If possible the complaint would be settled on the spot and the participant would be given extra information or an explanation. With serious complaints, if the participant requested so or when personal damage was done the project leader of the Pienter project at the RIVM was informed (annexe 7: complaint form) and the project leader would settle the issue as soon as possible but at least within two weeks.
All serious and often mentioned complaints were registered. The RIVM warranted financial compensation when personal damage was done.

In total, 12 complaint forms were filled in after oral reported complaints and five letters with one or more complaints were received at the RIVM from participants. Reasons for complaining were:

- Hypocrisy that sera were not analysed for HIV antibodies.
- Receive a request to fill in a non response questionnaire while the participant had already given blood and filled in a questionnaire.
- Questions too personal (n=2)
- Not called back by the administrative team as agreed.
- A field worker getting a little blood on her hand while drawing blood from one child and continuing with an other person without having washed her hands.
- An administrative employee having deliberated on the Pienter project with a housekeeper of the invited person instead of the invited person him/herself.
- Blaming the child of the blood draw failure.
- Coming to the walk-in consultation hour at night around closing time and the field workers were gone (n=2).
- Inviting young children unfair since they can't make a choice themselves.
- Not polite to make an appointment for someone without consulting the person first.
- The gift voucher was considered bribery (n=3).
- The blood sampling had caused a bruise (n=2).
- Field workers not capable enough to draw blood from a baby.
- Result of the serum analysis not reported to participants.

All these complaints were handled by the project leader if the complaining person wanted so and an explanation or apology were given. Some persons declared to just want to make a comment and did not want to be contacted by the project leader. No financial compensation was considered necessary by the project leader or by the complaining persons but the persons who came to the clinic while the staff was gone and the person who wasn't called back, were sent a gift voucher anyway.

CAIF S.A.
María Bernarda Belay
Farmacéutica
Co - Directora Técnica
M.P. 15.148

Also the administrative staff have received remarks and complaints while reminding the invited persons by phone. The most heard remark was that individuals felt their privacy got invaded by the study and that they did not see the use of the study.

2.12 Press and publicity

The RIVM covered publicity in regional/provincial and national media on the start of the project in October '95.
Two weeks before the onset of the study in a municipality, the Public Health Service informed general practitioners and the local health services in writing. Also, a standard press release was available for the local press/radio.

2.13 Ethical issues and privacy

The study proposal was submitted to the Medical Ethical Committee of TNO and was approved. Some suggestions were included in the definitive design.

The sample of the population registers were read in the computer and secured with passwords. The preparations for the mailing took place in one, lockable, administrative room from where all telephone calls were also made. All samples from the municipality registers were anonymised after the consultation hours had taken place in a specific municipality and papers with personal data on them were destroyed. The PHS were informed once the database had been anonymised. All data were analysed with the personal anonymised code (U-number).

2.14 Data-entry and validation

Questionnaires and vaccination data were double-entered in the computer in a programme developed at the RIVM (B. Bloemberg) with the exception of answers on open questions; those data were entered only once (at the first entry). The second entry was done by another person. When there was an inconsistency between the first and second entry, the computer gave a bleep and the typist had to answer the question whether the first or second entered answer was correct before she could continue typing.

2.15 Data-analysis

Data were analysed in the Statistical Package SAS.

A comparison for the variables date of birth and sex provided in the questionnaire and in the file of the population registers was made to select not-invited persons who did fill in the questionnaire and possibly donated blood (e.g.. instead of a family member). When a discrepancy was found between the date of birth provided in the questionnaire and the date of birth in the file of the population register (n=168), this was in most instances because individuals accidentally filled in the current year instead of their year of birth or individuals had switched month and day. It also happened that the dates of birth only differed one or two days. In that case the date in the questionnaire was considered the right one.
When two persons of the same household were invited, questionnaires could have been switched accidentally (n=10).
If only the sex differed and not the date of birth, the sex in the questionnaire was considered the right one (n=15). When none of the above mistakes could be retrieved, the person was considered a non-invited person and the invited person was considered an absolute non-respondent (n=38).

Answers to questions that were not plausible (e.g. marital status was divorced for a 17-year old person) or inconsistent, wrong referenced answers (filling in a question when one should have skipped it on the basis of the answer on the previous question), or 'missed' answers (e.g. filling in number of glasses beer drunk per week while not have filled in one did drank beer weekly) were checked in the questionnaire and corrected if possible.

An age-stratified sample was drawn from the population register and therefore the age distribution of the invited persons did not match the true age distribution of the population of the municipality meaning certain age strata would be overrepresented or underrepresented. This was corrected for in the analyses: by weighting the frequencies within an age group by the proportion of the age group in the municipality, the estimate of the proportion in the population of the municipality was found. As the number of inhabitants in each region was approximately equal (Table 1) and the municipalities were drawn proportional to their size, the proportion of each municipality could be added up and divided by the total number of clusters (=municipalities) to obtain an estimate for the Dutch population (0-79 years or a specific age range).

CAF S.A.
María Bernarda Belay
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M.P. 15.148

The estimate of the proportion in the Dutch population (P_{mod}) was given by:

$$P_{\mathrm{mod}} = \frac{1}{n_c} \sum_{i=1}^{n_c} \sum_{s=1}^{s} \frac{N_{is}}{N_{i.}} \cdot p_{is}$$

population

N_c number of clusters (municipalities in the Netherlands)

N_i size of sampled cluster (number of inhabitants)

N_{is} size of stratum s in cluster I
(number of inhabitants per age stratum in the cluster)

$N = _i$ number of units

P_{is} proportion in stratum s and cluster I

P_i proportion per cluster

sample

n_c number of clusters (municipalities in the sample)

n_i size of sampled cluster (number of inhabitants)

n_{is} size of stratum s in cluster I
(number of inhabitants per agestratum in the cluster)

$n = _i$ number of units

p_{is} proportion in stratum s and cluster I

p_i proportion per cluster

The nation-wide sample consisted of 40 municipalities. For the eight municipalities with a low vaccination coverage the proportions were calculated similarly.
In this report the distribution of answer categories weighted by age are given for participants in the Pienter project (who gave blood and had filled in a questionnaire) from the nation-wide sample and the sample of municipalities with a low vaccination coverage.
Comments on the questionnaire, variables on demographic data and variables concerning vaccinations (participation in the NIP, opinion on necessity of vaccinations from the NIP, Hib vaccination among young children, (re)vaccination of DTP and tetanus alone, vaccination against influenza, hepatitis A and B) and variables on opinion on own health are described and commented on in the report. The distribution of other variables from the questionnaire are described in Appendix II.
Demographic variables, variables on religion and vaccination status (participation in the NIP, immunisations against DTP-IPV, MMR, Hib, hepatitis A and B, influenza) were analysed for both the national sample and the low immunisation coverage sample. The other variables (variables on travelling, health, activities that are possible risk factors for infectious diseases, sexual transmittable diseases, smoking and alcohol consumption) are only described for the national sample since these are non-relevant for the study objectives focusing on immunisations. Data from the national sample were compared with data from the Dutch Central Bureau for Statistics (CBS) and the Dutch Influenza Foundation.

2.16 Classification of religion

A classification of religion was made to evaluate the differences in opinion on the necessity of vaccinations in the National Immunisation Programme between religious groups.
The group of orthodox reformed consisted of persons belonging to the following religious groups: 'Het Gekrookte Riet', reformed congregations (in the Netherlands and North-America), reformed congregations in the Netherlands and old-reformed congregations. Persons belonging to the orthodox reformed are known to refuse vaccination on grounds of their religion (16, 17).
About a quarter of the persons belonging to the reformed bond are known to refuse vaccination on the grounds of their belief. That is why this religious group was considered separately.
Persons not belonging to the orthodox reformed and reformed bond were denoted as persons belonging to an 'other or no religion'.

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M.P. 15.148

2.17 Classification of Social Economic Status

The classification of social economic status (SES) was made on grounds of the highest accomplished education for adults (17-79 years) and the highest accomplished education of the parents of younger participants (see Appendix II for classification of education).
Persons with primary school education or a lower (vocational or general) secondary education were classified as persons with a low SES. Persons with an intermediate (vocational or general) secondary education or with a higher general secondary education were denoted as persons with middle SES and persons with a higher vocational secondary or university education were classified as persons with a high SES.

2.18 Response in the Pienter project

All 48 municipalities and their Public Health Services were willing to participate in the Pienter project. In total 18.217 persons were invited, 23 less than anticipated. This was mostly due to the small communities who did not always have enough inhabitants in the age group of 0 years. This accounted for 18 missing persons out of 4 municipalities. In two municipalities we found two individuals twice in the sample leading to 4 missing persons. This was possible because the sample drawn did not include the right number of persons per age group and therefore an additional sample was drawn to complete the sample of 380 persons. Accidentally this additional sample included already sampled persons though. The last missing person was due to the coincidental finding that one person had moved out of the municipality between the drawing of the sample and the start of the survey.

In table 2 the proportion of different response categories is shown. Initial participants are the persons who came to the regular consultation hours (on Monday and Tuesday). Additional participants are the ones who gave blood at the extra consultation hour on Wednesday after they were reminded by the Pienter staff members. Partial respondents were divided in participants who had filled in the original questionnaire and respondents who had filled in the short non-response questionnaire.

Table 2 Response in the Pienter project

	national sample		low immunisation coverage sample	
	n	mean	n	mean
responders (questionnaire and serum)	8359	55.0%	1589	52.5%
initial participants	*7904*	*94.6%*	*1531*	*96.3%*
additional participants	*455*	*5.4%*	*58*	*3.7%*
partial responders (questionnaire only)	2671	17.6	562	18.6%
original questionnaire	*1618*	*60.3%*	*375*	*66.7%*
non-response questionnaire	*1053*	*39.7%*	*187*	*33.3%*
non-responders (population register information)	4159	27.4%	877	29.0%
total invited	**15189**	**100.0%**	**3028**	**100%**

In total 146 successful house visits were made; 109 for individuals with the Dutch nationality, 17 for individuals with the Turkish nationality and 20 for individuals with the Moroccan nationality.

In the national sample, 8359 persons gave blood. Thirteen of those 8359 have not filled in a questionnaire at all and one individual has filled in a non-response questionnaire. So 8345 participants gave blood ánd filled in an original questionnaire. In the sample of the municipalities with a low immunisation coverage, 1589 persons did so leading to a total of 9954 responders. In table 3 the distribution among the different age groups is shown.

Table 3 Number of responders (questionnaire and serum) per age group

	national sample	low immunisation coverage sample
0-11 years (A)	2280	409
12-16 years (B)	572	104
17-79 years (C)	5493	1076
0-79 years (total)	8345	1589

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M.P. 15.148

3. RESULTS

3.1 The questionnaire

This chapter describes if the participant or a proxy filled in the questionnaires and reasons mentioned why the questionnaire was filled in by another person than the participant. Furthermore questions that had the most missing values, wrong references and proportion of 'don't know' answers are described.

3.1.1 Filling in of the questionnaire

In the national sample 2213 (97%) of the A-questionnaires for 0-11-year olds were filled in by the parents or caretakers of the invited child, 52 (2%) by other persons (other family and staff of the Pienter project) and 15 (1%) persons did not fill in this question.
Of the 12-16-year olds (B-questionnaires) 464 (84%) filled in the questionnaire themselves, 90 (14%) were filled in by the parents, 11 (1%) by another person and 7 (1%) persons of this age range did not fill in this question.
Five thousand and two hundred and forty-four(96%) of the C-questionnaires (17-79-year) were filled in by the invited persons themselves, 97 (2%) were filled in by a family member of the invited person and 51(1%) were filled in by a staff member of the Pienter project. One hundred and two (1%) persons did not fill in this question.

In the A-questionnaire no question was included on the reason the invited child did not fill in the questionnaire for obvious reasons.
For the 12-16-year olds, most of the parents (64%) who filled in the questionnaires for their child did so because they thought their child was too young to do it him/herself. Other reasons were mostly 'no time', 'don't feel like it' and 'not able to'.
The 17-79-year olds gave a variety of reasons why the invited persons did not fill in the questionnaires themselves (not able to, personal reasons, no time, language and understandibility problems).

3.1.2 Understandibility of the questionnaire

In total 480 persons (6%) filled in that one or more questions were not clear to them.
One-hundred and forty-nine (6%) persons who had filled in a A-questionnaire thought that one or more questions were not clear. The following questions were noted most: playing in the sandbox (48 times) and bare hands in mud/earth (44 times), both mostly because individuals had

difficulty estimating the mean time playing/gardening since it was dependent on the season. Furthermore the question on necessity of the different vaccinations in the NIP were noted upon 28 times because individuals found themselves often not competent enough to answer this. And the question on chronic diseases was remarked on 25 times mostly because in those cases the children were too young to know whether they had these diseases or not and individuals did not always know all diseases asked in the questionnaire.

Among the 49 (9%) remarks on one or more questions in the B-questionnaires there was no question that stood out. Almost every question was remarked upon once or more times.

There were 282 (5%) persons who had filled in a C-questionnaire and found one or more questions difficult to answer. The question on necessity of the vaccinations in the NIP was noted most (60 times). Again individuals did not feel competent to pronounce upon this matter. The diagnosis of sexual transmittable diseases (STD's) yielded 39 remarks, mostly because individuals did not know the diseases named. The questions on hepatitis A and B together were also remarked on 39 times because often individuals did not know which hepatitis they were vaccinated for. And the question on chronic diseases was noted upon 32 times in the C-questionnaire, mostly because individuals did not know all diseases asked for.

3.1.3 Missing values

The question that produced the most missing values was the question on which group of the dutch reformed one belonged to. This question had 350 (25%) missing values. Secondly the question on whether one was immunised for hepatitis A with gammaglobulines (n=62, 11%) or one was vaccinated with active immunisation (n=258, 46%) yielded a lot of missing values. Thirdly the question on whether children put sand in their mouth while playing in the sandbox had many missing answers (n=121, 5%).

3.1.4 'Don't know' answers

The questions that produced the most 'don't know' answers were again the question on Dutch Reformed school (n=178, 13%) and on sort of vaccination against hepatitis A (n=68, 12% for immunisation with gammaglobulines and n=75, 13% for active vaccination).

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M.P. 15.148

3.1.5 Wrong references

The questions most wrongly referenced were the questions on participation in the temporary NIP as a child and joining the military army which was supposed to be answered just by individuals under 50 years of age according to the reference in the questionnaire but many persons over 50 did fill in those questions. Apart from that, the reference on joining the army was misprinted in the questionnaire, it was supposed to be answered by all persons of 17-79 years.
The second reference that was often missed by participants was in the question on diabetes. Many individuals did fill in the questions on diabetes prevalent in the family when they did not have diabetes themselves. There are no numbers on these wrong references because the data-typists were not supposed to enter answers on wrong-referenced questions.

3.2 Demographic information

3.2.1 Distribution of sex

Table 4 Percentage of men among the participants

	n (total)	n (men)	mean % man	range
national sample				
0-11 years	2278	1180	52.2	36.3-69.4
12-16 years	572	272	46.5	19.7-76.5
17-79 years	5492	2488	44.3	33.8-54.3
total	8342[1]	3940	45.8	38.0-53.1
low immunisation coverage sample				
0-11 years	408	207	46.8	39.0-58.3
12-16 years	104	57	54.5	36.9-70.8
17-79 years	1075	491	45.0	38.7-50.3
total	1587[2]	755	46.9	42.5-52.0

1
2 <8345 because of missing values
<1589 because of missing values

From Table 4 it can be seen that in both samples the mean percentage of participating men was lower in the adult group (17-79 years) and because of the high number in this group this is also seen in the total percentage of men. In the national sample the mean percentage of male participants in the children group (0-11 years) was higher than the percentage female participants but in the adolescents (12-16 years) the percentage of males was lower. The opposite was seen in the low immunisation coverage sample.
The Central Bureau of Statistics (CBS) found that the Dutch population was composed of 49.5% men on 1 January 1995 (15).

In Figure 1 the number of responders (questionnaires and blood) per age group is shown for both men and women from the national sample. One can see that the number of responders in the two youngest age strata is highest which can be explained by the number of persons invited in those age groups, which was twice as high as in the other age groups. Furthermore once again one can see that there were more participants of the female sex in the adult age groups (15-79 years) while this was not so obvious in the younger age groups.

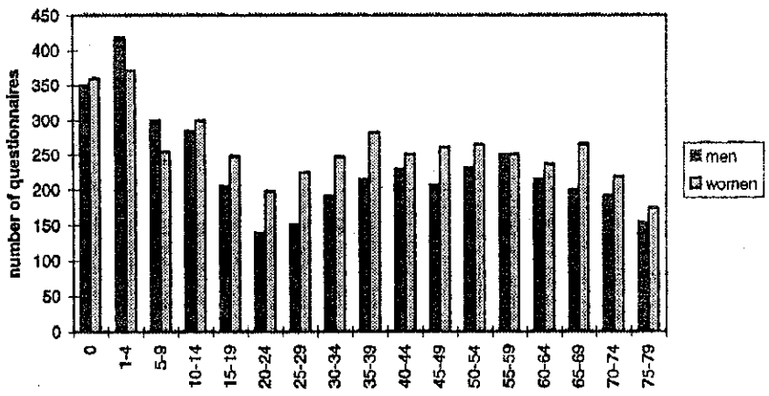

Figure 1 Number of responders per age stratum in the national sample, stratified by sex

3.2.2 Social economic status

The distribution of social economic status stratified by age group and sample is shown in table 5.

Table 5 Distribution of social economic status in the age groups

	national sample									
		low SES			middle SES			high SES		
	n (total)	n	mean	range	n	mean	range	n	mean	range
0-11 years	2242	658	33.4	3.8-62.7	860	35.3	7.2-51.9	724	31.2	10.5-57.8
12-16 years	557	219	41.4	0.0-82.9	159	27.1	0.0-64.9	179	31.4	0.0-86.3
17-79 years	5449	3133	52.2	35.0-76.0	1418	30.6	20.0-41.0	898	17.2	4.1-39.2
total	8248[1]	4010	48.5	33.3-73.6	2437	30.7	19.9-41.4	1801	20.8	6.6-40.5
	low immunisation coverage area									
0-11 years	403	161	42.0	32.3-56.4	143	30.8	20.4-41.7	99	27.2	17.0-37.1
12-16 years	102	59	60.8	41.4-80.0	28	25.4	6.8-52.6	15	13.8	0.0-35.3
17-79 years	1069	741	64.6	53.2-69.6	225	25.4	21.6-29.0	103	10.0	4.9-17.8
total	1574[2]	961	60.4	50.3-66.8	396	26.4	23.4-30.8	217	13.2	9.9-20.7

1
2 <8345 because of missing values
<1589 because of missing values

In Table 5 it can be seen that in the national sample most adult participants have a low SES while for children and adolescents the proportion for each SES class was approximately equal. Furthermore the mean SES is lower in the low immunisation coverage sample than in the national sample.

The CBS found that 41.8% of the Dutch population of 15-64 years could be denoted having a low SES, 38.7% a middle SES and 19.4 a high SES, when using the same classification for SES as in the Pienter project persons (15).The participants of 15-64 years of age in the national sample showed the following distribution of SES: 48.0% low, 32.4% middle and 19.6% high.

3.2.3 Marital status

Persons of 0-11 years of age were not asked for their marital status for obvious reasons. The marital status of persons of 12-16 was asked for and turned out to be single for everybody, both in the national sample as well as in the low immunisation coverage sample.

The marital status of the adults (17-79) is shown in Table 6.

Table 6 Marital status of the participants of the Pienter project (17-79 years)

	national sample			low immunisation coverage area		
	n	%	range	n	%	range
	5486[1]			1073[2]		
single	400	23.0	14.0-53.3	45	21.3	14.7-25.7
sharing house	3647	9.1	3.0-17.3	776	4.8	1.1-12.7
married	871	60.0	24.9-76.7	144	66.6	58.7-71.2
divorced	349	3.7	0.0-16.1	80	2.5	0.4-5.4
widow(er)	219	4.1	1.3-8.0	28	4.8	2.1-7.2

1 <5493 because of missing values
2 <1076 because of missing values

The CBS has numbers on total Dutch population and does not provide the option 'sharing house'. When joining this option with 'single', all Pienter participants of the national sample together show the following division of marital status: single 44.8%, married 48.7%, divorced 3.1% and widowed 3.4%. The CBS found the numbers: 43.8%, 45.6%, 4.9% and 5.7% (15).

1336

3.2.4 *Nationality, native country and ethnicity*

The nationality and native country of participants of the Pienter project is shown in Table 7. Some individuals filled in they had two or three nationalities but only the first nationality was used.

Table 7 Nationality and native country of the participants of the Pienter project

	national sample					
	Nationality			Native country		
	n	%	range	n	%	range
	8313[1]			8328[1]		
Dutch	8046	96.6	83.2-100.0	7934	94.1	79.2-100.0
Turkish	62	0.7	0.0-7.6	41	0.8	0.0-7.3
Moroccan	79	1.0	0.0-8.7	39	0.7	0.0-6.0
North-European	41	0.5	0.0-2.3	79	1.1	0.0-4.2
Other European	27	0.5	0.0-3.8	30	0.4	0.0-1.9
Other	58	0.7[2]	0.0-3.2	205	3.0[3]	0.0-13.8
	low immunisation coverage area					
	1582[4]			1586[4]		
Dutch	1554	98.3	96.1-100.0	1537	96.8	93.9-99.3
Turkish	1	0.0	--	0	--	--
Moroccan	10	0.6	0.0-2.2	4	0.3	0.0-1.9
North-European	6	0.4	0.0-1.9	13	0.9	0.0-2.0
Other European	3	0.2	0.0-0.9	4	0.3	0.0-0.9
Other	8	0.4[5]	0.0-1.7	28	1.6[6]	0.3-3.5

[1] <8345 because of missing values

[2] Other country of nationality: Indonesia, Surinam, the Netherlands Antilles/Aruba, China, Hong Kong, Vietnam, USA, Kenya, Somalia, Sri Lanka, Iran, Colombia, Zaire, India, Chile, Tunisia, Norway, Brazil, Nigeria Uganda and Libya.

[3] Other country of nationality: Canada, Colombia.

[4] <1589 because of missing values

[5] Other native countries: Indonesia, Surinam, China, Hong Kong, Vietnam, USA, Kenya, Somalia, Sri Lanka, Iran, Zaire, India, Ghana and Argentina.

[6] Other native countries; Netherlands Antilles/Aruba, Vietnam, USA, Kenya, Canada, Colombia and Nepal.

The CBS found that on 1 January 1995 95.1% of the Dutch population had the Dutch nationality, 1.2% was Turkish and 1.0% Moroccan (15).
Furthermore the CBS found that 91.0% of the Dutch population was born in the Netherlands, 1.1% in Turkey and 0.9% in Morocco.

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M.P. 15.148

3.2.5 Religion

The CBS found that 7.0% considered themselves reformed (i.e. reformed church, reformed church (Vrijgemaakt), Christian reformed church in the Netherlands, reformed congregations and old-reformed congregations. This was 6.9% for the participants of the Pienter project in the sample(Appendix II, table B5).
Furthermore the CBS found that 14% of the Dutch population considered themselves Dutch reformed (16.0% for participants of the Pienter project), 33% roman catholic (32.6% for participants of the Pienter project), 40% none (34.7% for participants of the Pienter project), 4.3% Islamic (2.7% for participants of the Pienter project) and Hindu 0.5% (0.2% for participants of the Pienter project) (15).

3.3 National immunisation programme and religion

This chapter covers the vaccination history of the participants of the Pienter project with respect to the National Immunisation Programme, related to their religious background.

In the national sample a mean of 0.7% (n=58) persons belonged to the orthodox reformed, 1.2% (n=111) to the reformed bond and 98.1% (n=8139) to other religions. Thirty-seven persons did not fill in the question about their religious background. In the low immunisation coverage sample this was 16.0% (n=255), 11.2% (n=178) and 72.8% (n=1150). The religious background of 6 persons was not reported.
The orthodox reformed in the national sample were spread over 15 municipalities and persons belonging to the reformed bond over 16 municipalities. Persons belonging to an other or no religion were seen in all 40 municipalities. All religious groups were seen in all eight low immunisation coverage area-municipalities.

3.3.1 Participation in the National Immunisation Programme

Participants were asked to state whether they had participated in the contemporary NIP in their youth. The Dutch NIP has existed since 1952, that's why only answers from individuals under 40 years of age were analysed. Individuals under 40 years of age belonging to one of the religious groups against vaccination were spread over 11 municipalities in the national sample, so were the persons belonging to the reformed bond. Persons with an other or no religion were found in all 40 municipalities. All eight municipalities in the low immunisation coverage sample held the different religious groups.

In Table 8 one can see the difference in participation in the NIP for the different religious groups and for the two samples. In both samples the orthodox reformed participated clearly least of all in the NIP. The individuals of the reformed bond and the individuals of an other or no religion participate equally in the national sample but in the low immunisation coverage sample the individuals belonging to the reformed bond participate less than individuals of an other religion.
Also the difference between the orthodox reformed and reformed bond group in the national sample and in the low immunisation coverage sample is clearly shown. Both the individuals of the orthodox reformed group and the reformed bond participate clearly more in the NIP in the national sample than in the low immunisation coverage sample although the range is wide because of the small numbers. There's virtually no difference in reported participation in the NIP between the groups with an other or no religion between the national sample and the low immunisation coverage sample.

CAIF S.A
María Bernarda Belay
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Co - Directora Técnica
M.P. 15.148

There are no clear differences in the percentage of individuals that said to have participated in the NIP and brought there vaccination papers with them for the different religious groups although it seems that a slightly higher percentage of the participants from the low immunisation coverage sample brought their vaccination certificates with them.
In the national sample 24 (24.5%) persons reported they had not participated in the NIP as a child but did bring a vaccination certificate and 14 (21.4%) persons reported they did not know whether they had participated in the NIP as a child but did bring a vaccination certificate. In the low immunisaton coverage sample these numbers were 13 (11.5%) and 2 (20.2%).

Table 8 Participation in the NIP and bringing the certificate for different religious groups

		national sample						
		n (total)	n	% participation NIP	range	n	% NIP certificate brought with	range
orthodox reformed		40						
	yes		23	67.0	0.0-100.0	19	88.5	0.0-100.0
	no		16	32.5	0.0-100.0	0	0.0	--
	don't know		1	0.5	--	1	100.0	--
reformed bond		61						
	yes		58	94.6	51.2-100.0	51	76.5	0.0-100.0
	no		3	5.4	0.0-48.8	1	50.0	--
	don't know		0	0.0	--	--	--	--
other or no religion		4566						
	yes		4399	95.1	81.1-100.0	3343	70.3	40.5-83.6
	no		86	2.2	0.0-11.5	23	26.7	0.0-100.0
	don't know		81	2.8	0.0-10.0	13	20.8	0.0-100.0
Total		4685[1]						
	yes		4491	94.7	81.1-100.0	3422	70.4	37.8-82.6
	no		109	2.5	0.0-111.5	24	24.5	0.0-100.0
	don't know		85	2.8	0.0-10.0	14	21.4	0.0-100.0
		low immunisation coverage sample						
orthodox reformed		171						
	yes		64	34.6	0.0-61.2	54	79.3	63.6-100.0
	no		105	64.7	38.8-100.0	5	6.2	0.0-18.1
	don't know		2	0.8	0.0-3.7	1	50.0	--
reformed bond		97						
	yes		84	85.1	73.9-100.0	69	81.0	51.1-100.0
	no		13	14.9	0.0-26.1	0	0.0	--
	don't know		0	0.0	--	--	--	--
other or no religion		614						
	yes		580	93.2	80.8-98.9	440	73.7	63.1-83.8
	no		27	5.4	0.0-15.4	8	33.7	0.0-73.1
	don't know		7	1.4	0.0-3.7	1	16.7	--
Total		885[2]						
	yes		729	81.1	64.2-87.8	564	73.9	64.4-81.7
	no		146	17.4	10.5-33.0	13	11.5	0.0-29.6
	don't know		10	1.5	0.0-2.8	2	20.2	0.0-100.0

1 <4772 because of missing values

2 <890 because of missing values

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3.3.2 Opinion on necessity of vaccinations of the National Immunisation Programme

Participants were asked what their opinion was on the necessity of vaccinations that are incorporated in the NIP and if their opinion on necessity of vaccination had changed in the last five years.

In table 9-16 the opinions of the participants on respectively diphtheria, tetanus, pertussis, poliomyelitis (DTP-IPV), *Haemophilus influenzae* type b (Hib), mumps, measles and rubella (MMR) are shown.

Table 9 Opinion on the necessity of vaccination against diphtheria for different religious groups

		national sample			low immunisation coverage sample		
		n	mean	range	n	mean	range
orthodox reformed		55			241		
	necessary	30	61.4	0.0-100.0	101	38.1	0.0-70.5
	not necessary	15	15.1	0.0-68.6	103	45.5	12.0-77.9
	don't know	10	23.6	0.0-100.0	37	16.5	0.0-26.6
reformed bond		109			175		
	necessary	106	98.3	85.9-100.0	155	89.9	71.6-100.0
	not necessary	0	--	--	8	3.5	0.0-11.1
	don't know	3	1.7	0.0-14.1	12	6.6	0.0-28.4
other or no religion		8041			1133		
	necessary	7356	90.6	81.8-97.1	1053	92.1	85.4-95.0
	not necessary	91	1.1	0.0-2.8	23	2.4	0.4-7.7
	don't know	594	8.3	1.3-17.6	57	5.5	2.4-10.8
Total		8237[1]			1554[2]		
	necessary	7517	90.4	82.0-95.4	1311	83.6	70.4-90.5
	not necessary	111	1.3	0.1-4.7	135	8.5	3.4-19.4
	don't know	609	8.3	2.6-17.4	108	7.9	4.8-10.3

1 <8345 because of missing values
2 <1589 because of missing values

In the opinions on the necessity of vaccination for the different diseases against which vaccination is available in the NIP, there are some consistencies. Firstly, relatively less persons belonging to a religion against immunisation or to the reformed bond see the need of vaccination in the low immunisation coverage sample than in the national sample. Secondly, in the low immunisation coverage sample relatively more persons belonging to the category 'other or no religion' see the need of vaccination than in the national sample. This difference is however mostly small. Thirdly, a relatively great percentage of the orthodox reformed say they don't know whether they find the immunisations in the NIP necessary or not. And last, in the national sample more persons of the reformed bond find the vaccinations of the NIP important than the persons of an religion not opposed to immunising and persons with no religion while in the low immunisation coverage sample this is the reverse.

There also is a trend to be seen in the opinion of the participants on the necessity of different immunisations. This trend is seen in all religious groups and in both samples. In general individuals found immunisation against poliomyelitis most important. Participants considered immunisations against tetanus, pertussis, diphtheria and *Haemophilus influenzae* type b approximately equally important. Considered least important was the MMR immunisation where rubella was considered most important and measles least important.

Table 10 Opinion on the necessity of vaccination against tetanus for different religious groups

		national sample			low immunisation coverage sample		
		n	mean	range	n	mean	range
orthodox reformed		55			240		
	necessary	31	64.6	0.0-100.0	117	47.1	15.3-80.5
	not necessary	14	15.3	0.0-100.0	95	41.2	12.3-64.7
	don't know	10	20.1	0.0-100.0	28	11.7	0.0-24.1
reformed bond		107			172		
	necessary	106	99.7	95.4-100.0	156	92.3	76.3-100.0
	not necessary	0	--	--	6	3.0	0.0-9.1
	don't know	1	0.3	0.0-4.6	10	4.8	0.0-23.7
other or no religion		8015			1132		
	necessary	7330	90.7	82.0-97.6	1057	92.3	86.5-96.5
	not necessary	171	2.3	0.0-5.1	31	3.3	0.0-7.7
	don't know	514	7.1	0.7-15.3	44	4.5	0.7-9.7
Total		8209[1]			1549[2]		
	necessary	7493	90.5	82.5-96.3	1332	85.6	73.3-91.9
	not necessary	190	2.4	0.0-5.5	133	8.5	3.8-18.9
	don't know	526	7.1	0.7-15.1	84	5.9	2.8-7.9

1 <8345 because of missing values
2 <1589 because of missing values

Table 11 Opinion on the necessity of vaccination against pertussis for different religious groups

		national sample			low immunisation coverage sample		
		n	mean	range	n	mean	range
orthodox reformed		55			240		
	necessary	31	62.6	0.0-100.0	106	42.6	0.0-70.5
	not necessary	18	27.2	0.0-100.0	105	45.7	15.1-77.9
	don't know	6	10.2	0.0-100.0	29	11.7	0.0-22.1
reformed bond		109			174		
	necessary	106	98.3	85.9-100.0	156	91.0	76.3-100.0
	not necessary	0	--	--	10	5.9	0.0-19.8
	don't know	3	1.7	0.0-14.1	8	3.1	0.0-11.6
other or no religion		8034			1130		
	necessary	7283	89.5	81.1-97.3	1049	92.2	87.7-94.9
	not necessary	136	1.7	0.0-4.9	27	3.0	0.0-8.9
	don't know	615	8.8	1.7-17.9	54	4.9	2.4-8.4
Total		8230[1]			1549[2]		
	necessary	7445	89.2	81.3-96.0	1313	84.2	70.3-91.4
	not necessary	160	2.0	0.0-5.4	143	9.2	3.6-22.5
	don't know	625	8.8	1.7-17.8	93	6.5	3.5-7.8

1
2 <8345 because of missing values
<1589 because of missing values

Table 12 Opinion on the necessity of vaccination against poliomyelitis for different religious groups

		national sample			low immunisation coverage sample		
		n	mean	range	n	mean	range
orthodox reformed		56			243		
	necessary	35	65.8	0.0-100.0	124	44.8	0.0-79.5
	not necessary	15	20.0	0.0-100.0	94	43.3	9.8-77.9
	don't know	6	14.3	0.0-100.0	25	11.9	0.0-22.1
reformed bond		110			175		
	necessary	109	99.7	95.4-100.0	163	93.4	78.5-100.0
	not necessary	0	--	--	6	3.0	0.0-11.1
	don't know	1	0.3	0.0-4.6	6	3.6	0.0-21.5
other or no religion		8081			1144		
	necessary	7815	96.5	90.0-99.6	1118	97.2	90.0-100.0
	not necessary	40	0.5	0.0-1.3	11	1.1	0.0-3.8
	don't know	226	3.1	0.0-8.8	15	1.6	0.0-6.1
Total		8279[1]			1567[2]		
	necessary	7985	96.2	89.9-98.5	1407	89.7	79.2-95.4
	not necessary	58	0.7	0.0-4.8	112	7.0	2.7-15.8
	don't know	236	3.1	0.4-8.9	48	3.4	1.5-5.0

1 <8345 because of missing values
2 <1589 because of missing values

Table 13 Opinion on the necessity of vaccination against Haemophilus influenzae type b for different religious groups

		national sample			low immunisation coverage sample		
		n	mean	range	n	mean	range
orthodox reformed		54			239		
	necessary	29	54.6	0.0-100.0	95	35.0	0.0-71.0
	not necessary	15	20.8	0.0-100.0	103	45.6	15.5-77.9
	don't know	10	24.6	0.0-100.0	41	19.4	13.6-26.5
reformed bond		109			171		
	necessary	98	95.8	66.7-100.0	145	85.8	67.4-100.0
	not necessary	2	0.6	0.0-9.3	11	6.8	0.0-21.2
	don't know	9	3.5	0.0-33.3	15	7.4	0.0-21.6
other or no religion		7991			1128		
	necessary	7295	91.1	86.1-96.4	1046	92.3	84.3-98.1
	not necessary	109	1.3	0.0-4.7	22	2.3	0.0-5.6
	don't know	587	7.6	2.8-11.6	60	5.5	1.9-10.0
Total		8185[1]			1541[2]		
	necessary	7445	90.7	86.1-95.0	1286	83.5	72.2-90.6
	not necessary	130	1.6	0.0-4.7	137	8.6	3.1-19.4
	don't know	610	7.8	4.1-11.3	118	7.9	4.9-11.8

1 <8345 because of missing values
2 <1589 because of missing values

Table 14 Opinion on the necessity of vaccination against mumps for different religious groups

		national sample			low immunisation coverage sample		
		n	mean	range	n	mean	range
orthodox reformed		55			240		
	necessary	29	60.1	0.0-100.0	78	29.6	0.0-55.0
	not necessary	18	26.6	0.0-100.0	132	57.7	28.6-78.4
	don't know	8	13.2	0.0-100.0	30	12.7	4.9-22.1
reformed bond		104			169		
	necessary	91	89.7	37.6-100.0	129	76.3	62.6-100.0
	not necessary	7	7.2	0.0-62.4	23	13.0	0.0-21.2
	don't know	6	3.1	0.0-33.3	17	10.7	0.0-24.1
other or no religion		7956			1122		
	necessary	6616	81.8	66.3-88.9	973	86.5	82.8-92.8
	not necessary	544	7.5	3.6-18.4	69	6.8	2.0-12.2
	don't know	796	10.7	3.4-17.8	78	6.7	2.3-10.9
Total		8147[1]			1534[2]		
	necessary	6762	81.6	66.3-88.4	1182	77.1	66.1-84.9
	not necessary	575	7.8	3.5-18.4	226	14.5	7.9-26.1
	don't know	810	10.6	3.2-17.6	126	8.4	4.4-11.9

1 <8345 because of missing values
2 <1589 because of missing values

Table 15 Opinion on the necessity of vaccination against measles for different religious groups

		national sample			low immunisation coverage sample		
		n	mean	range	n	mean	range
orthodox reformed		55			240		
	necessary	27	57.9	0.0-100.0	77	29.3	0.0-54.9
	not necessary	21	31.0	0.0-100.0	129	55.9	26.1-77.9
	don't know	7	11.0	0.0-100.0	34	14.9	4.9-26.7
reformed bond		104			168		
	necessary	85	88.0	0.0-100.0	123	73.3	54.0-100.0
	not necessary	9	7.2	0.0-62.4	27	14.7	0.0-23.1
	don't know	10	4.8	0.0-37.6	18	12.0	0.0-24.1
other or no religion		7953			1127		
	necessary	6505	80.2	67.2-89.3	977	86.4	83.0-92.9
	not necessary	631	8.7	4.5-18.7	82	7.9	4.2-11.1
	don't know	817	11.0	4.4-18.5	68	5.7	2.9-9.3
Total		8144[1]			1540[2]		
	necessary	6643	80.0	67.2-88.8	1179	76.7	66.4-85.6
	not necessary	667	9.1	4.8-18.7	240	15.2	9.5-25.9
	don't know	834	11.0	4.1-18.5	121	8.1	4.9-10.6

1 <8345 because of missing values
2 <1589 because of missing values

Table 16 Opinion on the necessity of vaccination against rubella for different religious groups

		national sample			low immunisation coverage sample		
		n	mean	range	n	mean	range
orthodox reformed		54			240		
	necessary	29	60.5	0.0-100.0	83	33.8	0.0-60.0
	not necessary	19	28.9	0.0-100.0	124	52.2	23.2-77.9
	don't know	6	10.6	0.0-100.0	33	14.0	4.9-22.1
reformed bond		107			171		
	necessary	97	93.2	37.6-100.0	135	79.4	65.3-100.0
	not necessary	7	6.4	0.0-62.4	16	8.2	0.0-21.2
	don't know	3	0.4	0.0-3.1	20	12.4	0.0-28.1
other or no religion		7984			1123		
	necessary	7013	86.8	77.5-93.1	1012	89.4	85.4-97.1
	not necessary	354	4.8	2.1-11.7	54	5.7	1.2-8.7
	don't know	617	8.4	2.8-14.7	57	4.9	1.6-8.5
Total		8177[1]			1539[2]		
	necessary	7164	86.5	77.7-93.0	1232	79.7	69.9-89.8
	not necessary	386	5.1	2.3-11.6	196	12.7	5.8-22.7
	don't know	627	8.4	2.8-14.7	111	7.6	4.4-10.9

1 <8345 because of missing values
2 <1589 because of missing values

Table 17 Change in opinion on necessity of immunisation in the past five years

		national sample			low immunisation coverage sample		
		n	mean	range	n	mean	range
orthodox reformed		57			255		
	no	53	95.6	66.2-100.0	213	82.7	67.4-97.4
	more inclined	3	2.2	0.0-21.9	33	11.7	2.6-18.0
	less inclined	1	2.3	0.0-33.8	9	5.6	0.0-26.6
reformed bond		110			174		
	no	103	86.7	13.6-100.0	153	91.0	81.4-95.8
	more inclined	6	11.2	0.0-86.4	16	6.3	0.0-11.3
	less inclined	1	2.1	0.0-33.3	5	2.7	0.0-9.4
other or no religion		7976			1133		
	no	7077	88.4	82.4-95.8	1026	89.1	81.4-95.8
	more inclined	748	9.6	3.4-15.5	90	9.4	2.9-17.5
	less inclined	151	2.0	0.0-5.4	17	1.5	0.0-4.9
Total		8173[1]			1566[2]		
	no	7259	88.4	82.4-95.6	1396	88.0	80.8-93.8
	more inclined	760	9.6	3.4-15.5	139	10.0	5.1-17.5
	less inclined	154	2.0	0.2-5.3	31	2.0	1.0-4.0

1 <8345 because of missing values
2 <1589 because of missing values

It is clear from table 17 that most individuals have not changed their opinion on the necessity of vaccinations in both samples in the last five years. Furthermore a greater percentage feels móre inclined to immunise than léss inclined in comparison with five years ago, both in the national and low immunisation coverage sample. This is not true though for the individuals in the orthodox reformed category but because of the small numbers in the national sample that has changed their opinion one can't really say anything in general on the change in that group.

3.3.3 Vaccination against Haemophilus influenzae type b in children

Vaccination against *Haemophilus influenzae* type b was introduced in the NIP on 1 April 1993. Before then, Hib vaccination was on a voluntary basis and was on the parents own account. The vaccination status for Hib of children of 0-6 years old was asked for in the childrens' questionnaire.

Table 18 Received Hib immunisation for children born after 1 April 1993 (0-3 years) and for children born before 1 April 1993 (3-6 years).

	national sample						
		born after 1 April 1993			born before 1 April 1993		
	n total	n	mean	range	n	mean	range
	1629[1]	1089			540		
yes		907	88.7	53.8-100.0	131	19.5	0.0-71.2
no		138	6.2	0.0-18.1	363	69.4	28.8-100.0
don't know		44	5.1	0.0-43.0	46	11.1	0.0-36.9
	low immunisation coverage sample						
	288[2]	180			108		
yes		129	70.8	35.0-86.6	14	11.8	0-26.9
no		47	25.8	4.5-46.2	88	82.9	72.0-89.9
don't know		4	3.5	0.0-18.8	6	5.4	0.0-13.8

1 <1727 because of missing values
2 <306 because of missing values

3.4 Other vaccinations

In this chapter vaccinations other than those from the National Immunisation Programme are considered. These are vaccinations against DTP (at older ages; is used for revaccination), tetanus, influenza and against hepatitis A and B.

3.4.1 DTP (re)vaccination

First the participants with a C-questionnaire were asked for their latest immunisation against DTP (table 19). DTP vaccination was part of the NIP from the start in 1952 until 1962 when IPV was added to it. Also, DTP was given to men joining the military service.
About two-third reported that they have been vaccinated against DTP. Most of those individuals reported that they got that vaccination over twenty years ago. When the answers for the different age groups were looked at, it was seen that most individuals over 29 years of age filled in they had their last vaccination over twenty years ago. Younger individuals reported for a big part that they had their last vaccination against DTP when they were 5-15 years old and a smaller but still big percentage reported to have received the immunisation when they were 0-10 years old.
Furthermore the percentage of persons that never got that vaccination is higher in the low immunisation coverage sample. The percentage that does not know whether they ever got immunised against DTP is lower in that sample than in the national sample although it is high in both samples.

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Table 19 Latest DTP (re)vaccination (17-79 years)

	national sample			low immunisation coverage sample		
	n	mean	range	n	mean	range
	5269[1]			1028[2]		
not applicable, not vaccinated	604	8.7	3.6-17.6	238	20.4	14.3-26.5
yes	3252	67.1	54.1-79.8	604	63.9	54.8-70.7
less than 12 months ago	*108*	*3.4*	*0.0-10.4*	*11*	*1.5*	*0.0-4.6*
1 to 5 years ago	*340*	*10.1*	*1.9-21.5*	*123*	*19.4*	*9.3-28.4*
5 to 10 years ago	*327*	*11.1*	*3.9-21.9*	*68*	*13.6*	*8.3-18.4*
10 to 15 years ago	*394*	*13.6*	*5.6-27.7*	*67*	*13.2*	*8.8-16.9*
15 to 20 years ago	*335*	*10.9*	*3.7-20.4*	*66*	*11.5*	*7.9-19.5*
over 20 years ago	*1748*	*50.8*	*29.0-66.7*	*269*	*40.8*	*27.8-54.8*
don't know	1413	24.3	14.6-33.0	186	15.8	10.8-21.6

1 <5493 because of missing values
2 <1076 because of missing values

3.4.2 Tetanus (re)vaccination

Participants were asked when they received their latest tetanus vaccination because of an injury. About half of the participants said they had never got this immunisation and about a third said they did get immunised against tetanus. The percentage that did never receive this vaccination is higher in the low immunisation coverage sample and the percentage that does not know whether they ever got a tetanus vaccination is somewhat lower than in the national sample.

Table 20 Latest tetanus (re)vaccination because of an injury

	national sample			low immunisation coverage sample		
	n	mean	range	n	mean	range
	8118[1]			1534[2]		
not applicable, not vaccinated	4434	48.4	33.5-63.2	909	56.1	49.7-63.5
yes	2560	35.6	24.8-49.3	443	31.7	24.2-36.3
less than 12 months ago	*226*	*9.8*	*1.5-19.9*	*48*	*13.1*	*7.2-21.2*
1 to 5 years ago	*602*	*27.1*	*12.0-38.3*	*89*	*23.2*	*18.1-36.6*
5 to 10 years ago	*439*	*18.5*	*7.2-48.0*	*80*	*20.7*	*13.8-27.6*
10 to 15 years ago	*316*	*12.3*	*4.9-20.1*	*61*	*12.7*	*7.9-16.6*
15 to 20 years ago	*247*	*8.5*	*0.9-22.3*	*40*	*8.6*	*4.1-11.8*
over 20 years ago	*730*	*23.9*	*11.7-36.8*	*125*	*21.7*	*16.8-28.3*
don't know	1124	16.0	8.4-30.0	182	12.2	9.2-17.4

1 <8345 because of missing values
2 <1589 because of missing values

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3.4.3 Influenza vaccination

Participants were asked whether and why they had received immunisation against influenza in the last three years. In Table 21 the increase in vaccination coverage in the last years is clear, both in the national sample and the low immunisation coverage sample although the coverage is consistently lower in the last sample. Most individuals get an influenza vaccination because of medical reasons. The percentage of individuals who reported to have received an influenza vaccination increased from 8.1% to 9.9% in the national sample and from 6.7% to 9.0% in the low immunisation coverage sample from the '93-'94 season to the '95-'96 season.

Table 21 Influenza vaccination in the last three years

	national sample								
		'95-'96			'94-'95			'93-'94	
	n	mean	range	n	mean	range	n	mean	range
	8168[1]			8066[1]			8142[1]		
yes	890	9.9	5.6-19.9	799	8.9	4.7-18.3	736	8.1	4.2-18.0
medical reason	*511*	*66.8*	*43.9-90.2*	*471*	*66.9*	30.5-92.6	*423*	*61.8*	*20.6-87.9*
age-related	*238*	*12.0*	*0.0035.9*	*208*	*12.8*	*0.0-47.9*	*178*	*12.1*	*0.0-38.7*
work-related	*22*	*4.8*	*0.0-29.4*	*23*	*5.2*	*0.0-27.8*	*41*	*9.2*	*0.0-42.8*
other reason	*119*	*16.4*	*0.0-38.3*	*97*	*15.1*	*0.0-34.0*	*94*	*16.9*	*0.0-58.0*
no	7250	89.7	80.1-94.4	7236	90.7	81.6-94.5	7361	91.3	81.4-95.8
don't know	28	0.4	0.0-1.9	31	0.4	0.0-2.6	45	0.6	0.0-2.6
	low immunisation coverage sample								
	1570[2]			1551[2]			1562[2]		
yes	171	9.0	6.3-15.6	142	7.5	4.6-11.8	129	6.7	4.0-11.1
medical reason	*95*	*61.7*	*34.3-77.0*	*78*	*61.0*	*28.8-85.8*	*74*	*60.1*	*40.8-88.6*
age-related	*44*	*10.9*	*3.6-21.1*	*39*	*12.8*	*5.4-32.8*	*34*	*13.7*	*4.4-27.1*
work-related	*5*	*5.5*	*0.0-29.8*	*6*	*6.4*	*0.0-33.4*	*6*	*17.9*	*0.0-24.9*
other reason	*27*	*21.8*	*15.2-42.0*	*19*	*19.8*	*5.0-30.9*	*15*	*18.2*	*0.0-35.4*
no	1396	90.8	84.4-93.5	1405	92.3	88.2-94.9	1427	92.9	88.9-95.5
don't know	3	0.2	0.0-0.5	4	0.2	0.0-0.5	6	0.4	0.0-0.7

1 <8345 because of missing values
2 <1589 because of missing values