



# The Dutch Standard Group

## «NL2013»

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### What is a Standard Group?

A standard group is used as an indication of how a population will typically score on one of the 48 patterns of the iWAM. The indication is a range of typical scores. jobEQ uses this range on its feedback reports in order to give a relative indication of where a person scores in comparison to others. The standard group can be any group, such as a team of sales people, all employees of a certain organization, or the population of a country. In this case the standard group represents the Dutch working population.

Once we know how a group typically scores, we can determine, in relative terms, whether a person's score is lower than, the same as, or higher than that of a particular population.

iWAM standard groups are calculated by taking the means of a sample of a group, adding one standard deviation to these means to find the upper limit of the standard group and subtracting one standard deviation from the mean to find the lower limit. If we presuppose that the population is approximately normally distributed, we know by definition that approximately two-thirds of the population will fall within the standard group range for the scale. In addition, we can assume that 1 out of 6 individuals will score higher than the standard group and 1 out of 6 will score lower.

### Purpose of a Standard Group?

Standard groups are not intended to add statistical validity. Rather, standard groups help people understand the test results by showing how individuals compare to a given population or group. We use a standard group in iWAM reports to generate visual charts and/or textual explanations of a person's scores as those in the standard group would experience them.

Standard groups are less relevant when jobEQ questionnaires are used for making decisions such as in hiring or promotions. A more useful technology for making decisions in these cases is to compare an individual's scores to those of top performers in a certain position. This kind of comparison uses jobEQ's *Model of Excellence* technology.

### Purpose of this paper

This paper will explain how the Dutch Standard Group of 2013 is constructed. First the working population of The Netherlands and the used sample is documented with essential demographics like gender, age and occupation. Further descriptive characteristics concerning meta-programs are displayed. The extent in which the standard group is representative for the Dutch workforce population is discussed.

## About the population

Based on the Census data (last update February 2013) of the Dutch Central Bureau of Statistics (Centraal Bureau voor de Statistiek<sup>1</sup>), one can conclude that The Netherlands has an active working population of circa 7.4 million people. The current national labor force consists out of 55.08% male workers and 44.92% female employees. Five age categories are represented as following: 15 to 24 year olds 10.19%, 25 to 34 year olds 22.17%, 35 to 44 year olds 25.42% 45 to 54 year olds 26.64% and 55 to 64 year olds 15.55%.

## About the sample

The 2013 Standard Group is based on 1049 persons working in the Netherlands, who completed the iWAM questionnaires between January 2002 and May 2013. Of this group 40% completed the iWAM in the on-line demo environment. The rest of the sample participated in various research projects and commercial projects conducted in Dutch work environments. A comparison with the 2011 sample was also conducted.

### *Filters*

The following filters were used to construct the 2013 Standard Group:

- First a test criteria filter was used: people who left more than 6 items of 40 unchanged in the questionnaire were not used because of reliability reasons: the test administration of people who leave more 15% of the items unchanged is considered as not valid;
- Duplicate candidates were filtered out as well;
- Students were filtered out because they have almost no experience in a work environment;
- The following occupation categories were deleted as well cause of 'not representative for the Dutch working population': 'homemaker', 'retired' and 'unemployed/between jobs';
- To prevent distortion by one or more major clients, persons from major commercial projects were filtered out<sup>2</sup>.

### *Gender*

Concerning gender, the sample represents closely the working population in the Netherlands. Both sample and population have a 55/45 male-female ratio. A chi-square test ( $\chi^2(1) = 0.005$ ,  $p = 0.943$ ) shows that the sample distribution is not significantly different to the population distribution.

**Table 1: Comparison of iWAM Standard Group 2013 and working population**

<b>iWAM Standard Group</b>	<b>n</b>	<b>%</b>	<b>Working population</b>	<b>N</b>	<b>%</b>
Male	579	55.20	Male	4.069.000	55.08
Female	470	44.70	Female	3.318.000	44.92
Total	1.049	100.00	Total	7.387.000	100.00

### *Age*

<sup>1</sup> www.cbs.nl

<sup>2</sup> A common mistake in creating standard groups for tests is to rely only (or mainly) on a 'sample of convenience' (i.e. a student population or data from one organization) which is an example of nonprobability sampling which can provoke bias in the standard group.

If we compare age categories in table 2 we can state that the 2013 Standard Group represents very closely the age categories of the working population in the Netherlands: The categories at both ends show a minor under-representation (6.6% and 9.6%). The difference found in the category 15-24 years old showing an under-representation, is a normal finding. Most people who take the iWAM had some extra years of education and are 21 years or older whereas in the working population this is not the case. Because the iWAM is constructed to measure motivation and attitude in a work environment, people under 18 years can be considered as a source of distortion. The ‘unknown’ category contains about 5% of the sample.<sup>3</sup> The average age of the sample is 40.2 years old (SD 9.3).

**Table 2: Comparison of iWAM Standard Group 2013 and working population (age)**

iWAM Standard Group	n	%	Working Population	N	%
15-24	38	3.62%	15-24	753.000	10.19%
25-34	256	24.40%	25-34	1.638.000	22.17%
35-44	356	33.94%	35-44	1.878.000	25.42%
45-54	284	27.07%	45-54	1.968.000	26.64%
55-64	62	5.91%	55-64	1.149.000	15.55%
unknown	53	5.05%	unknown		
Total	1.049	100.00	Total	7.387.000	100.00

### *Occupation*

**Table 3: Comparison of iWAM Standard Group (occupations)**

iWAM Standard Group 2013	n	%
[NOT SPECIFIED] <sup>4</sup>	187	
Accounting/Finance	53	6.15%
Computer related (Internet + other)	47	5.45%
Consulting	51	5.92%
Customer service/support	16	1.86%
Education/training	95	11.02%
Engineering	53	6.15%
Executive/senior management	56	6.50%
General administrative/supervisory	42	4.87%
Government/Military	34	3.94%
Manufacturing/production/operations	16	1.86%
Other	184	21.35%
Professional (medical, legal, etc.)	32	3.71%
Research and development	16	1.86%
Sales/marketing/advertising	90	10.44%
Self-employed/owner	70	8.12%
Tradesman/craftsman	7	0.81%
Total	1.049	100.00%

<sup>3</sup> This can be related to two facts: first, in the early version of the iWAM there was no option to administer extra variables like occupation etc... Second, now the possibilities are available to question more variables, it is possible that in client projects (where people are asked via the ‘invite option’) people do not necessarily fill out the extra parameters. That is the explanation why the category ‘NOT SPECIFIED’ shows a strong presence in the sample.

<sup>4</sup> This category was not taken into account to calculate percentages of the sample.

Based on the information of the Central bureau of Statistics, it is impossible to compare the census classification with the jobEQ categories. The government data divides occupations linked to education level instead of sector, business or content which makes it hard to make a plausible comparison. Despite this lack of comparison, the 16 jobEQ occupation categories in the standard group are well varied, showing widespread heterogeneity in different occupations.

Table 3 shows the distribution of the occupation categories of the standard group. As one can see the occupations of the respondents are quite varied ranging from less than 1% ('Tradesman/craftsman') up to 11% ('Education/training'). The category 'Other' accounts for 21% indicating that their profession is other than the categories mentioned.

### Meta-programs

Table 4 shows the absolute means, standard deviations and standard errors of the 48 patterns. The absolute averages of the meta-programs range from 16% up to 82%. All parameters show a sufficient variation in scores (standard deviations ranging from 13% to 26%). The averages and standard deviations of each scale are used to calculate the individual norm groups.

Standard errors vary from 0.38% to 0.80% with an average of 0.57%. When .95 confidence intervals (i.e. mean  $\pm$  1.96 SEM) are constructed around the sample means, one can conclude that in 95% of the cases the mean will fall within a margin less than 1%. One can conclude that the estimation of the population means for the 48 patterns using the Standard Group 2013 (n=1049) is quite accurate.

**Table 4: patterns of iWAM Standard Group 2013: means, standard deviations and standard errors**

pattern	Mean	SD	SEM	pattern	Mean	SD	SEM	pattern	Mean	SD	SEM
OF1PA	49.67%	18.83%	0.58%	So1A	17.68%	16.93%	0.52%	Co1A	82.26%	12.16%	0.38%
OF1MA	40.23%	14.47%	0.45%	So2A	72.10%	15.58%	0.48%	Co2A	26.99%	19.31%	0.60%
OF2PA	75.39%	17.90%	0.55%	So3A	62.71%	17.73%	0.55%	Co3A	23.73%	21.62%	0.67%
OF2MA	20.87%	16.23%	0.50%	WA1A	52.56%	18.51%	0.57%	Co4A	64.04%	18.13%	0.56%
OF3PA	72.90%	16.63%	0.51%	WA2A	68.76%	16.31%	0.50%	Co5A	53.16%	18.03%	0.56%
OF3MA	40.35%	17.51%	0.54%	WA3A	63.30%	19.20%	0.59%	Co6A	44.63%	25.90%	0.80%
OF4PA	60.01%	18.58%	0.57%	TP1A	52.94%	13.99%	0.43%	Co7A	53.04%	18.91%	0.58%
OF4MA	29.75%	21.38%	0.66%	TP2A	66.94%	14.85%	0.46%	Co8A	32.37%	23.15%	0.71%
OF5PA	66.40%	21.67%	0.67%	TP3A	57.79%	15.09%	0.47%	IF1A	60.90%	18.11%	0.56%
OF5MA	23.47%	19.44%	0.60%	Mo1A	37.23%	18.58%	0.57%	IF2A	39.38%	19.20%	0.59%
OF6PA	51.43%	22.81%	0.70%	Mo2A	36.49%	19.27%	0.59%	IF3A	46.61%	18.11%	0.56%
OF6MA	40.83%	17.07%	0.53%	Mo3A	61.08%	19.31%	0.60%	IF4A	69.05%	13.93%	0.43%
OF7PA	62.13%	24.24%	0.75%	N1A	50.89%	15.54%	0.48%	IF5A	29.40%	19.03%	0.59%
OF7MA	24.48%	23.09%	0.71%	N2A	15.85%	13.25%	0.41%	IF6A	63.38%	18.31%	0.57%
OF8PA	55.21%	21.79%	0.67%	N3A	70.59%	13.76%	0.42%	IF7A	41.97%	17.41%	0.54%
OF8MA	46.43%	22.06%	0.68%	N4A	54.77%	18.62%	0.57%	IF8A	64.14%	19.28%	0.59%

## **Comparison meta-programs 2011 versus 2013 standard group**

To assure whether there are any major shifts in the Dutch working culture, a comparison of the meta-programs of the new and old standard group was performed. A statistical analysis on the differences in averages, standard deviations and effect sizes was conducted. The results show that there are no significant discrepancies between the two standard groups, indicating that no substantial shifts in patterns occurred the last two years.

## **Conclusions**

The data used in this research provides a substantial basis to build a new standard group for the Netherlands.

Demographics of the sample shows a distribution of men and women resembling the real life distribution of the working people in the Netherlands.

When examining the age distribution, one will find that the sample is representative for the vast majority of the age groups. In perspective of the goal of the iWAM, the mentioned under-representation in youngest category is strength instead of a weakness. Young people who have almost no working experience can bias the results. That is also one of the main reasons that the student population is filtered out.

The information about the profession categories was not comparable with jobEQ categories. We can expect an under-representation of blue collar workers. This is justified by the fact that the iWAM was constructed for white collar workers. Furthermore, despite some categories are somewhat over or under-represented due to the lack of more substantial differentiation in occupations, one can state that the sample contains a wide variety of specified occupation categories.

Looking at the descriptive statistics of the iWAM, we can report two important conclusions. First, we can state that the iWAM scales can measure quite accurately: all standard error measures are below 1.00%. Second, the scales show enough variation in scores (standard deviations up to 26%) to apprehend the heterogeneity of the standard group.

We can conclude that the Dutch Standard Group 2013 is well balanced and heterogeneous if you take into account gender, age and job occupation.