



# The Malaysian-Singaporean Standard Group «MYSG2013»

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## What is a Standard Group?

A standard group serves as an indication of how a population will typically score on one of the 48 patterns of the iWAM. The indication offers 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 Malaysian 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 mean 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 Malaysian-Singaporean Standard Group of 2013 is constructed. First the working population of Malaysia and Singapore is documented with essential demographics like gender, age and occupation as well as the used sample. Further descriptive characteristics concerning meta-programs are displayed. The extent in which the standard group is representative for the Malaysian-Singaporean workforce population is discussed.

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## About the population

Based on the Census data of the Malaysian Bureau of Statistics<sup>1</sup> (update December 2011) and the Singaporean Ministry of Manpower<sup>2</sup> (update June 2012), one can conclude that Malaysia and Singapore have a combined working population of circa 14.7 million people (12.7 million Malaysian and 2.0 million Singaporean).

The combined labor force consists out of 62.64% male workers and 36.83% female employees. Five age categories can be represented as following: 15 to 24 year olds 17.28%, 25 to 34 year olds 31.81%, 35 to 44 year olds 23.65%, 45 to 54 year olds 18.50% and 55 or older 8.76%. Also data concerning occupation categories was available for both countries.

## About the sample

The 2013 Standard Group is based on 683 persons working in Malaysia and Singapore, who completed the iWAM questionnaires between January 2002 and May 2013. Of this group, 12.74% completed the iWAM in the public on-line demo environment, which is open to all. The rest of the sample participated in various research projects and commercial projects conducted in Malaysian and Singaporean work environments.

In the combined population, the Malaysian-Singaporean work force ratio is 86/14. In the standard group sample, this ratio of Malaysian-Singaporean workers was taken into account, resulting in 584 Malaysian workers and 99 Singaporean workers.

### *Filters*

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

- First a test criteria filter was applied: people who left more than 6 items of 40 unchanged in the questionnaire were not included in the sample 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<sup>3</sup>;
- The following occupation categories which are 'retired' and 'unemployed/between jobs' were deleted as well, because they do not represent the Malaysian-Singaporean working population<sup>3</sup>.

### *Gender*

Concerning gender, the sample closely represents the working population in Malaysia and Singapore. The sample has a 62/38 male-female ratio whereas the combined population has a 63/37 ratio. A chi-square test ( $\chi^2(1) = 0.107, p = 0.743$ ) shows that the sample distribution is not significantly different to the population distribution.

Note that in Singapore the female employee rate is higher than in Malaysia (44.22% versus 35.87%).

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<sup>1</sup> [www.statistics.gov.my](http://www.statistics.gov.my)

<sup>2</sup> [www.mom.gov.sg](http://www.mom.gov.sg)

<sup>3</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.

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

<b>iWAM Standard Group</b>	<b>MY (n)</b>	<b>SG (n)</b>	<b>%</b>	<b>Working population</b>	<b>MY (N)</b>	<b>SG (N)</b>	<b>%</b>
Male	371	55	62.37%	Male	8.129.500	1.138.247	62.98%
Female	213	44	37.63%	Female	4.546.300	902.353	36.02%
Total	584	99	100.00%	Total	12.675.800	2.040.600	100.00%

### *Age*

If we compare age categories in table 2, we can state that the youngest category is under-represented (circa 11%). Furthermore we can see that the mid-category 35-44 years old is over-represented (circa 9%) in the sample, indicating that the average age of the sample is somewhat higher than that of the population where a major part of the people starts to work from early age. These findings are normal, most people who took 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 8% of the sample.<sup>4</sup>

Note that there is a difference between Malaysia and Singapore when it comes to participation in the workforce. In Malaysia we find that almost 20% of the working population is between the age of 15 and 24, whereas in Singapore this is only 9% of the working population. In Singapore more people will attend higher education instead of starting to work at a young age. For more detailed information, see appendix 1.

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

<b>iWAM Standard Group</b>	<b>N</b>	<b>%</b>	<b>Working Population</b>	<b>N</b>	<b>%</b>
15-24	43	6.30%	15-24	2.542.300	17.28%
25-34	201	29.43%	25-34	4.681.800	31.81%
35-44	221	32.36%	35-44	3.480.300	23.65%
45-54	133	19.47%	45-54	272.300	18.50%
55+	30	4.39%	55+	128.900	8.76%
<i>Age unknown</i>	55	8.05%			
Total	683	100.00%	Total	14.716.400	100.00%

<sup>4</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.

## Occupation

In the working population of Malaysia and Singapore, we find 9 categories for both countries (see appendix 2). Seven of these categories are the same: ‘Managers, legislators and senior officials’, ‘Professionals’, ‘Associate professionals and technicians’, ‘Clerical support workers’, ‘Service and sales workers’, ‘Craftsmen and related trades workers’ and ‘Plant and machine operators, assemblers’. In Malaysia we find the following 2 extra categories: ‘Elementary occupations’ and ‘Skilled agricultural forestry and fishery workers’; in Singapore we find ‘Cleaners, laborers and related workers’ and ‘others’ as supplementary categories.

In order to link these categories to each other and to the jobEQ categories, we distinguish the following 7 categories in the combined population: ‘Managers’ 7.23%, ‘Professionals’ 10.56%, ‘Associate professionals and technicians’ 12.08%, ‘Clerical support workers’ 10.04%, ‘Service and sales workers’ 19.30%, ‘Craftsmen and related trades workers’ 9.94% and a blue collar category 30.85% which combines ‘Plant and machine operators, assemblers’, ‘Elementary occupations’ and ‘Skilled agricultural forestry and fishery workers’ ‘Cleaners, laborers and related workers’ and ‘others’.

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

iWAM Standard Group 2013	n	%	Category
[NOT SPECIFIED]	114	16.69%	
Accounting/Finance	45	6.59%	Technicians and associate professionals
Computer related (Internet + other)	31	4.53%	Technicians and associate professionals
Consulting	45	6.59%	Professionals
Customer service/support	18	2.64%	Clerical support workers
Education/training	56	8.20%	Professionals
Engineering	26	3.81%	Professionals
Executive/senior management	107	15.67%	Managers
General administrative/supervisory	23	3.37%	Clerical support workers
Government/Military	5	0.73%	Technicians and associate professionals
Manufacturing/production/operations	9	1.32%	Blue collar
Other	54	7.91%	
Professional (medical, legal, etc.)	17	2.49%	Professionals
Research and development	3	0.44%	Professionals
Sales/marketing/advertising	81	11.86%	Service & sales
Self-employed/owner	49	7.17%	Managers
Total	683	100.00%	

Table 3 shows the distribution of the jobEQ occupation categories of the standard group linked to the Malaysian-Singaporean categories.

As one can see (Based on table 3,) the occupations of the respondents are quite varied ranging from less than 1% (‘Government/Military’) up to almost 16% (‘Executive/senior management’). The categories ‘NOT SPECIFIED’ and ‘Other’ account for almost 25%, indicating that their professions are not known (see footnote 2).

If we compare the combined categories, we find that the blue-collar category is very under-represented (1.32%) which implies that the white-collar categories are over-represented. In the

sample we find 22.84% ‘Managers’<sup>5</sup>, 21.52% ‘Professionals’, 11.86% ‘Technicians and associate professionals’, 6.00% ‘Clerical support workers’, 11.86% ‘Service and sales workers’. The category ‘Craft and related trades workers’ is not present in the sample.

Despite the under-representation of the blue-collar workforce, the occupation categories in the standard group are well varied, showing widespread heterogeneity in different occupations.

## 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 12% up to 79%. All parameters show a sufficient variation in scores (standard deviations ranging from 12% to 27%). The averages and standard deviations of each scale are used to calculate the individual norm groups.

Standard errors vary from 0.47% to 1.03% with an average of 0.69%. 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=683) 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	52.73%	21.71%	0.83%	So1A	18.99%	18.40%	0.70%	Co1A	73.59%	13.77%	0.53%
OF1MA	48.33%	14.09%	0.54%	So2A	75.34%	15.25%	0.58%	Co2A	26.82%	18.90%	0.72%
OF2PA	73.44%	18.22%	0.70%	So3A	56.70%	17.75%	0.68%	Co3A	31.44%	25.26%	0.97%
OF2MA	26.64%	17.50%	0.67%	WA1A	41.55%	16.64%	0.64%	Co4A	57.92%	20.86%	0.80%
OF3PA	58.55%	20.64%	0.79%	WA2A	78.99%	15.82%	0.61%	Co5A	59.12%	16.14%	0.62%
OF3MA	34.27%	15.81%	0.61%	WA3A	64.51%	17.58%	0.67%	Co6A	29.86%	22.96%	0.88%
OF4PA	67.17%	16.58%	0.63%	TP1A	46.11%	15.81%	0.60%	Co7A	70.49%	19.43%	0.74%
OF4MA	43.05%	22.93%	0.88%	TP2A	75.59%	13.51%	0.52%	Co8A	33.12%	18.14%	0.69%
OF5PA	58.58%	26.97%	1.03%	TP3A	59.60%	16.06%	0.61%	IF1A	57.21%	18.57%	0.71%
OF5MA	36.73%	23.80%	0.91%	Mo1A	48.75%	17.85%	0.68%	IF2A	51.32%	18.33%	0.70%
OF6PA	35.61%	18.84%	0.72%	Mo2A	37.91%	18.87%	0.72%	IF3A	53.34%	16.39%	0.63%
OF6MA	45.42%	17.20%	0.66%	Mo3A	69.07%	20.68%	0.79%	IF4A	70.51%	14.61%	0.56%
OF7PA	51.55%	22.53%	0.86%	N1A	53.81%	13.39%	0.51%	IF5A	29.22%	21.60%	0.83%
OF7MA	18.17%	18.48%	0.71%	N2A	11.61%	12.29%	0.47%	IF6A	45.75%	18.92%	0.72%
OF8PA	55.31%	18.35%	0.70%	N3A	74.70%	12.56%	0.48%	IF7A	51.24%	19.43%	0.74%
OF8MA	45.96%	17.09%	0.65%	N4A	46.23%	13.38%	0.51%	IF8A	46.76%	15.06%	0.58%

<sup>5</sup> The reason of the over-representation in the category is the presence of more than 100 ‘Executive/senior management’ respondents.

## Conclusions

The data used in this research provides a substantial basis to build a representative standard group. The choice of taking two countries together is justified by the fact that the numbers for Singapore were too small to construct a valid standard group. The creation of the combined standard group takes into account the population ratio as well as the gender ratio.

When examining the age distribution, one will find that the sample is representative for the vast majority of the age groups. The category under 24 years old is under-represented. In perspective of the goal of the iWAM, this under-representation is a strength instead of a weakness. Young people who have almost no working experience can bias the results. This is also one of the main reasons why the student population was filtered out.

Information about the occupations in the Malaysian and Singaporean working population allows a comparison with the predefined categories in the iWAM. The major under-representation of blue collar workers is justified by the fact that the iWAM was constructed for white collar workers. Note that there is also an over-representation of executives and senior managers. Furthermore one can state that the sample contains a wide variety of 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 of the patterns (except OF5P Breadth) are below 1%. Second, the scales show enough variation in scores (standard deviations up to 27%) to apprehend the heterogeneity of the standard group.

We can conclude that the Malaysian-Singaporean Standard Group 2013 is well balanced and are heterogeneous if you take into account population size, gender, age and job occupation.

## Appendix 1: Age groups working population

<b>Malaysia</b>	<b>N</b>	<b>%</b>	<b>Singapore</b>	<b>N</b>	<b>%</b>
15-24	2.355.300	18.6%	15-24	187.000	9.1%
25-34	4.245.800	33.5%	25-34	436.000	21.4%
35-44	2.962.900	23.4%	35-44	517.400	25.4%
45-54	2.220.300	17.5%	45-54	502.700	24.6%
55+	891.400	7.1%	55+	397.600	19.5%
<b>Total</b>	<b>12.675.800</b>	<b>100.00%</b>	<b>Total</b>	<b>2.040.600</b>	<b>100.00%</b>

## Appendix 2: Occupation categories working population

### Malaysia

Jadual A3.5: Bilangan dan taburan peratus penduduk bekerja mengikut pekerjaan, strata dan jantina, Malaysia, 2011  
Table A3.5: Number and percentage distribution of employed persons by occupation, stratum and sex, Malaysia, 2011

Pekerjaan Occupation		Jumlah Total			Bandar Urban			Luar bandar Rural		
		Jumlah Total	Lelaki Male	Perempuan Female	Jumlah Total	Lelaki Male	Perempuan Female	Jumlah Total	Lelaki Male	Perempuan Female
Jumlah Total	('000) (%)	12,284.4 100.0	7,889.8 100.0	4,394.7 100.0	8,528.4 100.0	5,318.9 100.0	3,209.5 100.0	3,756.0 100.0	2,570.9 100.0	1,185.1 100.0
Pengurus Managers		695.6 5.7	539.4 6.8	156.2 3.6	591.7 6.9	456.0 8.6	135.7 4.2	103.8 2.8	83.3 3.2	20.5 1.7
Profesional Professionals		1,225.1 10.0	559.3 7.1	665.8 15.2	961.0 11.3	447.4 8.4	513.6 16.0	264.2 7.0	111.9 4.4	152.3 12.8
JG Juruteknik dan profesional bersekutu Technician and associate professionals		1,313.0 10.7	914.3 11.6	398.7 9.1	1,090.1 12.8	758.6 14.3	331.4 10.3	223.0 5.9	155.7 6.1	67.3 5.7
Pekerja sokongan perkeranian Clerical support workers		1,178.3 9.6	351.6 4.5	826.7 18.8	985.6 11.6	292.2 5.5	693.4 21.6	192.7 5.1	59.4 2.3	133.3 11.2
Pekerja perkhidmatan dan jualan Service and sales workers		2,495.1 20.3	1,387.8 17.6	1,107.3 25.2	1,848.3 21.7	1,046.5 19.7	801.8 25.0	646.8 17.2	341.3 13.3	305.5 25.8
Pekerja mahir pertanian, perhutanan dan perikanan Skilled agricultural, forestry and fishery workers		1,007.9 8.2	794.1 10.1	213.8 4.9	113.0 1.3	101.1 1.9	11.9 0.4	894.9 23.8	693.0 27.0	201.9 17.0
Pekerja kemahiran dan pekerja pertukangan yang berkaitan Craft and related trades workers		1,330.2 10.8	1,148.3 14.6	181.9 4.1	935.7 11.0	827.6 15.6	108.1 3.4	394.4 10.5	320.6 12.5	73.8 6.2
Operator loji dan mesin serta pemasang Plant and machine-operators and assemblers		1,554.9 12.7	1,199.4 15.2	355.6 8.1	1,123.3 13.2	850.5 16.0	272.8 8.5	431.6 11.5	348.9 13.6	82.7 7.0
Pekerjaan asas Elementary occupations		1,484.2 12.1	995.6 12.6	488.7 11.1	879.6 10.3	538.9 10.1	340.8 10.6	604.6 16.1	456.7 17.8	147.9 12.5

### Singapore

EMPLOYED RESIDENT<sup>1</sup> AGED 15 AND OVER BY OCCUPATION, AGE GROUP AND SEX, JUNE 2012 [TABLE 2.4]

Occupation	Total			15 - 19			20 - 29			30 - 39			40 - 49			50 & Over		
	Person	Male	Female	Person	Male	Female	Person	Male	Female	Person	Male	Female	Person	Male	Female	Person	Male	Female
<b>Total</b>	2,040.6	1,138.1	902.5	30.9	18.4	12.5	353.8	182.9	170.9	497.3	258.4	238.8	519.9	287.0	232.8	638.8	391.3	247.5
Legislators, Senior Officials & Managers	346.3	229.4	116.9	0.0	0.0	0.0	16.1	7.6	8.5	95.5	55.4	40.1	121.9	81.6	40.3	112.8	84.8	28.0
Professionals	289.7	168.8	121.0	0.1	0.0	0.1	56.4	25.9	30.5	118.5	68.9	49.5	73.9	47.2	26.7	41.0	26.8	14.2
Associate Professionals & Technicians	422.7	215.2	207.6	2.5	0.7	1.8	103.3	44.1	59.3	135.4	68.2	67.2	101.4	53.5	47.9	80.1	48.7	31.4
Clerical Support Workers	262.2	59.3	202.9	5.5	1.0	4.5	61.3	16.9	44.3	58.1	11.4	46.8	65.2	10.5	54.7	72.0	19.4	52.6
Service & Sales Workers	265.3	127.3	138.0	8.6	3.2	5.4	48.2	24.6	23.6	47.6	22.8	24.8	64.2	28.6	35.6	96.7	48.1	48.5
Craftsmen & Related Trades Workers	90.6	81.7	8.8	0.3	0.3	0.0	6.2	5.4	0.9	12.4	11.2	1.3	24.9	22.9	2.0	46.7	42.1	4.6
Plant & Machine Operators & Assemblers	149.8	124.1	25.8	0.2	0.2	0.0	7.3	6.1	1.1	15.3	11.5	3.8	38.5	29.7	8.9	88.5	76.6	11.9
Cleaners, Labourers & Related Workers	145.3	64.7	80.6	1.8	1.1	0.7	7.5	5.1	2.4	10.2	5.2	5.0	26.7	10.3	16.4	99.1	42.9	56.1
Others <sup>2</sup>	68.6	67.7	0.9	11.9	11.9	0.0	47.5	47.3	0.2	4.2	3.9	0.4	3.0	2.8	0.2	2.0	1.8	0.1

Notes: 1 Occupations are classified according to the Singapore Standard Occupational Classification SSOC 2010.

2 Data may not add up due to rounding.

<sup>1</sup> Residents refer to Singapore Citizens and Permanent Residents.

<sup>2</sup> Includes Agricultural & Fishery Workers and Workers Not Classifiable by Occupation.

Source: Comprehensive Labour Force Survey, Ministry of Manpower