATEGORY
SO INTERVIEWEE CAN RESPOND BY STATING NUMBER ONLY

1. ..that you only feel attracted to men
2. ..that you feel attracted to both men and women
3. ..that you only feel attracted to women
4. FEEL NO ATTRACTION TO ANYONE
5. DON'T KNOW
6. DO NOT WISH TO ANSWER

If (Interviewee is female and Sid2 = 2 or 3) or (Interviewee is male and Sid2 = 1 or 2)

Sid3

Do you regard yourself as being gay/lesbian, bisexual or heterosexual?

⁵ Example from the interview form "...that you only feel attracted to men...". Example from the postal form "...that you *only* feel attracted to persons of the opposite sex...".

READ OUT THE NUMBERS IN FRONT OF EACH RESPONSE CATEGORY SO INTERVIEWEE CAN RESPOND BY STATING NUMBER ONLY

1. Gay or lesbian
2. Bisexual
3. Heterosexual
4. NO, NONE OF THE CATEGORIES
5. DON'T KNOW
6. DO NOT WISH TO ANSWER

If Sid1 = 4 or Sid2 = 6 or Sid3 = 6

Sid_post

I appreciate that it may be uncomfortable to talk about this topic. So, I suggest we send you the questions in a questionnaire by post. You will then have a chance to look at them in peace and quiet, before deciding whether or not you wish to answer them.

Yes/No

If Sid3 = 1 or 2

Sid4a

Has your sexual orientation ever caused problems for you in relation to your family?

Yes/No

Sid4a

Has your sexual orientation ever caused problems for you in relation to friends?

Yes/No

If (Work1a or Work1b = Yes) or IYI = Yes

Sid4a

Has your sexual orientation ever caused problems for you in relation to co-workers?

Yes/No

The sub-sample for question 3 on sexual identity is thus made up only of those who feel sexually attracted to the same or both sexes.

Thus, the data collection instrument was designed as follows:

- Topic is presented as one of several questions on lifestyle and quality of life
- Response given by stating numbers
- The first question emphasises the relevance
- Distinction between sexual attraction and sexual identity
- Also questions on perceived problems resulting from sexual identity

The data collection procedure should consist of:

- Telephone interview
- Option of self administered postal questionnaire if respondent declines to answer one of the questions
- Interviewer debriefing

2.3. Survey of Living Conditions 2008 – a multi-mode survey

The survey comprised 10,000 persons, aged 16 years and over, selected for personal in-home interview and in accordance with Statistics Norway's two-step

sampling plan⁶. The interviews were conducted with a personal computer. Data collection lasted for six months in the winter of 2008/2009. Although the development project concluded that the questions on sexual identity should ideally be asked in telephone interviews, the survey was designed as a personal-in-home survey. However, in practice, the majority of the interviews were conducted as telephone interviews. In sum, the survey method was a combination of personal interview, *either by phone or in-home*, and a postal self-administered questionnaire form sent out subsequently. In other words, it was a *multi-mode survey*.

The postal questionnaire was designed to contain the questions which by tradition would be regarded as sensitive in a personal interview setting; concerning life situation and coping, psychological mood and worries, use of medicinal drugs, serious life events, use of health services, alcohol, drugs and gambling. The fact that the pilot (which included questions on sexual identity) concluded that those persons who declined to respond to questions on sexual identity during personal interview were to be offered a self-administered variant of the questions instead was therefore consistent with the customary practice for any living conditions survey dealing with sensitive topics.

The result was therefore two versions of the postal supplement: one containing questions on sexual identity designed for those who preferred to respond to such questions by self-administered questionnaire form rather than in a personal interview setting, and one without these questions.

In sum, this means that the questions on sexual identity were made in three different modes: during a personal in-home interview, during a telephone interview or in a postal self-administered questionnaire form. The choice between the first two modes was made primarily by the interview organisation, although the interviewees themselves could influence this by saying how they preferred to be interviewed.

The decision regarding telephone or personal in-home interview was informed partly by financial-administrative considerations (the lower cost of telephone interviews) and partly by statistical considerations (optimal response quality from personal in-home interview for vulnerable groups in terms of the survey's principal topic, which was health). Experience also indicates that certain sample groups (elderly persons especially) find telephone interviews more difficult than in-home interviews. In-home interviews are thus a "scarce commodity" and to some extent restricted to certain respondent categories.

Accordingly, the distribution of personal in-home interviews is not random. At the start of the data collection, the plan was for the local interviewers in different parts of the country mainly to conduct personal in-home interviews, while the centralised staff (*CATI-interviewers*) were to deal with the telephone interviews. Ultimately, the strategy was for elderly persons and long-term ill persons to be prioritised for in-home interviews. In addition, individuals who specifically requested them were granted in-home interviews.

The proportion of in-home interviews varies considerably according to age. Among the eldest, the proportion of in-home interviews was 36 per cent for the age-group 80 years and over and 22 per cent for the age-group 67-79 years. There was also some variation depending on place of residence, with a higher proportion of in-home interviews in densely populated districts. Both of these outcomes were thus connected with administration of the data collection.

⁶ In the documentation report for the survey (Wilhelmsen, 2009) the sampling and data collection are presented in more detail.

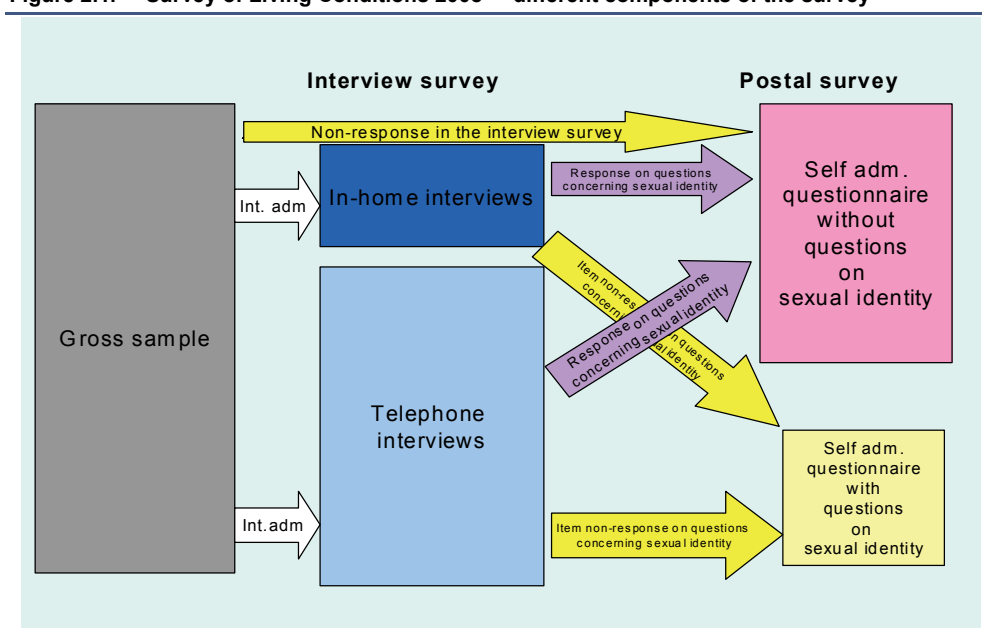
Table 2.1. Proportion of in-home interviews by gender, age and area of residence

	Proportion of in-home interviews of all interviews	No. of persons
Total	18,2 %	1 175
Gender		
Females	19,1 %	629
Males	17,2 %	546
Age		
16-24 years	14,4 %	129
25-44 years	17,5 %	388
45-66 years	17,2 %	411
67-79 years	21,5 %	143
80 years and older	36,1 %	104
Area of residence		
Sparsely populated areas	16,6 %	220
Densely populated < 2000 inhab.	17,1 %	93
Densely populated 2000-20 000 inhab.	17,0 %	283
Densely populated 20 000-10 0000 inhab.	21,3 %	301
Densely populated 100 000 or more inhab.	19,1 %	278

Source: Survey of Living Conditions 2008, Statistics Norway.

Unlike the in-home interviews, a respondent's assignment to the postal sample for questions on sexual identity was solely a result of the interviewee's response (or strictly: unwillingness to respond) during interview. But nonetheless there were thus two "paths" to the self-administered postal questionnaire: either via phone interview or via in-home interview.

Figure 2.1 presents an overview of the survey's various components and the spread of the gross sample of 9,684 individuals across the different components.⁷

Figure 2.1. Survey of Living Conditions 2008 – different components of the survey

The complex structure of the survey means that the absolute figures (N) we use for our calculations of the different sample components vary, depending on whether we are presenting the findings for the entire sample in the interview survey or for the questions on sexual identity by mode. In Table 2.2 we present the figures for the samples broken down by these two methods. We find that the responses from the postal questionnaires containing questions on sexual identity comprise less than 1 per cent of all the entities in the net sample for the entire survey.

⁷ 316 people were characterised as absent.

Table 2.2. Sample size for the questions on sexual identity by interview form from the start and by response mode

Sample type	No. of persons	Per cent
By interview mode from the start		
Phone interviews	5 282	81,8 %
In-home interviews	1 175	18,2 %
Total for the interview-based survey	6 457	100,0 %
By response mode for questions on sexual identity		
Phone interviews	5 254	81,4 %
In-home interviews	1 156	17,9 %
Postal questionnaire	47	0,7 %
Total by response mode	6 457	100,0 %

Source: Survey of Living Conditions 2008, Statistics Norway.

2.4. Analysis of the data collection process

The effects of including questions on sexual identity in Survey of Living Conditions 2008 should be assessed in terms of the impacts on *representation* and *measurement*. On the one hand, we have the potential effects the questions on sexual identity may have had on representativity in the survey through *increased and/or biased non-response*. What level of representation was achieved for the survey's different components and what level for these questions compared with the rest of the survey? Then we have possible effects of non-response on the estimates, both the non-response that "always" occurs in the living conditions surveys, and those that occurred in this particular survey because we asked questions about what may be assumed to be a highly sensitive issue. Finally, we have the potential effects on the estimates of the questions in themselves. Is there reason to believe that measurement errors occurred as a result of the content and design of the questions?

The problems are thus as follows:

- Have the questions on sexual identity resulted in a higher unit non-response or item non-response in Survey of Living Conditions 2008 (than would otherwise have been the case)?
- How do the scale and composition of non-response affect the estimates regarding sexual identity?
- How do the questions themselves affect the estimates?

To answer these questions, we split the analysis into four parts:

1. presentation of non-response at the different stages and in the different modes of the collection (both unit and item non-response)
2. assessment of whether the questions affect unit and item non-response
3. assessment of the effect of non-response on the estimates
4. assessment of the effect of the questions on the estimates

2.4.1. Non-response at the different stages of collection

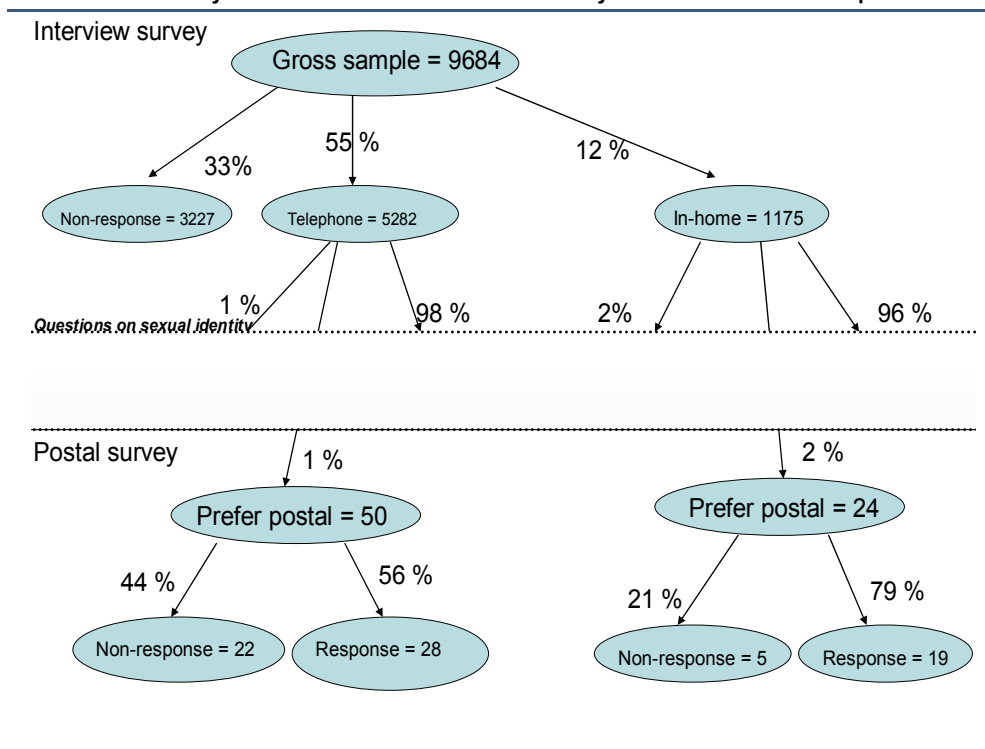
Traditionally, questions on sexual identity have been regarded as highly sensitive. The qualitative interviews in the development project were indicative that the questions in themselves were perhaps not so sensitive, and that the problem was rather one of relevancy; "*what does this have to do with living conditions*"? To counter this, emphasis was placed on intimating relevance and context by providing a separate preamble, ensuring well-considered location in the questionnaire etc.

Those who might be expected to react negatively to these questions are mainly elderly persons, persons from other cultures, and persons with a non-heterosexual identity (concealed or open) for whom sexuality is a taboo. A negative reaction might result both in refusal to complete the rest of the survey or to answer these specific questions. If respondents become non-responders to the entire survey because of these questions (unit non-response), this will affect the response rate, possibly also the quality of the entire living conditions survey, including the estimates for sexual identity. If the respondents decline only to respond to these questions (item non-response), this also affects the estimates.

However, correlation between unit non-response, bias and the quality of the estimates is not subject to a given relationship. Groves et al. (2004) indicate that, if the causes of unit non-response correlate with a specific statistic, then those units accounting for non-response will have other attributes for this statistic than the units responding. This will make the estimates biased *for the variables concerned*. If there is no correlation between the statistic and the causes of the non-response, then the non-respondent group can be presumed to have the same attributes as the respondents, and the estimates will be the same. If persons refuse to respond because of the questions on sexuality, it will affect these results, but not necessarily other results in the living conditions survey.

In the information letter for the survey (see Appendix 1), respondents were informed that the topic of the survey was “health, care-giving and social contact” and that the questions would include ‘how you rate your state of health, health services you have used and care-giving you have provided’. No detailed information was provided about the specific sections in the questionnaire. In other words, the respondents were not informed that sexual identity was one of the topics until during the interview itself. In terms of the sensitivity issue, unit non-response is therefore only of interest as regards the postal supplements, *unless the questions caused respondents to terminate the entire interview on reaching this point in the interview session*. However, the results show that no-one terminated the interview after the section on sexual identity, hence this effect is equal to nil.

Figure 2.2. Responses, unit non-response and item non-response for the questions on sexual identity in the different sections of the survey. Absolute numbers and per cent



But what was the scale of total non-response in the different phases and sections of the survey? In Figure 2.2 we provide an overview of all the response and non-response rates over the course of the survey⁸. We then comment on the outcomes of the different phases/samples, the interview survey’s unit non-response rate and item non-response rate and the different phases of the postal survey. Finally in this chapter we will go on to discuss the implications of this for representativity in the survey generally and for the questions specifically.

⁸ Note that the figure presents aggregate figures for the number of observations who decline to respond to one or more of the questions in the section – for individual questions this varies.

2.4.2. Non response in the interview survey

The first thing we see in Figure 2.2 is that the interview survey yields a response rate of 67 per cent, which is what one might expect and a fairly good result. In 2008, the response rate increases slightly over the rate for 2007, but in the period from 2005 to 2008 as a whole, the response rate for the living conditions survey declined. In the 2005 cross-sectional survey, non-response was at 29.9 per cent, whereas our survey has a non-response rate of 33.3 per cent. Again, this is in line with the general trend for household surveys (Hougen 2006, Dalsgaard-Rørvik 2007, Rørvik 2008, Kleven and Normann 2009, Thomsen et al. 2006, Wilhelmsen 2009).

The documentation report for Survey of Living Conditions 2008 informed us that non-response in the interview survey varies according to gender, age and region. Women have a somewhat higher response rate, while the oldest age group (80 years and over) shows a good deal higher non-response than the average for the survey (more than 10 percentage points). The response rate is also higher than the average in the Trøndelag (Central Norway) and Northern Norway regions (Wilhelmsen 2009). The report also states that women in general are more willing to participate than men. Broken down by gender and age, we find that among women 80 years and over, many decline to participate (response rate of 50 for this age-group), and that men between the ages of 25 and 44 also account for a relatively low response rate. In this group there are both many who decline to participate and many that Statistics Norway is unable to make contact with.

2.4.3. Differing response rates for in-home and phone interviews?

Looking at Figure 2.1 in which we presented the model for the survey, it would seem permissible to compare the response rate for the in-home and phone surveys, respectively. However, this is not feasible since the response mode is not registered until after the interview has been completed. We do not have any information concerning the mode of attempts to make contact before the actual interview was conducted. This would have been useful information to include in assessment of the multi-mode approach. As regards the effect of the questions on sexual identity, this is strictly speaking not of interest since the choice of response mode was informed by considerations of cost efficiency in the data collection and the communication between the interviewer and respondent.

2.4.4. Item non-response

The rate of item non-response is a quality determinant for the data material. How many respondents declined to respond to the questions on sexual identity but otherwise participated in the survey by phone interview, in-home interview or by postal questionnaire? In order to estimate this, we have to go back to the figures that emerged in Figure 2.2. where we saw that 1 and 2 per cent respectively of phone and in-home interviews ended with "outright" refusal to answer the questions on sexual identity. But in addition, there was then also a proportion of respondents who agreed to complete the postal questionnaire, which is also a form of item non-response in the interview survey. *This pushes the item non-response rate up to 2 and 4 per cent respectively.*

However, these aggregate figures mask the trend for each of the questions in the section. Note that the option to respond via a self-administered questionnaire form was only to be offered if the respondent answered "don't know", or declined to answer one or more of the three first individual questions in this section. In this way, those who end up in the sample for the postal survey may still have responded substantively to one of the first questions. Even if they did, it is the responses from the postal questionnaire that are included here.

The question-skip structure was designed so that everyone would be asked the first two questions on quality of life and sexual attraction, while only those attracted to the same or both sexes would be asked the questions on identity and problems.

Starting from the question on sexual identity, the net sample thus consisted exclusively of persons who state that they feel attracted to the same or both sexes. This group may include persons who live with a hidden sexual identity, persons who are vulnerable to the sensitivity in the interview setting or the content of the questions.

In Table 2.3 we show that item non-response for individual questions, both as regards questions on sexual identity and other potentially sensitive questions in the survey. We also break results down by phone, in-home and postal mode. Note that “Don’t know” is counted as a substantive response in this analysis, since we regard it as a valid expression for an individual unsure of his or her own sexual orientation or identity.

Table 2.3. Item non-response for sensitive individual questions in different response modes

	Total	Phone interview	In-home interview	Postal supplement
Questions on the importance of sexuality for quality of life ..	1,7	1,4	2,0	23,4
Questions on sexual attraction	0,3	0,2	0,1	19,1
Questions on sexual identity	8,5	5,4	4,9	19,1
Questions on problems in relation to family due to sexual identity	13,8	15,4	6,7	17,0
Questions on problems in relation to friends due to sexual identity	12,1	10,3	6,7	17,0
Questions on problems in relation to co-workers due to sexual identity	18,1	20,5	16,7	17,0
Questions on contact with doctors	0,8	0,8	0,4	
Question on height	0,4	0,5	0,2	
Question on weight	2,0	2,1	1,6	

Source: Survey of Living Conditions 2008, Statistics Norway.

The first question, concerning the extent to which sexuality affects quality of life, produces an item non-response of 1.7 per cent in total; that is, below the level for item non-response for the question as to how much the person weighs. If we then move on to the question concerning attraction, there is a drop to below 0.5 per cent, but a rise above 8 per cent when we ask about sexual identity. A relatively high number decline to answer the questions on problems this has caused in relationships with others. The highest level of non-response is to the last question, concerning problems in relation to co-workers, with item non-response at 18 per cent overall. The most obvious explanation for this is that a certain “response fatigue” had set in among respondents by this stage. It may be the case that respondents find it wearing and/or unpleasant to take such personal and relatively intrusive follow-up questions three in a row. The last three questions underwent less testing in the development project than the first questions. There is the possibility that they are ill-considered in cognitive terms, and that what the respondent is being asked to consider is simply too difficult. This should perhaps be investigated in more detail subsequently.

The tendency is seen in all modes. The phone interviews result in a higher level of item non-response than the in-home interviews as we approach the end of the section. The greatest effects are seen in the small postal sample. Here the proportion of non-responders is much higher across the board than in the interview samples. This is not surprising, since the postal sample is made up of individuals who reacted negatively at interview. Besides which, the self-administered questionnaire form lends itself more readily to item non-response, since the respondent has time to (re)consider the content of the questionnaire before, during and after responding.

But again, we find that all the respondents revert to responding after this section; no one opts out of the entire survey after these questions.

Item non-response to other sensitive questions in the survey

In Table 2.3 we also saw that item non-response for the first questions in the section on sexual identity are at a lower level than for the question on how much

the person weighs (2 per cent item non-response). There is perhaps some justification for seeing this as a “normal” level for item non-response to sensitive questions. Before we reach the section on sexual identity, only three questions in the questionnaire trigger item non-response, and this is irrespective of survey mode:

- questions on number of times contact made with a doctor/health service in the last 12 months
- questions on height
- questions on weight

The reasons why these three questions out of all the others cause item non-response probably differ somewhat. The first question concerning medical consultations is heavy in its wording, and sets the respondent a demanding task:

Approximately how many times were you in contact with your regular GP or other GP at a local surgery, a doctor on call, school/university/occupational health care service within the last 12 months? Please count all kinds of contact. But do not count times when you were accompanying a child, spouse or other person.

The two other questions concerning height and weight are presumably felt to be very sensitive by a number of respondents because they concern their body. However, they ‘opt back into’ the questionnaire again and do not terminate the interview.

It is interesting to note that the problem of item non-response for these questions is most prevalent for the phone interviews. For the cognitively-challenging question on medical contact, this is probably bound up with the fact that it is difficult to comprehend long questions over the phone, without the face-to-face communication provided by the interviewer. As for the two questions on height and weight, there is also the possibility that the questions seem more invasive when asked over the phone. The telephone survey sample is also younger in age on average. It is conceivable that young people find these questions more personal or invasive than older persons do. It may be of interest to examine these issues at a later date.

2.4.5. Summary of non-response to the sexual identity section of the survey

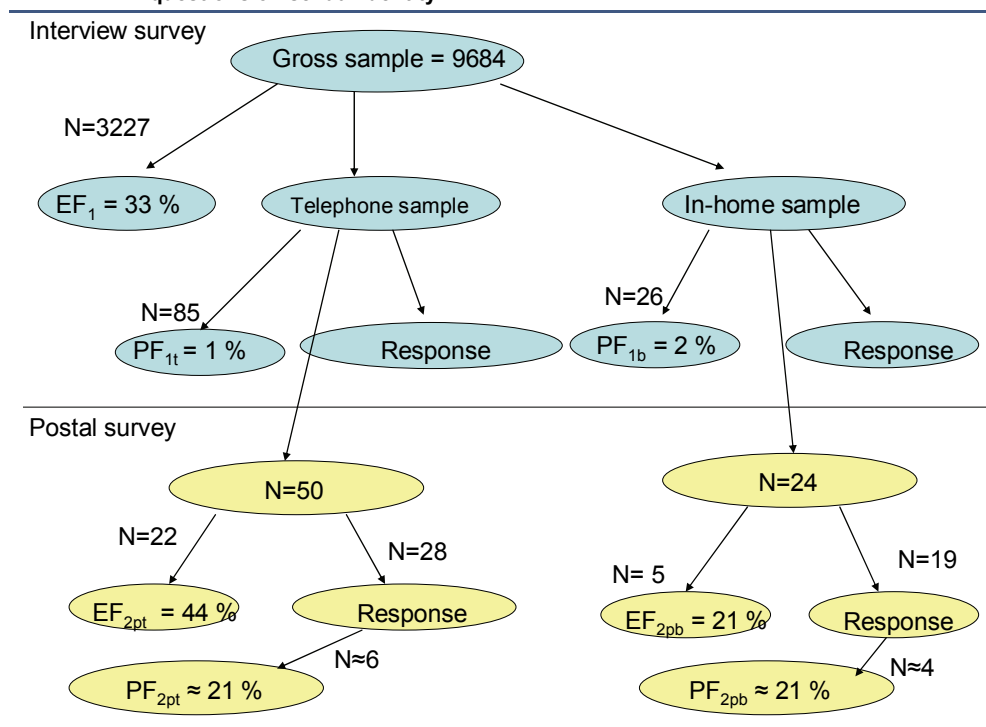
Owing to the complex structure, it is somewhat challenging to prove a simple listing of the various types of non-response in this survey. We might start by drawing on a figure indicating unit non-response and item non-response for each of the two sub-surveys which include the questions on sexual identity (interview and postal with questions on sexual identity)⁹. In Figure 2.3 we have labelled the various non-response items in order to set out the following:

Total unit non-response in the survey comprising questions on sexual identity

$$\sum EF = EF_1 + EF_{2pt} + EF_{2pb}$$

where $\sum EF$ is the sum of unit non-response including those who responded by post; EF_1 is the total unit non-response in the interview survey (irrespective of contact mode); EF_{2pt} is the unit non-response in the postal survey following phone interview; while EF_{2pb} is the unit non-response in the postal survey following in-home interview.

⁹ We do not cover here the section of the survey which comprises the postal supplement *without* questions on sexual identity. This sub-survey is discussed in section 2.4.6 below.

Figure 2.3. Unit non-response and item non-response in the sections of the survey containing questions on sexual identity

The sum for unit non-response for the entire survey which contains questions on sexual identity is thus:

$$\sum EF = (3227 + 22 + 5) : 9684 = 33.6 \text{ per cent}$$

The total unit non-response thus comes to 33.6 per cent: the figure for unit non-response increases by just 0.3 percentage points as a result of the questions on sexual identity.

If we look at the postal survey for questions on sexual identity in isolation, the unit non-response is a good deal higher. That is, *if we also include in the calculation "the firm refusers": those who were offered the postal questionnaire, but declined* (PF_{1t} and PF_{1b}). Note that this then brings these two dimensions under both the unit non-response and the item non-response:

$$\sum EF_p = (85 + 22 + 26 + 5) : 185 = 74.5 \text{ per cent}$$

But if we factor out the "firm refusers" (respondents who will neither respond during interview nor to the postal questionnaire they receive) from the calculation, then non-response in the postal survey is slightly higher than it is in the interview survey:

$$\sum EF_p = (22 + 5) : 74 = 36.5 \text{ per cent}$$

However it has to be said that this is not a particularly high non-response rate for a postal survey.

The total item non-response in the interview survey is 1 per cent for the phone sample and 2 per cent for the in-home sample. More respondents are reluctant to answer one or more of the questions when face-to-face with the interviewer than when talking to the person over the phone, which is what we would expect. So, item non-response is not high compared with that for other sensitive questions – at least for the initial questions in the section. As demonstrated above, item non-response increases a good deal once we get to the identity question, and from there

on it increases over the rest of the section. If we attempt to create an overall measure for the item non-response for the survey as a whole, meaning the proportion of respondents who decline to respond to questions either in the interview or on the postal questionnaire, or who fail to complete the postal questionnaire in which these questions are included, we arrive at an aggregate of 2.3 per cent out of everyone in the net sample for the interview survey.

Moving to the postal survey, we find that the item non-response increases to as much as 21 per cent (rounded, average item non-response for all questions in the section). This then is higher than the corresponding proportion in the interview survey for the last questions with the poorest score. This means that the questions have put people off even more from responding in the postal survey. However, this is not surprising, since those who agreed to complete a postal questionnaire were originally unwilling to answer the questions during interview.

We may conclude the following as regards the various forms of non-response in the section of Survey of Living Conditions 2008 containing the questions on sexual identity:

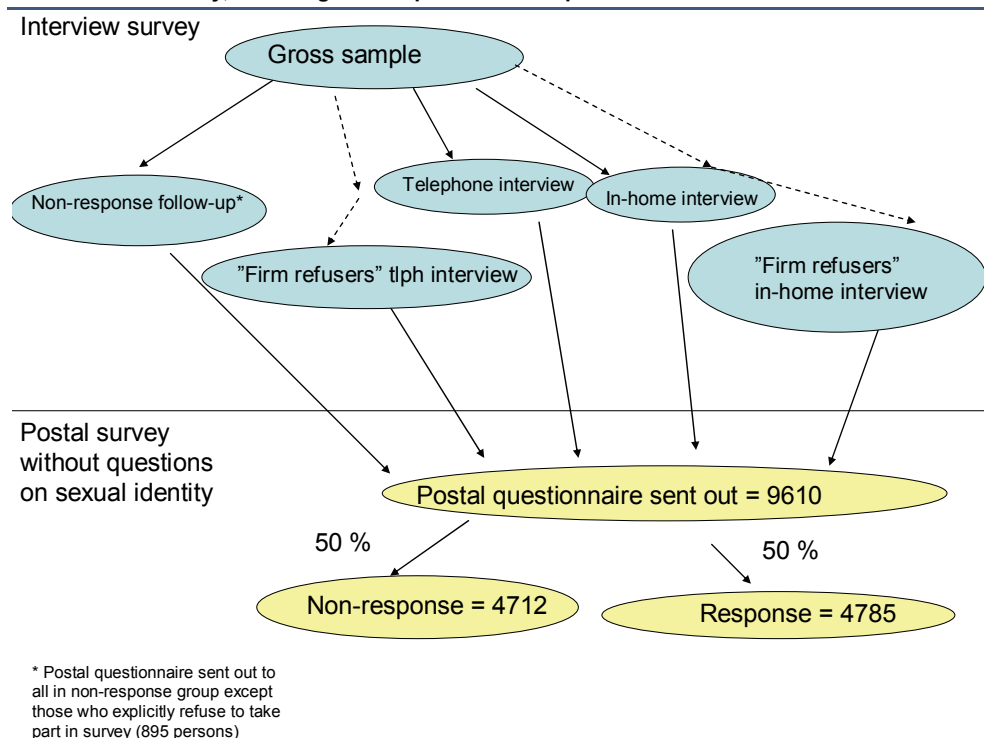
- Unit non-response in the interview survey increases marginally (less than 0.5 percentage points) as a consequence of introducing questions on sexual identity.
- Unit non-response in the postal survey containing questions on sexual identity is substantial if considered as an “isolated” survey. For those who fail to return the postal questionnaire, this also means item non-response for the other postal questions in the survey (mental health, drugs etc). However, this does not represent more than 27 individuals, or 0.4 per cent of the net sample.
- The “firm refusers”, that is those who decline to answer and to receive a postal questionnaire containing these questions, were instead sent the ordinary postal questionnaire. For this group, item non-response is limited to the questions on sexual identity.
- In the interview survey, the first two questions in the section, on how sexuality affects quality of life, and sexual attraction, produce low item non-response; so low that it may be characterised as negligible, seen in the context of other sensitive topics also covered by the survey.
- Two other topics in the survey are also prone to item non-response: questions on medical contact and questions concerning the person’s body (height and weight)
- The scale of non-response to questions aimed solely at respondents who feel attracted to the same or both sexes (question on sexual identity and any social consequences of this) is substantial.
- A certain volume of item non-response gathers momentum as the section on sexual identity proceeds: negligible for the initial questions, then increasing to a high level. The question concerning attraction gives rise to minimal item non-response in the interview survey. The question on sexual identity gives rise to a certain item non-response (around 5 per cent). The final questions on the consequences of non-heterosexual identity produce very high item non-response. This may be characterised as a form of “response fatigue”.
- In the postal survey, item non-response to the questions on sexual identity is extremely high. This confirms that the questions were perceived as highly sensitive to the small group of respondents who declined to answer these questions during interview.
- Refusal to answer individual questions does not result in persistent item non-response, i.e. with respondents dropping out permanently from the survey as a result of these questions. Units with item non-response always resume the survey after these questions. This conclusion obviously applies only to those who also returned the questionnaire; the remainder obviously count as unit non-responders.

2.4.6. Non-response in the postal survey without questions on sexual identity

Postal surveys generally achieve lower response rates and greater non-response than interview surveys (Groves et al. 2004), although this applies strictly to what are referred to as “household surveys of adult populations”. The interviewer’s presence has an inherently positive effect on the tendency to want to take part in the survey. The findings of the Cross Sectional Survey 2008 tend in a different direction.

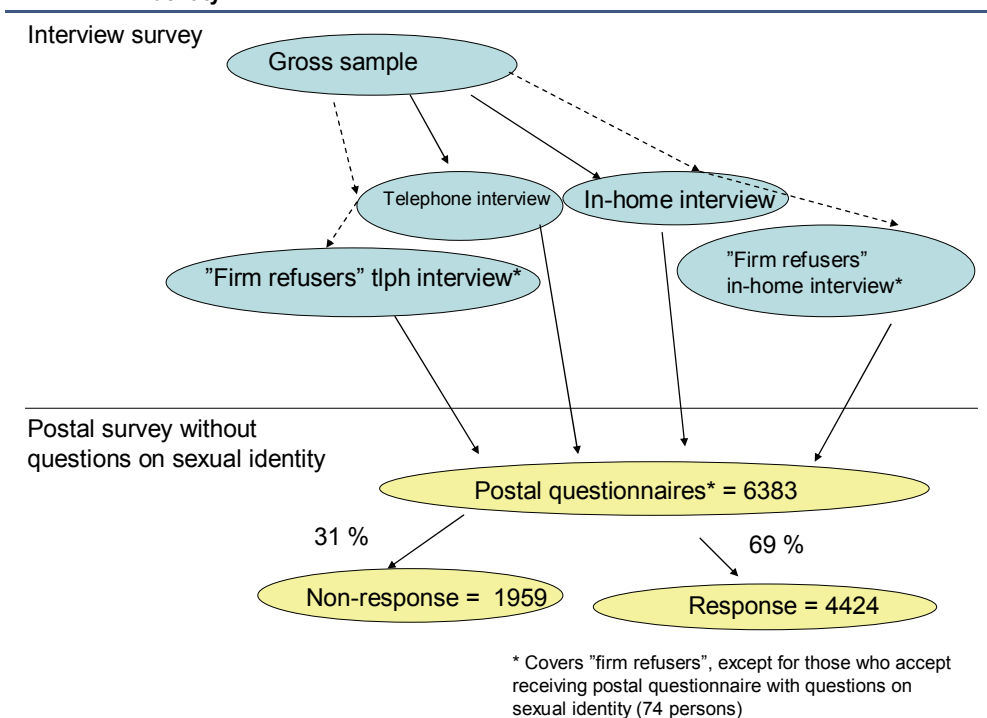
In Figure 2.4 we present the figures for the ordinary postal survey without questions on sexual identity.

Figure 2.4. Response rate and non-response in the postal survey without questions on sexual identity, including non-response follow-up



If we include the response rate resulting from all questionnaires sent out of this type, the response rate is 50 per cent. This also includes questionnaires sent out as part of the non-response follow-up in which persons who had not been contactable for interview were still sent a questionnaire. However, this method of calculation is scarcely relevant if we want to determine the possible impacts of including questions on sexual identity, since the sample also includes persons who have no idea of what the survey concerns. If we instead make the sample consist of persons who first completed an interview, as in Figure 2.5, we find that the 2008 survey yields a relatively high response rate.

The non-response rate then increases to 31 per cent, and as such the proportion that responds is higher than in the interview survey. This is the best result out of all the living conditions surveys with postal supplements for the last four years, including surveys which dealt with less sensitive themes (Hougen 2006, Dalsgaard-Rørvik 2007, Rørvik 2008, Kleven and Normann 2009, Thomsen et al. 2006, Wilhelmsen 2009).

Figure 2.5. Response rate and non-response in the postal survey without questions on sexual identity

What is the response rate in the postal survey for the “firm refusers”? In this group totalling 111 persons, 57 forms were returned, that is, a response rate of 51 per cent. The unit non-response equating to “firm refusers” amounts to 0.8 per cent of the gross sample in the postal survey without questions on sexual identity.

We may conclude that introducing the questions on sexual identity has not had any appreciable effect on the ordinary postal supplementary survey. Indeed, for a postal supplementary survey, this was a highly satisfactory response rate. Even in the category of “firm refusers”, for whom we only have interview data, half of the postal questionnaires were returned. These results are as good as those achieved by sending out postal questionnaires as part of the non-response follow-up on the survey.

2.5. Effect of the questions on non-response

The introduction of the questions on sexual identity in Survey of Living Conditions 2008 did not result in any appreciable increase in unit non-response for the interview survey and the ordinary postal survey. The former is not surprising, the latter is perhaps more unexpected. If the questions were felt to be so sensitive that their very presence in the survey caused offence to the respondent, then this should have resulted in greater non-response than otherwise to the ordinary postal survey. But this was not the case. There is however substantial unit non-response to the special postal survey containing questions on sexual identity. The “firm refusers” push non-response up dramatically even though the response rate among those who agreed to receive the questionnaire form was in fact very satisfactory (64 per cent).

One might expect a greater sense of obligation bound up with receipt of the postal questionnaire containing questions on sexual identity than the ordinary postal questionnaire. The recipients, in full knowledge of their content, have committed to them in advance, by agreeing to receive them. The ordinary postal questionnaires, however, are sent out without the respondents being 'forewarned' of their arrival. Still, fair results were achieved for both versions, although still poorer for the version dealing with sexual identity.

In addition, there is the seriously high item non-response to the last questions in the section, especially in the postal questionnaires. For the majority, however, the two preliminary questions, on how sexuality and sexual attraction affect quality of life, are quite straightforward.

The generally positive results in terms of item non-response in the postal surveys may be interpreted as a confirmation of the fact that efforts to stress relevance and consistency had an encouraging effect for the great majority of the sample.

However, we would stress that the sensitivity of the questions in this section was a reason for item non-response. Moreover, the marginal increase in unit non-response among the “firm refusers” is obviously connected with the topic of the questions. People who react strongly against these questions tend to refuse to respond at the first instance and many of them then also fail to respond by post. *This means that we have a small core-group of respondents for whom the questions are not conducive to participation in an interview setting.* This amounted to 185 persons and approximately 2.9 per cent of the net sample for interview survey. In this group, we can then draw a distinction between those who opt to respond to questions by post, and those who either refuse to receive them as a postal questionnaire or who decline to answer the individual questions in the self-administered questionnaire form.

But what is it that causes the differences between these two groups; those who ultimately do respond, and those who fail to? For simplicity sake, we will call the first group “reluctants” and the last group “firm refusers”. But what sets these two groups apart from the sample as a whole? We will start with question 2 in the section, concerning sexual attraction. In principle everyone has to answer this, but a high proportion declines to respond in the postal survey, besides which that proportion remains unchanged for the next question. Table 2.4 shows the distribution of individual background characteristics among “firm refusers” and “reluctants”¹⁰ for this question.

Table 2.4 reveals that the two special groups we have constructed based on response-behaviour differ, in fundamental respects, from the sample as a whole, and from each other. In terms of gender distribution, there are relatively many women in both of these small groups compared with the sample as a whole. The differences are greatest between “firm refusers” and the total sample, with a difference of almost 20 percentage points. As regards age, “firm refusers” consist to a great extent of persons aged 67 and over, while “reluctants” are made up of a markedly higher proportion of both the very youngest and the very oldest age-groups in the sample. Persons residing in sparsely populated neighbourhoods are clearly over-represented among “firm refusers”, while persons from the largest towns/cities are (heavily) over-represented among “reluctants”. Finally, we also find a coherence between educational attainment and this “atypical” response behaviour. Persons with a low level of educational attainment are greatly over-represented among “firm refusers” and persons with a high level of educational attainment are over-represented in the “reluctants” group.

Based on the description above, we can roughly characterise the two groups. “Firm refusers” consist largely of women, often elderly, residing in small communities with a low level of educational attainment. “Reluctants” consist largely of teens/young adults, many of whom are female, typically from urban areas and with a high level of educational attainment.

¹⁰ The aggregate figures in the table vary somewhat from those in other tables. The calculations for “the reluctants” include only those who responded with the substantive response categories, while the calculations for “the firm refusers” include both those who refused a postal form and those who in one way or another failed to respond substantively to the question on sexual attraction in the self-administered questionnaire form.

Table 2.4. Gender, age, area of residence and educational attainment for different response and non-response groups for questions on sexual attraction

	Total	"Firm refusers"	"Reluctants"
No.	6 457	151	34
	Per cent		
Gender			
Females	49,0	68,2	61,8
Males	51,0	31,8	38,2
Age			
16-24 years	13,8	11,9	26,5
25-44 years	34,3	17,2	23,5
45-66 years	37,1	37,1	32,4
67-79 years	10,3	19,2	8,8
80 years and older	4,5	14,6	8,8
Area of residence*			
Sparsely populated areas	20,5	34,0	20,6
Densely populated < 2 000 inhab.	8,4	12,2	5,9
Densely populated 2 000-20 000 inhab.	25,7	23,8	14,7
Densely populated 20 000-100 000 inhab.	21,9	10,2	8,8
Densely populated 100 000 or more inhab.	22,5	19,7	50,0
Education**			
1	26,3	44,5	23,1
2	43,0	40,9	30,8
3	31,0	14,6	46,2

*For the area of residence variable, register information was missing for 59 persons. These are not included in the calculation basis here

**For the educational attainment variable, register information was missing for 360 persons. These are not included in the calculation basis here

Source: Survey of Living Conditions 2008, Statistics Norway.

The immediate conclusion is therefore that “reluctants” who were initially sceptical about responding, were reassured (among other things) by the manner in which the questions were presented and the survey was conducted. If not, they would have been more likely to have failed to return the questionnaire form. After all, the response rate is good for the postal survey.

2.5.1 Mode-effect?

Did the mode in which the questions were originally asked have any effect? In Figure 2.2 we saw that the proportion of “firm refusers” and the proportion of those who prefer a postal questionnaire was twice as high for the in-home interviews as for the phone interviews. The closer the interviewer gets to the respondent, the more difficult it then is to obtain a response to these questions. The in-home interview clearly makes the interview setting more personal, and for those who in the first place find these to be problematical questions, there is correspondingly a greater risk that they will refuse to respond to them. This outcome confirms the conclusion of the development project; that the questions are best suited for telephone interviews.

2.6. Effect of non-response on the estimates

In our review of the results of the survey, we were aware that less than two per cent of the population aged 16 and over feels attracted to the same or both sexes. Just over one per cent categorise themselves as gay, lesbian or bisexual. This however varies depending on gender and age, while educational attainment and place of residence have little influence. Because the proportions are small and the sample relatively limited, the figures are statistically uncertain however. The estimates are below those from a number of research environments, but are still consistent with comparable surveys, among others from Sweden (Swedish National Institute of Public Health 2005).

We have concluded that the questions on sexual identity have had some influence on non-response in this survey, but this varies depending on which questions we are surveying. When we come to assess the effect this has on the estimates for sexual attraction and identity, we find it differs from one question to the next. However, we are not in a position to estimate with any certainty the *scale of the*

effect of non response. The trends tend in different directions. Furthermore, we cannot rely on the presumptions when assessing potential bias as a result of non-response: that there is a similarity between those who respond and those who decline to. Since homosexuality remains taboo in many circles and cultures, we should expect a certain amount of systematic under-reporting whatever the case. There is therefore (more so than usual) uncertainty as to whether one may conclude that respondents in the non-response group would have produced the same distribution as for those who did respond. There is reason to assume that the proportion of gays, lesbians and bisexuals is larger in the non-response group than in the sample as a whole. We can then assume that the estimates are too low. It is impossible to know how much lower, and the significance of the non-response can only be roughly suggested.

For the first two questions in the section, on the importance of sexuality and sexual attraction, the level of item non-response was in fact of very limited significance for the estimates because it was so small. If we assume nonetheless that the tendency for sexual attraction has the same distribution among women in the group of “firm refusers” as it has among the women who did respond, the proportion that is attracted to both sexes or the same sex would be slightly higher in the estimate. At the same time, it is the case that respondents from the two oldest age-groups (aged 67 and over) show a tendency to be less attracted by both sexes or the same sex. These age groups are also under-represented. As such, we see that the two non-response tendencies are contrary to each other. Two other groups are more weakly represented: respondents from sparsely populated districts and with the lowest level of educational attainment produce higher item non-response, while the tendency to feel attracted to the same sex or both sexes shows little variation under the influence of place of residence and educational attainment.

The estimate for how many people feel no sexual attraction at all varies greatly depending on age. The proportion is a great deal higher among the oldest respondents, and especially in the age-group 80 and over. It is also somewhat higher among persons with low educational attainment and women, but this presumably correlates with the age variable. With a more even representation of elderly persons, women and persons with low educational attainment, the estimate of how many are “asexual” would presumably have been higher, provided that respondents and non-respondents share the same characteristics in this area.

For the last two questions, on sexual identity and social consequences, item non-response has had greater significance for the estimates. Here we examine the case for only the first of these questions. The questions concerning social consequences give rise to such a high volume of non-response that we will not concern ourselves with analysing them. In any case, our primary interest is the identity question.

In the first place, only a very few will be asked these questions: only those who initially respond that they are attracted to the same or both sexes. This means that each non-response becomes more important. In addition, there is reason to believe that those who do not respond would in fact have influenced the estimate in the direction of more gays, lesbians and bisexuals, since a proportion of those who decline, presumably are concealing such an identity or orientation. But although “firm refusers” are quite distinct from the rest of the sample when it comes to the characteristics we surveyed for, there is no way of establishing *the true* distribution of gays, lesbians and bisexuals in the groups of elderly persons, women, people living in sparsely populated districts and people with low educational attainment.

Before looking at the estimate for gays, lesbians and bisexuals, it will be useful to look at bias in the group of “firm refusers” in terms of common characteristics.

Table 2.5. Gender, age, area of residence and education for “firm refusers” and the entire sample for questions on sexual identity

	Total	"Firm refusers"
No.	6 457	108
	Per cent	
Gender		
Females	49,0	60,2
Males	51,0	39,8
Age		
16-24 years	13,8	23,1
25-44 years	34,3	41,7
45-66 years	37,1	25,0
67-79 years	10,3	5,6
80 years and older	4,5	4,6
Area of residence*		
Sparsely populated areas	20,5	17,8
Densely populated < 2 000 inhab.	8,4	4,7
Densely populated 2 000-20 000 inhab.	25,7	23,4
Densely populated 20 000-100 000 inhab.	21,9	16,8
Densely populated 100 000 or more inhab.	22,5	37,4
Educational attainment**		
1	26,3	32,3
2	43,0	33,3
3	31,0	34,3

*For the area of residence variable, register information was missing for 59 persons. These are not included in the calculation basis here

**For the educational attainment variable, register information was missing for 360 persons. These are not included in the calculation basis here

Source: Survey of Living Conditions 2008, Statistics Norway.

When it comes to questions concerning sexual identity there is still a higher proportion of women than men among the “firm refusers”, but the difference is not quite as large. The level is ten percentage points higher than for the entire sample. There are relatively more younger individuals up to the age of 44 in the group of firm refusers. The proportion of firm refusers is also higher in densely populated districts. A relatively larger proportion of persons with the lowest level of educational attainment decline to answer these questions than in the sample as a whole.

How does this affect the estimates for sexual identity? Women have a somewhat greater tendency to be homosexual or bisexual, and if we had had a less biased respondent group in terms of gender for this question, the differences would have been reinforced, assuming there was the same pattern in the non-response group. In relation to age, the proportion of gays, lesbians and bisexuals decreases with increasing age. If the response rate from the younger generation had been higher, then this would also have driven the estimates for non-heterosexuals up. When it comes to geography, correlations between place of residence and identity are uncertain; there is a slightly higher proportion of gays, lesbians and bisexuals in both sparsely populated districts and in the largest towns/cities. For sparsely populated districts, the “firm-refuser” group is not more heavily represented here than elsewhere, while the largest towns/cities are over-represented in the “firm refuser” group. This perhaps increases the likelihood that lower non-response from the major towns/cities would also have influenced the estimates in the direction of a higher proportion of gays, lesbians and bisexuals. Finally, we have the educational attainment factor, which does not appear to be a significant background variable for sexual identity either. Here we have the same pattern as for place of residence: the proportion of non-heterosexuals is somewhat higher in the lowest and highest level educational attainment group and both of these are also slightly over-represented in the firm refuser group. The differences are too small to be given any emphasis, but all told, the composition of the firm refuser group, for all the four background variables we surveyed for, tend in the same direction. *The estimates for gays, lesbians and bisexuals are too low.*

2.6.1. Postal responses – not a representative survey

In the postal supplement which includes the questions on sexual identity, the estimates will be greatly biased as a result both of non-response due to the fact that the preceding interview contained these sensitive questions (“firm refusers”); as a result of the fact that high non-response in postal surveys is generally not randomly distributed in the population; and as a result of the high item non-response for individual questions. This sample cannot be regarded as representative, or as an independent postal survey. The units must only be included as part of the main sample. They are however still of interest for the analysis, because they consist of respondents who represent one of the two main challenges for the project: how to secure responses from those who are willing to take part in the survey but sceptical about responding to these specific questions in an interview setting.

2.7. Effect of the questions on the estimates

Is it possible that our wording of the questions affected the estimates? The cognitive testing in the planning phase was intended to ensure that the wording and substance of the questions were comprehensible and perceived as relevant, while not causing offence. The results suggest that these aims were by and large achieved in that item non-response was not higher than it was – at least for the initial questions. People largely responded to the questions on the effect of sexuality and sexual attraction. The fact that item non-response begins to increase with the question on identity is due to the sensitivity of the topic, albeit for a relatively small proportion of the population.

The last questions, on social consequences of a gay, lesbian or bisexual identity, were not however worded well enough to yield representative results. These questions should probably undergo further cognitive testing before any attempt to use them again. In fact, this had already emerged in the very last round of cognitive testing before the survey commenced. The questions were nevertheless included, among other things because they were seen as important in shedding light on the relevance of the questions in the living conditions context.

We lack responses from many elderly persons. This is both because they object to these questions and because they are over-represented in the non-response group anyway. One of the reasons for the latter is bound up with the design of the survey in that we allowed persons who feel no sexual attraction to anyone skip the question on sexual identity. This then resulted in a less robust sample for the identity question. In the event of a repeat of this survey, the effectiveness of this solution could be discussed, but the need for representativity must be weighed against the need to make the respondents feel that the structure of the questionnaire is meaningful. For a person who is not sexually active, and who might perceive him/herself to be “asexual”, a battery of questions on sexual identity may seem intrusive and interrogative.

Against that, it is of interest to reflect on what we were actually measuring with the questions on sexual attraction, and then to have let one of the response categories be “feel no attraction at all”. Those who then selected this response alternative might be both persons who lead an “asexual” existence because this stage of life is a thing of the past or because they are not sexually active or seeking to be so. The difference between the two types will be temporal aspect; we might call it the “widow-type” and “single person without sexual interest-type”. It is not hard to imagine that the latter group might also include persons who conceal homosexual tendencies. As a result of the design of the questionnaire form, such individuals were never asked the question on sexual identity, but even if they had, it is perhaps unlikely that they would have responded with anything but the most conventional answer.

2.7.1. Should we have retained the selection filter following effect of sexuality?

The questionnaire design and decisions as to who is to receive which questions are critical for the surveys. No sexual attraction = no questions on identity. Another similar selection was originally embodied by the very first question on the importance of sexuality for the person's life. For those respondents who stated that it had little or no effect, it was originally proposed that they be excluded from the questions on attraction and identity. In Table 2.9 we see that the proportion that responds to this is at around 18 per cent in total, but that the figure is pushing one quarter in the in-home sample. This is not that surprising since these respondents included a high proportion of elderly persons.

Table 2.6. Proportion responding that sexuality is of little or no importance for their quality of life, in total and in the different samples. Per cent

	Proportion responding "little or no"	No.
Total (net sample)	18,6	6 457
In phone interviews	17,2	5 254
In in-home interviews	24,9	1 156
In postal sample	14,9	47

Source: Survey of Living Conditions 2008, Statistics Norway.

This group did in fact by and large respond to the next questions, on attraction and identity. 97 per cent of them are attracted to the opposite sex, or feel no sexual attraction whatsoever. 2.1 per cent are attracted to the same sex or both sexes.

When we then come to examine the matter of which sexual identity the "no importance" group has, and use the rough identity metric of just two identity groups (heterosexual as one group and gay, lesbian or bisexual as the other), we find that 1.4 per cent of them either identify themselves as gay, lesbian or bisexual, responded with "unsure" or did not respond. The proportion of non-heterosexuals in this group would thus appear to be at the same level as for the rest of the sample although we have not distinguished between unsure, not stated and non-heterosexual.

The proportion for which sexuality is of little importance in the net sample for the postal questionnaire is only 15 per cent; that is, relatively fewer than in the two interview samples. The postal sample does thus not appear to consist of a higher proportion of 'non-sexually-aware' persons than the other samples. This is interesting; the expectation that the preference for responding by postal questionnaire might consist primarily of persons who are sexually inactive does not appear to be hold true.

Do the outcomes of the pilot justify employing the original question-skip structure which would allow those who state that sexuality is of little or no importance for their quality of life to omit the questions on sexual attraction and sexual identity? The argument in favour of not permitting this was that it would presumably apply to a very limited number of persons and would be disadvantageous in that it would result in a more complicated questionnaire structure. The outcomes suggest that it might be of more interest to go further with the group that states that sexuality is of little or no importance for their quality of life, because this group may contain a preponderance of non-heterosexuals. This gives grounds for further study. We propose retaining the current structure as-is.

2.7.2. Effect of generational differences

The development project conducted by the UK National Office for Statistics stresses the correlation between educational attainment and comprehension in determining the wording of questions (Betts 2007). Persons with low educational attainment have greater difficulty understanding what is implied by more or less commonplace terms for different types of non-heterosexuality. The results of our survey however provide scant information for determining whether the same is true

in Norway. It is not possible to demonstrate any clear correlation between gay, lesbian or bisexual identity and level of educational attainment in our material. Admittedly, the proportion is somewhat higher in the highest and lowest-level educational attainment group if we apply a three-way split, but the differences are slight. We are unable to offer any conclusion either way, aside from the fact that the development project's efforts to devise readily comprehensible wording in the questions may have eliminated this as a source of error.

More than anything, the correlations drawn between non-response, response and age in our survey point to an underlying cause, which we might refer to as *intergenerational cultural differences*. Under-representation is presumably an expression of a change in attitude. The younger generation finds it less of a problem to answer questions about sexual orientation. Ultimately, therefore, the feasibility of collecting representative data on sexual identity will increase over time. It is conceivable that the same set of questions will yield better results within just five years. This makes it important to operate with a longer timeframe in discussions as to whether or not to include questions on sexual identity in the living conditions survey.

Finally, it is worth mentioning that we cannot discount that maybe a small proportion of the respondents are not responding truthfully to these questions. This is impossible to counter in question design while certain types of sexuality remain taboo-ridden in many circles and cultures. Whether this in the last analysis also represents a generational difference cannot be established at present.

2.7.3. Sequential effects

The section containing questions on sexual identity is slotted between the questions on diet and perceived discrimination. In the last section, the proportion of non-response present from the very start disappears, and the response rate for each of the questions on discrimination is 100%. It then reverts to the level at the start of the survey when we reach the next section, on social contact. All these instances occur in phone interviews. It as if the respondents "sit up and listen" when they take the questions on sexual identity and get involved in the questions on negative treatment and discrimination.

For the group of non-heterosexuals, the questions as to whether sexual attraction has caused problems for them may be leading in relation to the subsequent questions that focus on negative treatment. They also suffer from some overlap with the preceding questions. The immediate conclusion thus has to be that this location was ill advised. Note that this applies only to the subsequent questions on discrimination. In the planning process, it was proposed as a measure to emphasise the relevance of the questions on sexual identity to let them follow on from a section on quality of life. This appears to have worked well, among other things because item non-response for the first question is low.

To control for this effect, for another survey we should consider changing the sequence so that questions on discrimination do not follow on immediately from questions on problems due to non-heterosexual identity. It would also be interesting to look at these questions in context and conduct cognitive tests on them as a whole. This might tell us more about how people relate to questions that seek to measure subjective phenomena of this nature.

2.7.4. Non-substantive responses

Response quality is also affected by how many people "manage" to respond accurately within the scale available for each question. How high is the proportion of non-substantive responses to questions on sexual identity? If the proportion is high, is this connected with cognitive problems surrounding the questions, genuine problems in selecting a response that expresses the true value, or problems with the sensitivity of the interview setting? And does the proportion of such responses vary

within the different response modes of phone interview, in-home interview or self-administered questionnaire?

The two types of responses we examine here are however not identical in nature. Following the cognitive interviews in the development project, we concluded that a “don’t know” to these questions is a valid response category. It is for example often asserted that young people are increasingly unsure of their sexual orientation or identity. But equally, “don’t know” may represent cognitive problems with the question. It is therefore of interest to examine this response category in parallel with those who decline to respond, in order to compare and assess the extent of one or the other.

The first question in the section, on how sexuality affects quality of life, elicits relatively few non-substantive responses. In Table 2.7, we find that the result for both the phone and in-home interviews combined is around 1 or 2 per cent. A slightly larger number decline to answer than do not know what to answer. In the sample that received postal questionnaire forms, a very high proportion state that they are unsure of how sexuality affects their quality of life, and there are also many who decline to respond. This underlines that the postal sample consists of persons who are highly distinct from the main sample in the survey.

Table 2.7. Proportion with non-substantive responses to the question on the extent to which sexuality affects their quality of life, in total and in the different samples. Per cent

	Proportion responding "don't know"	Proportion saying they do not wish to answer	No.
Total (net sample)	1,2	1,5	6 455
In phone interviews	1,0	1,4	5 254
In in-home interviews	1,3	2,0	1 156
In postal sample	33,3	6,7	45

Source: Survey of Living Conditions 2008, Statistics Norway.

As for the question on sexual attraction on the whole, only a few have failed to respond or state that they are unsure. For the question on sexual identity, the proportion that decline to respond is high. Very few are in doubt about their response, and this time the same applies to the postal sample. Instead, we find a great many who decline to respond, at almost 18 per cent.

Table 2.8. Proportion responding “don’t know” or “do not wish to answer” to questions on sexual identity, in the different samples. Per cent

	Proportion responding "don't know"	Proportion saying they do not wish to answer	No.
Total (net sample)	0,5	8,1	198
In phone interviews	0,9	5,4	112
In in-home interviews	0,0	4,9	41
In postal sample	0,0	17,8	45

Source: Survey of Living Conditions 2008, Statistics Norway.

The results of these three tables may be summarised in three points:

- To the first two questions on how sexuality affects quality of life and sexual attraction, the differences in the proportion that is unsure and that decline to answer is not especially great – except in the case of the postal sample
- Only a very few are unsure when we get to the question on sexual identity, while the proportion that decline to answer shoots up. This applies across all three modes
- The respondents in the postal sample are highly differentiated from the rest of the sample in the survey. A great many of them are unsure of how their sexuality affects their quality of life; and subsequently (almost as) many decline to respond to the questions on sexual attraction and identity.

Here again, we maintain that these results confirm that the first two questions work well cognitively, in that there are not many who are either unsure or unwilling. The question on identity poses problems for a certain fraction of the respondents. We

believe this is unlikely to be due to cognitive problems with the question or because many of them are in doubt about their identity. Instead, it would appear that many of them choose to decline to respond because the topic is so sensitive. This is patently the case in the postal sample.

It is tempting to interpret this as an indication that the great majority who do not know how to respond to the first question on quality of life, do not respond because they are in doubt about their own sexuality, rather than because they lead a “covert” sexually active life. This interpretation is strengthened by the result we referred to in Table 2.9 in which we saw that the proportion in the postal survey who stated that their sexuality has little or no effect on their quality of life was *lower* than otherwise. This then makes it uncertain whether the postal survey largely consists of persons who are sexually active, but also sexually unsure of themselves, or of persons who are no longer sexually active.

2.8. Problems associated with the data collection process

2.8.1. Did interviewer gender have any effect?

Might the interviewer’s gender have had any influence on the distribution of responses regarding sexual identity? The Statistics Norway interviewers who participated in the focus groups during the development project believed this would have great influence on the extent to which certain respondent groups were willing to respond to the questions, and this applied especially to religious respondents with immigrant backgrounds. The same scepticism does not emerge from the UK ONS study, in which neither heterosexual nor homosexual informants express any such expectation (Betts 2009). Are we seeing any effect in our material – some correlation between the tendency to decline to respond or to deny non-heterosexual identity if the respondent and interviewer are opposite sexes?

Table 2.9. Different response types to questions on sexual identity in the interview survey, by gender of interviewer. Per cent

	Proportion responding "don't know" or "do not wish to answer"	Proportion stating a non-heteros exual identity
Total (net sample)	5,90	1,10
When the interviewer is of the same sex	7,10	2,20
When the interviewer is of the opposite sex	3,70	0,30

Source: Survey of Living Conditions 2008, Statistics Norway.

If we examine the question on sexual identity, this being the more pertinent, since it results in the highest proportion of non-substantive responses out of questions that had the intended effect, we find a certain consistency between interviewer gender (opposite or same sex as respondent) and the tendency to provide non-substantive responses. A higher proportion are unsure or unwilling to respond if the interviewer is the same sex as the respondent. The same tendency, only weaker, appears to apply to the willingness or lack thereof to state that one’s identity is gay, lesbian or bisexual. If the respondent and interviewer are the same sex, relatively more persons state their identity as non-heterosexual.

Our provisional conclusion is that the relationship between own gender and that of the interviewer appears to have a certain effect on the extent to which respondents state a different sexual identity, or the extent to which they openly express uncertainty about how to respond. The figures however are uncertain.

2.8.2. How successful was data collection with optional response mode for the organisation?

How successful was data collection with optional response mode for the organisation? No particularly negative experiences were reported although a certain added effort is involved in dealing with multiple versions of questionnaires and managing the postal supplements alongside them.

2.8.3. Interviewer debriefing

The interviewers were known in advance to be sceptical. Accordingly, a general skills coaching programme on sensitivity issues was run prior to the survey. After data collection had been completed, focus group interviews were held to debrief the interviewers on their experiences. The outcome of these was that there had been very few problems in asking these questions in Survey of Living Conditions 2008. The interviewers were pleasantly surprised at how little “fuss” the topics had caused. It was pointed out that a number had been surprised; they had dreaded asking the questions, but discovered that their concerns were groundless. There were also no reports of any particular reactions from respondents to Statistics Norway as a result of these questions

2.8.4. Measures to optimise organisation of the data collection

What lessons were learned that could be applied to optimise data collection in future?

In order to improve our ability to analyse the effects of multi-mode design, we need to keep more records on how data collection was done. Examples would be what mode (phone or in-home) was used in each of the different contact attempts. This would also have allowed us to calculate non-response in each of the two modes. We also lack data on how these questions worked in settings where they may have been disclosed to other family members, i.e. information about anyone else sitting in on the interview. This has been done in the past, for instance in the living conditions survey among immigrants, and it might be of interest to investigate on another occasion, for example in follow-up interviews with the respondents.

Was it wise to create valid “Do not wish to answer” options throughout the entire section even if these were not read out to the respondent during the interviews? There was a relatively high proportion of non-substantive responses throughout the section. The reason for this format was on grounds of sensitivity, and in order to satisfy respondents who are unsure of their own sexuality or of disclosing it, by making this a valid response category. In the UK, they have currently decided to abandon this type of response category. In the ONS cognitive interviews, there was no indication that this should have been necessary. On the contrary: in all groups, it was indicated that a category of this kind would tend to direct attention at non-heterosexuality. However, we still maintain that being unsure of one’s sexuality can be regarded as a genuine situation, and should therefore also be included among the valid response categories.

Ultimately it may be worth discussing whether field work should be organised so that the gender of the interviewers is the same as the respondent’s. This is good practice in surveys of immigrants, but will still be adapted to other needs, such as the interviewers’ language skills, geography etc. However, there is some indication that this may reduce under-reporting of non-heterosexual identity.

2.9. Summary of the methodology evaluation

As regards *representativity* we can draw the following conclusions:

- Unit non-response in the survey is not higher than in other surveys
- Unit non-response for the sample that received a “standard” postal questionnaire (without the questions on sexuality) is relatively low
- No respondents broke off the entire interview on reaching the questions on sexual identity
- Persons who declined to answer questions on sexual attraction and identity are predominantly women, aged 67+, and persons residing in small communities and in sparsely populated districts, compared with those who respond to the questions. This is to a large extent due to refusals to answer the first question, on attraction.

- Since refusal to respond to these individual questions does not result in persistent item non-response, i.e. respondents permanently dropping out of the survey as a result of these questions, it gives rise to no bias in the other data from the survey. We can therefore conclude that the questions have not impaired the quality of the rest of the survey.
- The proportion that omitted to respond to the questions on sexual attraction and identity, but that otherwise participated in the survey by phone interview, in-home interview and in the postal questionnaire varies, from negligible at the beginning to large towards the end of the section. Item non-response is extremely high in the postal survey. This however only applies to persons attracted to the same or both sexes. In other words, we can conclude that representativity is fair for the questions on the significance of sexuality and sexual attraction. It is also acceptable for questions on sexual identity.
- The postal survey contains extensive inherent bias, and the estimates are skewed if considered as an isolated sample. In terms of the aim of letting the postal option provide an alternative for those who find it embarrassing to respond to the questions in an interview setting, this mode did however work well. The proportion that respond by self-administered questionnaire form is relatively high among women, elderly persons and persons in sparsely populated districts. In terms of the aim of seeking to elicit responses from those with a concealed sexual identity, it would appear that the postal survey has limited effect. This makes it both unsuccessful and successful: it secures a relatively small number of substantive responses from the most “prudish”, or shy, respondents. Such persons may also find that the survey takes their attitudes seriously; which is certainly a positive effect, almost as a measure to reduce the response burden. But as regards the estimates for non-heterosexual identity, this strategy is of no consequence, as we obtained an insufficient number of responses.
- If item non-response had been less biased in relation to gender, age, place of residence and educational attainment, the proportion of gays, lesbians and bisexuals would have been higher. How much higher is impossible to say. This conclusion is supported by the fact that we have to reckon with a certain amount of under-reporting of such identities, including among those who do respond, because the questions are still more or less taboo in many groups.

Problems concerning *measurement error* and *response quality*:

- The first two questions (on quality of life and sexual attraction) pose no problems for representativity. The results for the question on sexual identity are somewhat more uncertain, yet still fully acceptable. The last three (almost identical) questions on any social consequences of non-heterosexual identity are not satisfactory in their effect.
- There are indications that we risk sequential effects from the questions on sexual identity if the questions that follow on from them concern discrimination of various types. The location should be changed in any subsequent survey that includes them.
- The main challenge in relation to response quality in any subsequent rounds will concern whether it is feasible to obtain responses from the segment that is not open about its sexual orientation. How might the collection instrument contribute to this?

Problems associated with data collection

- It would appear that interviewer gender has some influence on the proportion that state non-heterosexual identity; if the interviewer and respondent are of opposite sexes, fewer state that they are gay, lesbian or bisexual. However, this correlation is uncertain
- Data collection worked satisfactorily with optional response-mode for the organisation
- Interviewer scepticism about asking the sensitive questions was unfounded – the measures were popular and no strongly negative reactions were reported

References

- Betts, P. (2007) *Developing survey questions on sexual identity: UK experiences of administering survey questions on sexual identity/orientation*. Data Collection Methodology – Social Surveys, Census and Social Methodology Division, Office for National Statistics.
- Betts, P. (2009) *Developing survey questions on sexual identity. Cognitive/in-depth interviews*. Data Collection Methodology, Office for National Statistics. July 2009.
- Dalgaard-Rørvik, Therese (2007) *Samordnet levekårsundersøkelse 2006-tverrsnitt. Tema: Arbeidsmiljø. Dokumentasjonsrapport*. Notater 2007/47, Statistisk sentralbyrå. Oslo/Kongsvinger.
- Dillman, D. (2007) *Mail and Internet surveys. The Tailored Design Method*. 2007 Update. John Wiley, New Jersey.
- Groves, R. M., J. F. Fowler, M. P. Couper, J. M. Lepkowski, E. Singer and R. Tourangeau. (2004) *Survey Methodology*. Wiley & Sons, New Jersey.
- Gulløy, E., G. Haraldsen & T. M. Normann. 2009. *Kartlegging av seksuell identitet i Statistisk sentralbyrås levekårsundersøkelse. Dokumentasjon av bakgrunn og utvikling av spørsmål*. Notater 2009/22. Statistisk sentralbyrå.
- Hegna, Kristinn (2007) *Homo? Betydningen av seksuell erfaring, tiltrekning og identitet for selvmordsforsøk og rusmiddelmisbruk blant ungdom. En sosiologisk studie*. Rapport 01/07. Norsk institutt for forskning om oppvekst, velferd og aldring (NOVA).
- Hegna, Kristinn, Hans W. Kristiansen & Bera Ulstein Moseng (1999) *Levekår og livskvalitet blant lesbiske kvinner og homofile menn*. Norsk institutt for forskning om oppvekst, velferd og aldring. Oslo : NOVA Rapport 1/99.
- Hougen, Hanne C. (2006) *Samordnet levekårsundersøkelse 2005-tverrsnittsundersøkelsen. Dokumentasjonsrapport..* Notater 2006/39, Statistisk sentralbyrå. Oslo/Kongsvinger.
- Kleven, Ø. & T. M. Normann. (2009) *Metodetester av spørsmål om arbeidsmiljø i levekårsundersøkelsen*. Notater 2009/18. Statistisk sentralbyrå.
- Moseng, Bera Ulstein (2002) *Lesbiskes psykiske helse*. Norsk institutt for forskning om oppvekst, velferd og aldring. Oslo : NOVA Rapport 4/2002
- Moseng, Bera Ulstein (2005a) *Skeive dager 2003 - en rusundersøkelse*. Norsk institutt for forskning om oppvekst, velferd og aldring. Oslo : NOVA Rapport 3/2005
- Moseng, Bera Ulstein (2005b) *Lesbiske og homofile arbeidstakere - en pilotundersøkelse*. Norsk institutt for forskning om oppvekst, velferd og aldring. Oslo : NOVA Skriftserie 3/2005
- Mørk, Eiliv (ed.) (2006) *Aleneboendes levekår*. Statistiske analyser 81. Oslo/Kongsvinger
- Normann, Tor Morten (red) (2007) *Ungdoms Levekår*, Statistiske Analyser 93/2007 Statistisk sentralbyrå.

- Rørvik, Therese. (2008) *Samordnet levekårsundersøkelse 2007- tverrsnitt. Tema: Boforhold. Dokumentasjonsrapport*. Notater 2008/37, Statistisk sentralbyrå. Oslo/Kongsvinger.
- Statens Folkehelseinstitutt (2005) *Homosexuellas, bisexuellas och transpersoners hälsosituation. Återrapportering av regeringsuppdrag att undersöka och analysera hälsosituationen blant hbt-personer*. Statens Folkehelseinstitutt. Rapport nr A 2005:19
- Taylor (2007). *ONS Sexual Identity Project. Developing survey questions on sexual identity. Report on National Statistics Omnibus survey trials 1 and 2*. Social Surveys, Census and Social Methodology Division, Office for National Statistics.
- Thomsen, I., Ø. Kleven, J. H. Wang & L. Zhang. (2006) *Coping with decreasing response rates in Statistics Norway. Recommended practice for reducing the effect of nonresponse*. Reports 2006/29. Statistics Norway.
- Tronstad, Kristian Rose (2009) *Opplevd diskriminering blant innvandrere med bakgrunn fra ti ulike land. Rapporter 2009/47*, Statistisk sentralbyrå Oslo/Kongsvinger.
- Wilhelmsen, Marit. (2009) *Samordnet levekårsundersøkelse 2008 – Tverrsnittsundersøkelsen. Dokumentasjonsrapport*. Notater 2009/40, Statistisk sentralbyrå Oslo/Kongsvinger.
- Wilmot, A. (2007) *In search of a question on sexual identity*. Paper presented at the 62nd Annual Conference of the American Association of Public Opinion Research. Office for National Statistics, UK. May 2007.

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