MOWIP Methodology Explainer 5 – Survey Implementation

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Section 1: Probability versus Non-Probability Surveys

In this section, the difference between probability and non-probability surveys and the MOWIP methodology's approach regarding the survey type are explained.

Probability surveys

Probability surveys or sample surveys are surveys that draw a representative sample of an overall population in order to study a range of topics such as attribute, behavior, opinion, etc. Probability surveys are used when it is not possible to survey every individual in the population, such as in the case of a census. An example of a probability survey is political opinion polls where a representative sample of the overall population is drawn to participate in the survey. Probability surveys are widely used considering the large resources (financial, human, and time) required to survey every individual in the population of interest. In the political opinion example, it is impractical and in some cases, impossible for an independent organization or institution with limited resources to survey an entire population of the United States (over 300 million people). So, a representative sample is drawn according to scientific methods which can then provide us with useful information about the overall population. The survey results can be generalized to the broader population under study. The key to understanding probability sampling is that everyone in the population has an equal chance of being selected for the study and that the sample will be randomly drawn. For example, if we are interested in studying an entire police force in a given country using probability sampling, we need to randomly select a representative sample of police officers where every single police officer in the country has an equal chance of being selected for the survey.

Non-probability surveys

Non-probability surveys are surveys where not every individual in a population has an equal chance of being selected. If some members of the population are knowingly left out in the sampling strategy, then the method being used in the study will be that of non-probability survey. For example, if researchers decide that they will email individuals to take part in a political opinion survey, then they knowingly leave out individuals that do not have an email address. Consequently, their results would not be generalized to the entire population. Non-probability surveys are commonly used when studying a specific population, and a certain percentage of individuals are surveyed from a specific group.

MOWIP approach

The MOWIP methodology usually uses non-probability as a sampling method for very specific and intentional reasons.

The first reason is to ensure that a high enough number of women are surveyed as part of the sample. The MOWIP methodology aims to assess whether there are barriers to women's meaningful participation in peace operations. As such, the methodology needs to ensure that in surveying deployed and non-deployed personnel, enough women are surveyed. To do that, it uses

a strategy called "quota sampling" where the entire population of security force is divided into subgroups such as women/men and deployed/non-deployed and then a certain number of women and deployed personnel are surveyed. If the sample was to be drawn through probability sampling, then the likelihood that the sample would include fewer women and deployed personnel will be high in institutions where fewer women are employed or fewer personnel are deployed. So, in order to ensure that enough women and deployed personnel are surveyed, the methodology determines a quota for female and deployed participants and recommends oversampling women and deployed personnel. That being said, if it is assured that a country can sample a high enough number of women and deployed personnel, they should use probability sampling. More information about sampling strategies can be found below.

Section 2: Margin of Error, Confidence Levels, and Confidence Intervals

In this section, calculating margin of error, confidence levels, and confidence intervals in the MOWIP methodology is explained.

The MOWIP methodology survey results aim to have a **margin of error** of at most 5% and a **confidence level** of at least 95%.

Margin of Error is a percentage point that demonstrates the extent to which the results of the study (given by the sample) may differ from the real **population**. **Population** refers to the entire group of individuals that the findings of the study apply to. For the purposes of the MOWIP methodology, the population refers to all members of the security organization undergoing the assessment. As it is not possible (or necessary) to survey the whole population, we survey a smaller sample. The **sample** therefore refers to those members of the security institution who participated in the study as respondents.

Confidence Interval refers to a range of values or numbers that represent the range the real population parameter falls into. In other words, given a confidence interval, researchers will be able to estimate what the real population value could be (a point estimate within the confidence interval range). **Confidence level** refers to the measure that represents the probability that the confidence interval would include the real population parameter. For example, a 95% confidence level means that if the study is conducted repeatedly using the same techniques, 95% of the time the true answer will fall within the range of confidence intervals. The confidence interval reflects how much uncertainty is involved in statistics presented in the study.

The margin of error gives the range of values above and below a point estimate, which gives us the range of confidence intervals. For example, a 95% confidence level with the point estimate of 45 and 5% margin of error means that the findings will be within 5 percentage points of 45, 95% of the time. In other words, the margin of error represents how far the true value is from our estimate; and confidence interval is our estimate plus and minus margin of error.

If we go back to the example we discussed under margin of error, this means that if we run our study once, we are 95% sure that the result we get is within 5% of the answer we would have got

from surveying all personnel. However, if we ran our study 20 times with different samples, we would expect to have a "wrong" (unlucky) result once, where the answer we get from our sample is more than 5% away from the answer we would have got from the whole population.

Illustrative Example

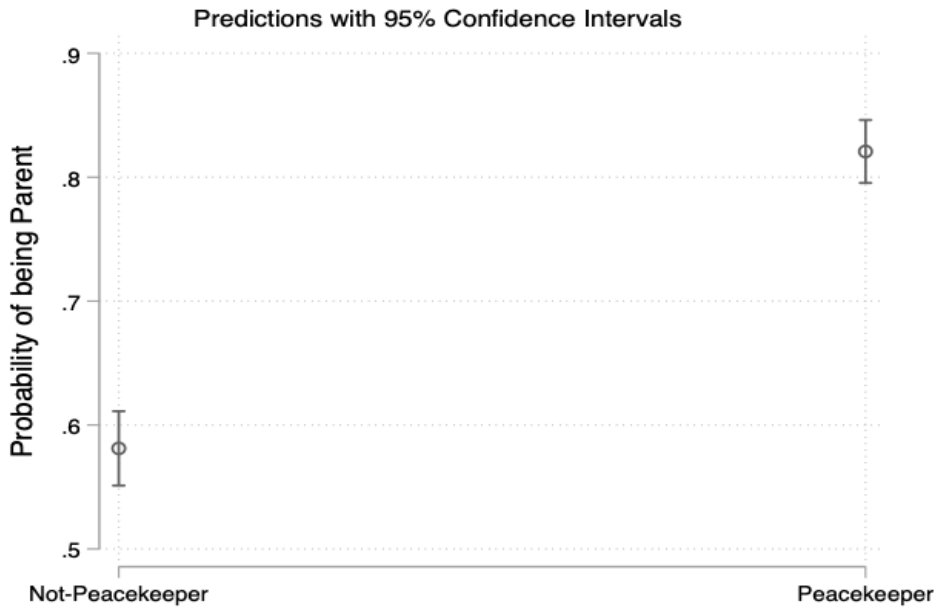
The study of security forces personnel in Ghana, Uruguay, Zambia, and Senegal shows that the probability of a peacekeeper being a parent is 82%with the confidence level of 95% and margin of error of 2.5%.

If the study was repeated indefinitely using the same techniques, we expect each of the findings to be within 2.5% of the previous finding (82 percent) 95% of the time. In other words, 95 percent of the time we would expect the finding to be between:

- 82 – 2.5 = 79.5 percent

  and
- 82 + 2.5 = 84.5 percent

The graph below visualizes the probability of a peacekeeper being a parent compared to a security force personnel that is not a peacekeeper. The graph presents the point estimate (the circle), and confidence intervals (the lines below and above the point estimate). It shows that the probability of a peacekeeper being a parent is between 79.5% and 84.5% and the best estimate is 62% (the circle). With a confidence level of 95%, we can say that if we draw samples of security force personnel using the same techniques, 95% of the time the probability that a peacekeeper is a parent is between 79.5% and 84.5%. Similarly, the probability of not being a peacekeeper and not having a child is between 55% and 61% with the best estimate of 58%.



Calculating the confidence interval and margin of error

In order to calculate the **confidence interval**, the researcher needs to first, calculate "degrees of freedom" and determine the "confidence level;" and in order to calculate margin of error, the researcher needs to calculate "standard error" and "critical value."

Degrees of freedom refers to the number of independent pieces of information that are included in an estimation. In order to calculate the degrees of freedom, the researcher needs to subtract 1 from the number of items/respondents in the study. To do that, 1 should be subtracted from the sample size (for example, if sample size is 380, degrees of freedom will be 380-1=379).

Confidence level refers to the probability that the true value of the population falls within a specific range and can be expressed as a percentage.

After calculating the degrees of freedom and specifying the confidence level, the **confidence level** should be subtracted from 1, then divide by two in order to determine the alpha (α) (for example, if the confidence level is 95%, then $\alpha =$ (1-0.95)/2=0.025).

The researcher then will consult a table called the "t-distribution" table to find a value called the "critical value" or "t-score" for 379 degree of freedom (df) and 0.025 (α) as shown below. The T-score is a value that represents how far a data point is from the average. So, a t-score can tell the researcher how far a value (e.g. the age at which a peacekeeper first deployed) is compared to the

average (average age at which peacekeepers deploy in the institution). The t-score is obtained from a t-distribution table that is universal. As figure 1 shows, for 379 degrees of freedom and α=0.025, our critical value is **1.966**.

Figure 1: how to use the t-table

	Area in right tail = 0.25	Area in right tail = 0.20	Area in right tail = 0.15	Area in right tail = 0.10	Area in right tail = 0.05	Area in right tail = 0.025	Area in right tail = 0.02	Area in right tail = 0.01	Area in right tail = 0.005	Area in right tail = 0.0025	Area in right tail = 0.001	Area in right tail = 0.0005
DF	t-score	t-score	t-score	t-score	t-score	t-score	t-score	t-score	t-score	t-score	t-score	t-score
359	0.675	0.843	1.038	1.284	1.649	1.967	2.061	2.337	2.590	2.824	3.113	3.318
360	0.675	0.843	1.038	1.284	1.649	1.967	2.061	2.337	2.590	2.824	3.113	3.318
361	0.675	0.843	1.038	1.284	1.649	1.967	2.061	2.337	2.590	2.824	3.113	3.318
362	0.675	0.843	1.038	1.284	1.649	1.967	2.061	2.337	2.589	2.824	3.113	3.318
363	0.675	0.843	1.038	1.284	1.649	1.967	2.061	2.337	2.589	2.824	3.113	3.318
364	0.675	0.843	1.038	1.284	1.649	1.967	2.061	2.337	2.589	2.824	3.113	3.317
365	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.337	2.589	2.824	3.113	3.317
366	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.337	2.589	2.824	3.113	3.317
367	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.337	2.589	2.824	3.113	3.317
368	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.337	2.589	2.824	3.113	3.317
369	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.317
370	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.317
371	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.317
372	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.317
373	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.317
374	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.317
375	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.317
376	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.317
377	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.317
378	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.316
379	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.316
380	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.824	3.112	3.316
381	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.823	3.112	3.316
382	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.823	3.112	3.316
383	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.823	3.112	3.316
384	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.823	3.112	3.316
385	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.823	3.112	3.316
386	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.823	3.111	3.316
387	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.823	3.111	3.316
388	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.823	3.111	3.316
389	0.675	0.843	1.038	1.284	1.649	1.966	2.061	2.336	2.589	2.823	3.111	3.316

The **Standard error** is a measure of spread and gives researchers information about the distribution of the data. The higher the standard error, the more heterogenous, or spread, the data are. The standard error is calculated by dividing the "standard deviation" by the square root of the sample size. Standard deviation is calculated by calculating the average (mean) of sample and subtracting each individual value from the mean and dividing them by degrees of freedom.

Calculating the Sample Standard Deviation (S)

$$s = \sqrt{\frac{\Sigma (X - \bar{x})^2}{n - 1}}$$

- Σ = sum of
- X = each value in the sample
- $\bar{x}$ = population mean
- n = number of values in the sample

Once we have calculated the standard error and the critical value, we can multiply them together the **margin of error.**

Margin of error = standard error x critical value

Once we have the **margin of error** and we can calculate the **confidence interval**, which is simply the range of values found by taking the sample mean, plus or minus the margin of error.

Confidence interval = sample mean ± margin of error

Illustrative Example

We want to know the average months that peacekeepers have been deployed in our study of security forces personnel in Ghana, Uruguay, Zambia, and Senegal. The average months that the 876 survey respondents have served – i.e. the sample mean - is 19 months. We want to use this to estimate what the population mean would be (i.e. what the average month served would be if we sampled all personnel.) The standard deviation is 13, we have chosen a confidence level of 95% and therefore, from t-table, the critical value is 1.960.

First, we calculate the standard error by dividing the standard deviation (13) by the square root of the sample size (876).

$13/\sqrt{(876)} = 0.439$

Second, we calculate the margin of error by multiplying the standard error by critical value, which is 1.966 (see figure 1).
$0.439 \times 1.960 =$ **$0.860 \cong 1$**

As was mentioned, the margin of error gives us the range of values that fall **above** and **below** the sample mean. This range is the confidence interval. The upper bound is the sample mean plus the margin of error, and the lower bound is the sample mean minus the margin of error:
Upper bound: 19 + 1 = 20
Lower bound: 19 – 1 = 18

This gives us a confidence interval of 21.471 to 28.529. What this means is that if we were to repeat the survey multiple times, we can expect the sample mean (the average months that the respondents were deployed) to be somewhere between about 18 and 20, 95% of the time.

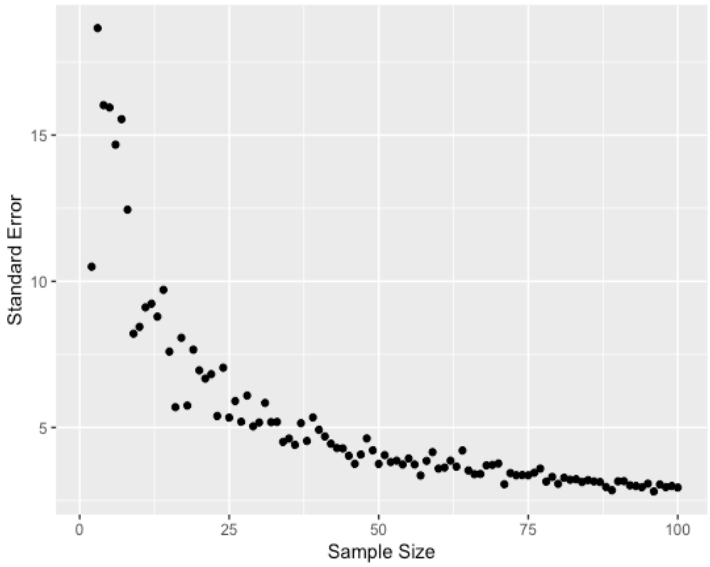
Section 3: Sample Size

In this section, calculating the sample size in the MOWIP methodology is explained.

Why sample size matters:

The MOWIP methodology recommends that a sample of at least 380 respondents be considered in order to make inferences about groups of interest. A scientific analysis of the security institutions means that in order to recommend policy change/adoption and generalize the findings of the study to the overall security institution, a large enough number of personnel from different groups (men and women; different ranks; deployed and non-deployed, different branches and technical units; etc.) need to be surveyed. As mentioned in the previous section, sample size plays an important role in calculating different components of the analysis such as margin of error, standard deviation, and confidence interval. The larger the sample, the smaller the measures of uncertainty become and the more accurate the findings will be (meaning the findings will be closer to those if we surveyed the actual population). Figure 2 and Figure 3 below show that as the sample size increases, both the standard error and margin of error decrease as well. Therefore, to ensure that the margin of error is 5 percent (the minimum standard for the MOWIP methodology) we need to have a sample that includes a sufficient number of respondents.

Figure 2: Distribution of Standard Error over Sample Size



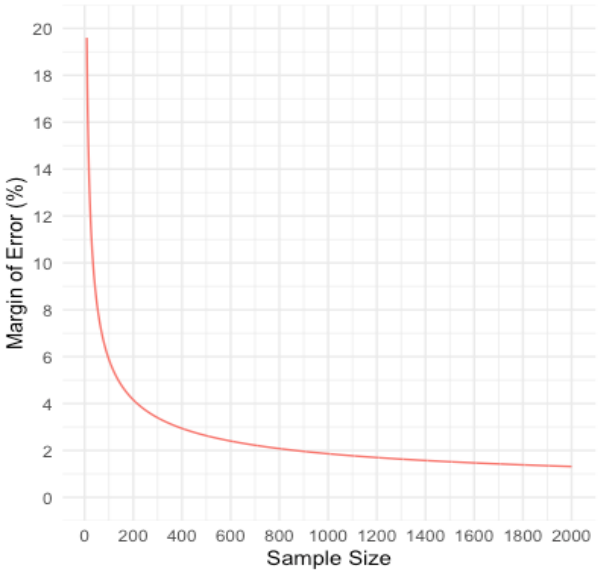


Figure 3: Distribution of Margin of Error over Sample Size (95% CI)

Different margins of error given different sample sizes (male and female, deployed female, deployed male, not deployed female and not deployed male)

Figures 4-6 illustrate the margin of error at different sample sizes. As was mentioned, the larger the sample size, the smaller the margin of error will be. Figure 4 shows that when sample size is 380, which is the recommended sample in the MOWIP methodology, the margin of error is about 3 percent. Figure 5 shows that when sample size is 190, which is the recommended sample of women/men and sample of deployed/non-deployed in the MOWIP methodology, the margin of error is about 4 percent. Figure 6 shows that when sample size is 95, which is the recommended sample of deployed women/deployed men in the MOWIP methodology, the margin of error is about 6 percent.

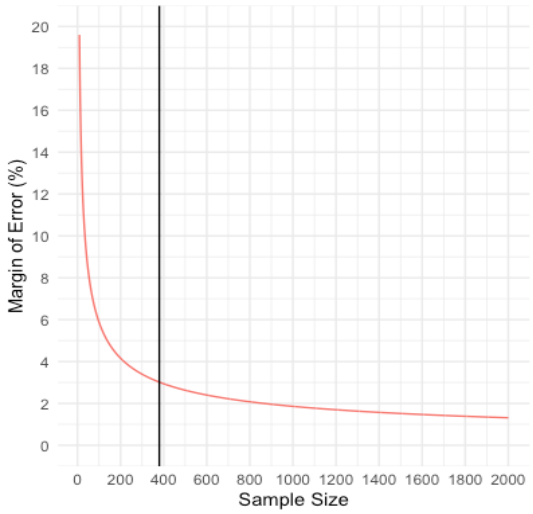


Figure 4: ME when Sample Size is 380

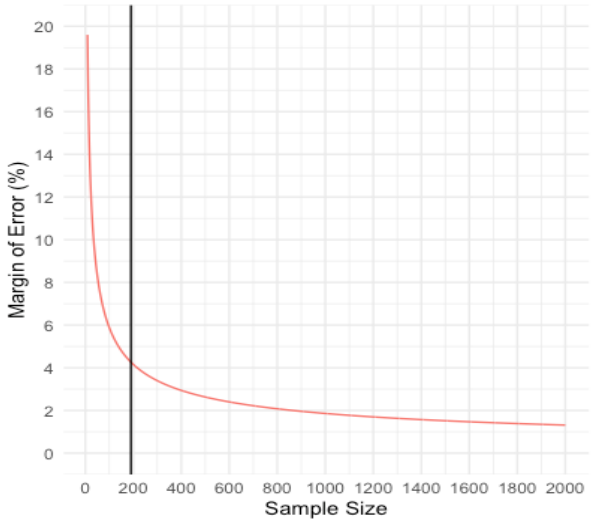


Figure 5: ME when Sample Size is 190 (men/women)

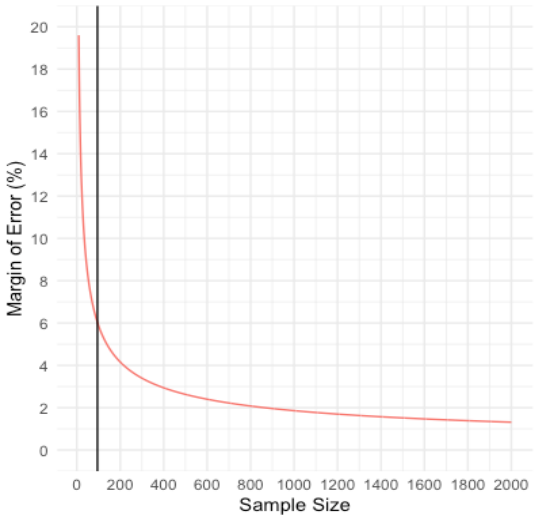


Figure 6: ME when Sample Size is 95(deployed men/women)

Different sample sizes given confidence interval, margin of error, and population size

The necessary sample size can be determined depending on the desired confidence interval and margin of error. The confidence interval and the margin of error are the measures of uncertainty. If researchers are interested in achieving higher levels of certainty in their findings, they should opt for higher confidence levels and lower margins of error, both of which require a larger sample size.

However, there is another factor that determines the necessary sample size given the desired confidence level and margin of error, and that is the **population size**. The larger the population size, the larger the sample that needs to be drawn in order to achieve the same levels of certainty.

Figures 7-15 illustrate the distribution of the necessary sample size for different confidence intervals and margins of error depending on the population size.

Figures 7-9 show the variation in the necessary sample sizes based on population size with a 99% confidence interval, and margins of error of 10%, 5%, and 3% respectively. The largest sample size is needed if we opt for a 99% confidence level and 3% margin of error. For example, if a security institution has 5,000 personnel, and if we opt for 99% confidence level and 5% margin of error for a study of that security institution, then we need about 600 respondents as shown in figure 8 (we draw a vertical line from 5,000 population size until we reach the red line, and then draw a horizontal line from there to the y-axis which is the sample size).

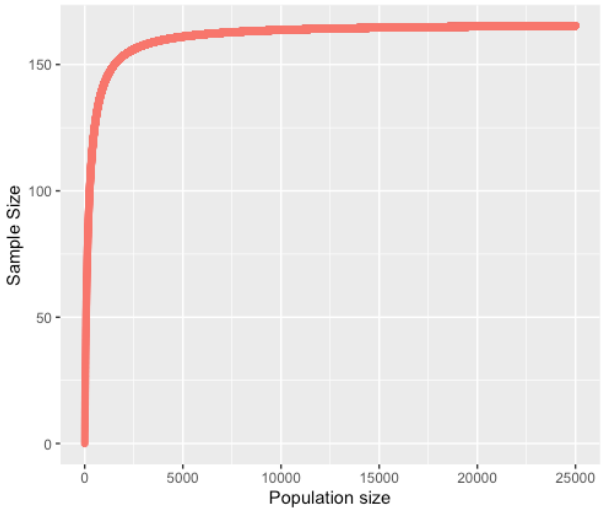


Figure 7: Sample Size with 99% CI & 10%ME

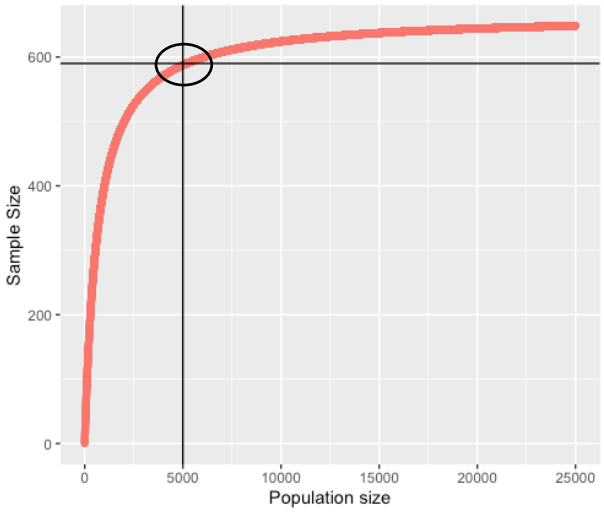


Figure 8: Sample Size with 99% CI & 5%ME

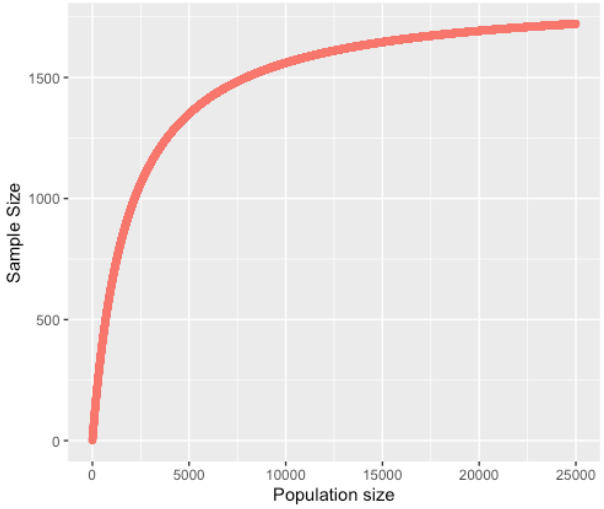


Figure 9: Sample Size with 99% CI & 3%ME

Figures 10-12 show the variation in the necessary sample sizes based on population size, with a 95% confidence level, and margins of error of 10%, 5%, and 3% respectively. For example, if a security institution has 5,000 personnel, and if we opt for 95% confidence level and 5% margin of error for a study of that security institution, then we need about 400 respondents.

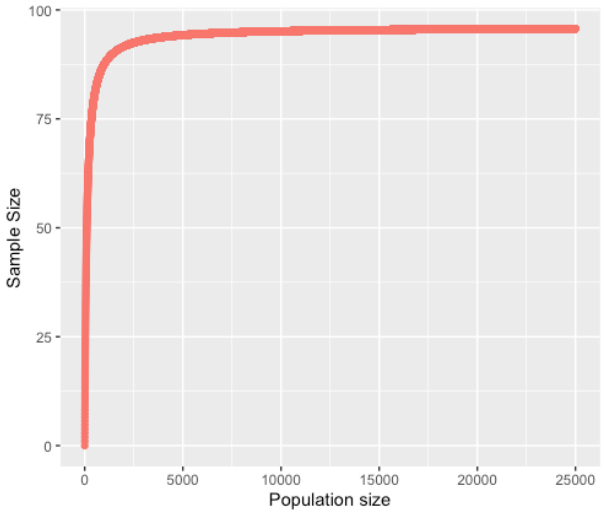


Figure 10: Sample Size with 95% CI & 10%ME

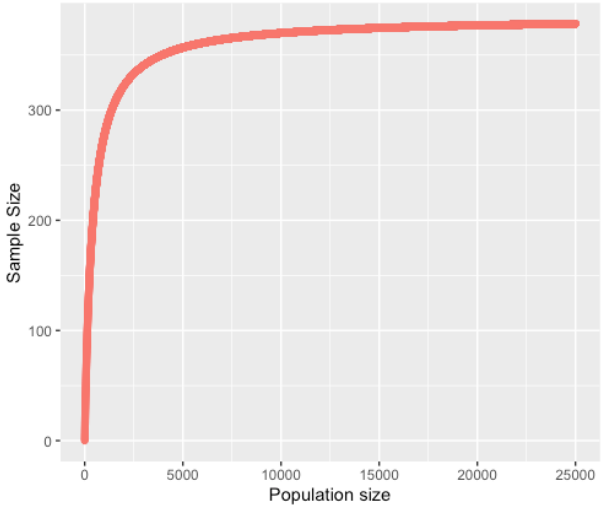


Figure 11: Sample Size with 95% CI & 5%ME

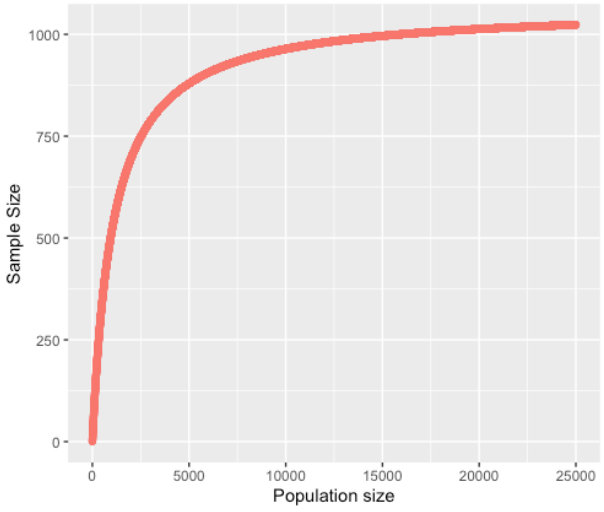


Figure 12: Sample Size with 95% CI & 3%ME

Figures 13-15 shows the variation in the necessary sample sizes based on population size, with a 90% confidence level, and margins of error of 10%, 5%, and 3% respectively. For example, if a security institution has 5,000 personnel, and if we opt for 90% confidence level and 5% margin of error for a study of that security institution, then we need about 300 respondents.

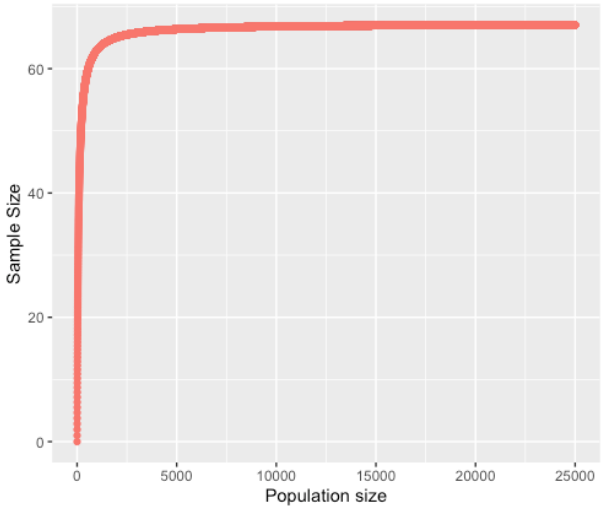


Figure 13: Sample Size with 90% CI & 10%ME

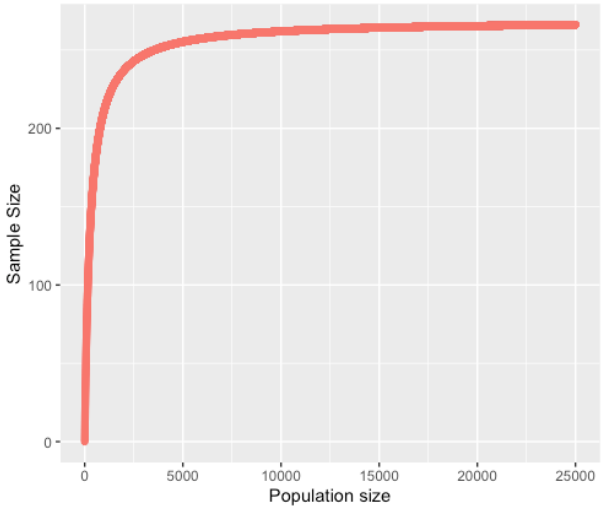


Figure 14: Sample Size with 90% CI & 5%ME

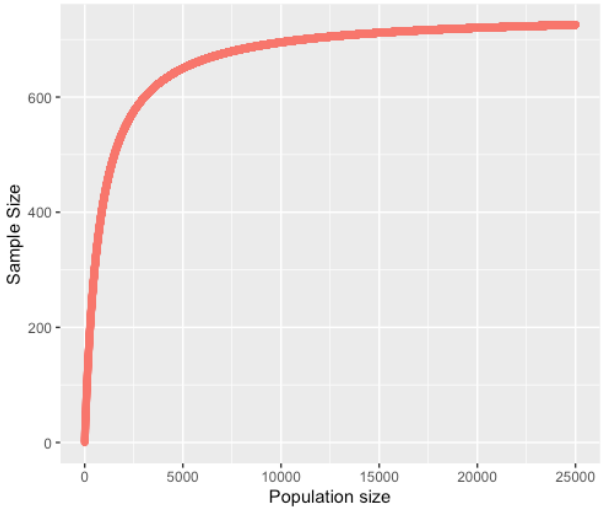


Figure 15: Sample Size with 90% CI & 3%ME

Section 4: How to Create a Sampling Frame

In this section, creating a sample of survey respondents in the MOWIP methodology is explained.

Why use a sampling frame

In order to draw a more accurate description of the security institutions under study, we should have a sufficient number of respondents from different groups within the security institutions. Respondents can be part of the following groups:

- Female and male personnel
- Personnel across ranks / high rank, medium rank, and low rank
- Deployed to UN missions and non-deployed personnel
- Army, navy, and the air force members (for armed forces institutions)
- Personnel across geographical locations (provinces/states/regions within a country)

Different approaches to creating sampling frame

A sample can be generated in multiple ways from the master roster (i.e. the institution's database of all serving personnel) using **random selection, systematic sampling**, **stratified sampling**, and **quota sampling.**

- **Random selection from the master roster**: Each member of the security institution would be allocated a corresponding number, and the assessment team/security forces would use a random number generator to produce the corresponding numbers of the people who are to be surveyed.
- **Systematic sampling from the master roster**: all members of the security institution would be listed in alphabetical order either by first or last name (or some other order such as birth day), and the team would choose a person at regular intervals, for example every twentieth person on the list.
- **Stratified sample from the master roster**: using this method ensures that the key features necessary for the survey accurately reflect the population of the security institution. For example, if 30% of the security forces are female, then they ensure that 30% of their sample is female.
- **Quota sampling**: in this method the selected groups are not proportionate to the population of the group within the security institution. If there are certain characteristics of interest, then the quota sample is used to ensure the over-representation of people with these characteristics.

Why the MOWIP methodology usually uses quota sampling

In the MOWIP methodology, we are particularly interested in learning about the experiences of certain types of personnel, which are **women** and those who have **deployed/not deployed**. For this reason and because we need to ensure that we survey enough of the above-mentioned personnel to make conclusive findings, we oversample these groups. In other words, even if

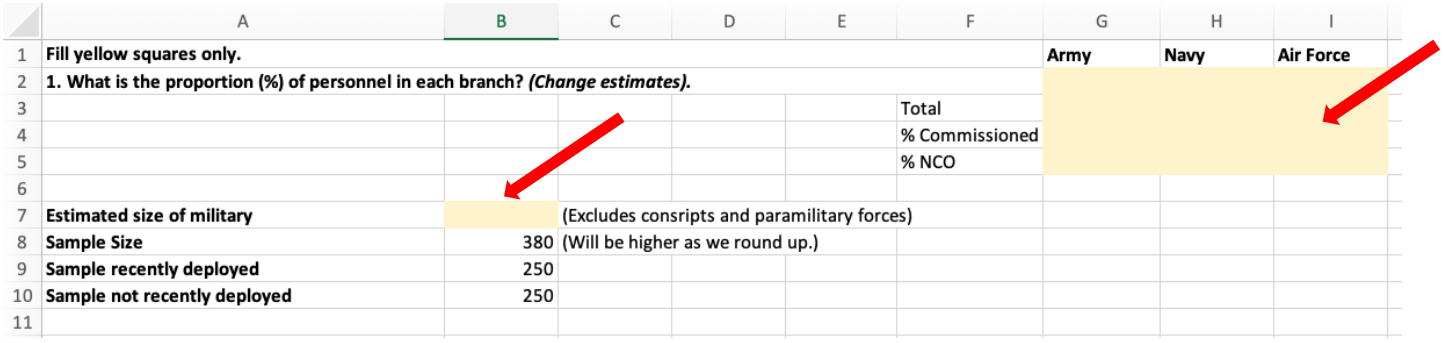
women make up only 5% of the population of the security institution, we still ensure that they make up 50% of the sample.

Technical instructions for creating a sampling frame

The first step in creating a quota sample frame is to gather the following information about the security institution under study:

- **Estimated size of the security institution**
- **The proportion (%) of personnel in each branch of the security institution**
- **The proportion (%) of commissioned and non-commissioned personnel in each branch (for the military only)**
- **Location of all institution (military, police, gendarmerie) sites in the country and the number of personnel at each location**
    - **The number of men and women at each location**
    - **The number of personnel who have deployed and not deployed at each location**
- **A list of all non-geographically based units (e.g operational units or administrative units)**
    - **The number of personnel in these units**
    - **The number of men and women in these units**
    - **The number of personnel that have deployed and not deployed in these units**

Once provided, the information will be imported into an Excel spreadsheet as in the image below. The MOWIP methodology recommends a minimum survey sample of 380 personnel for each institution, which would mean that the sample includes 95 women who have deployed, 95 women who have not deployed, 95 men who have deployed, and 95 men who have not deployed. Other characteristics will be considered based on the proportion of personnel holding that characteristic. For example, in surveying the armed forces, we are interested in drawing the personnel that have been commissioned and those that have not. The percentage of commissioned and non-commissioned personnel in each branch will determine the number of commissioned and non-commissioned personnel who will take the survey. The figure below presents a simple sample frame template for the military.

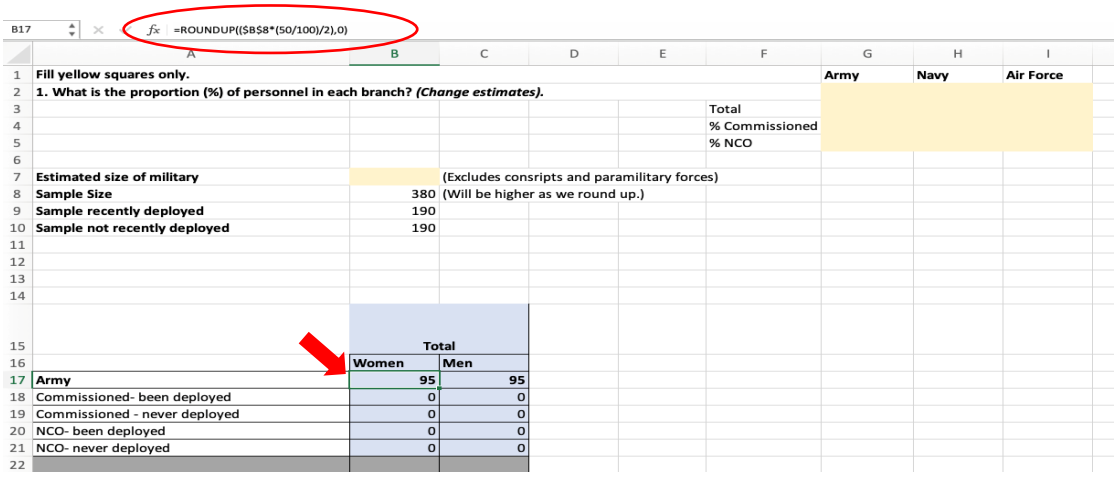


	A	B	C	D	E	F	G	H	I
1	**Fill yellow squares only.**						**Army**	**Navy**	**Air Force**
2	**1. What is the proportion (%) of personnel in each branch? *(Change estimates).***								
3						Total			
4						% Commissioned			
5						% NCO			
6									
7	**Estimated size of military**		(Excludes consripts and paramilitary forces)						
8	**Sample Size**	380	(Will be higher as we round up.)						
9	**Sample recently deployed**	250							
10	**Sample not recently deployed**	250							
11									

Once the above information has been gathered, the sample will be created for the three branches of the armed forces. As mentioned, the MOWIP methodology adopts quota sampling and requires

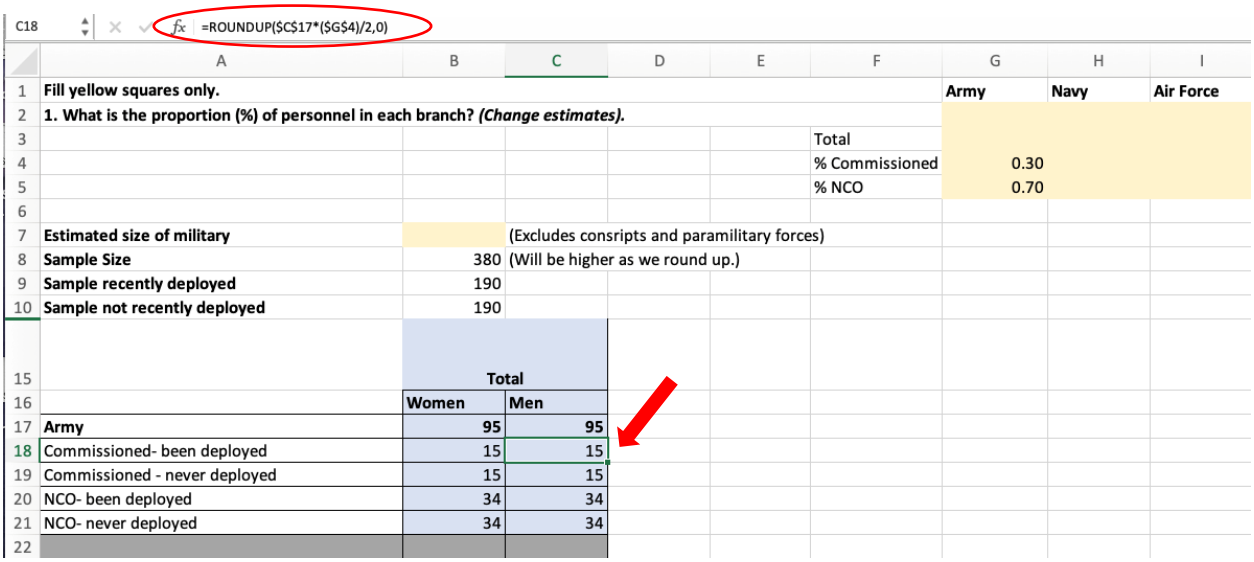
oversampling of women and deployment status. The gender and deployment status quota are determined as 50%/50% women and men, and 50%/50% deployed and non-deployed personnel meaning that the sample will include equal numbers of women and men and equal numbers of deployed and non-deployed personnel. The quota sampling of women and men, and deployed and non-deployed personnel ensures that meaningful comparison can be made and generalized to other members.

The figure below shows how the sampling frame is made for the army branch. As the army branch holds half of the armed forces personnel in our example, 50% of the sample is allocated to the army, which means that 190 respondents will be drawn from the army branch. Of those 190, 50% will be women and 50% will be men. This means that we will have 95 women and 95 men from the army participating in the study



	A	B	C	D	E	F	G	H	I
1	**Fill yellow squares only.**						**Army**	**Navy**	**Air Force**
2	**1. What is the proportion (%) of personnel in each branch? *(Change estimates).***								
3						Total			
4						% Commissioned			
5						% NCO			
6									
7	**Estimated size of military**		(Excludes consripts and paramilitary forces)						
8	**Sample Size**	380	(Will be higher as we round up.)						
9	**Sample recently deployed**	190							
10	**Sample not recently deployed**	190							
11									
12									
13									
14									
15		**Total**							
16		**Women**	**Men**						
17	**Army**	**95**	**95**						
18	Commissioned- been deployed	0	0						
19	Commissioned - never deployed	0	0						
20	NCO- been deployed	0	0						
21	NCO- never deployed	0	0						
22									

These 95 women and 95 men will then be divided into four groups: those that have been deployed to UN missions and those that have not, and those who are commissioned and those that are not. Since the deployment status has a quota of 50%/50%, these 95 respondents will be divided into 2 and weighted by the total percentage of commissioned and non-commissioned in the country, as shown in the figure bellow. In this example, we are assuming that 30% of the personnel in the army are commissioned and 70% are not commissioned. We divide 95 by 2 and weigh it by the commissioned and non-commissioned number to get the final sample of deployed and non-deployed, and commissioned and non-commissioned for the army.



C18 =ROUNDUP(C17*(G4)/2,0)

	A	B	C	D	E	F	G	H	I
1	**Fill yellow squares only.**						**Army**	**Navy**	**Air Force**
2	**1. What is the proportion (%) of personnel in each branch? *(Change estimates).***								
3						Total			
4						% Commissioned	0.30		
5						% NCO	0.70		
6									
7	**Estimated size of military**		(Excludes consripts and paramilitary forces)						
8	**Sample Size**	380	(Will be higher as we round up.)						
9	**Sample recently deployed**	190							
10	**Sample not recently deployed**	190							
15		**Total**							
16		**Women**	**Men**						
17	**Army**	**95**	**95**						
18	Commissioned- been deployed	15	15						
19	Commissioned - never deployed	15	15						
20	NCO- been deployed	34	34						
21	NCO- never deployed	34	34						
22									

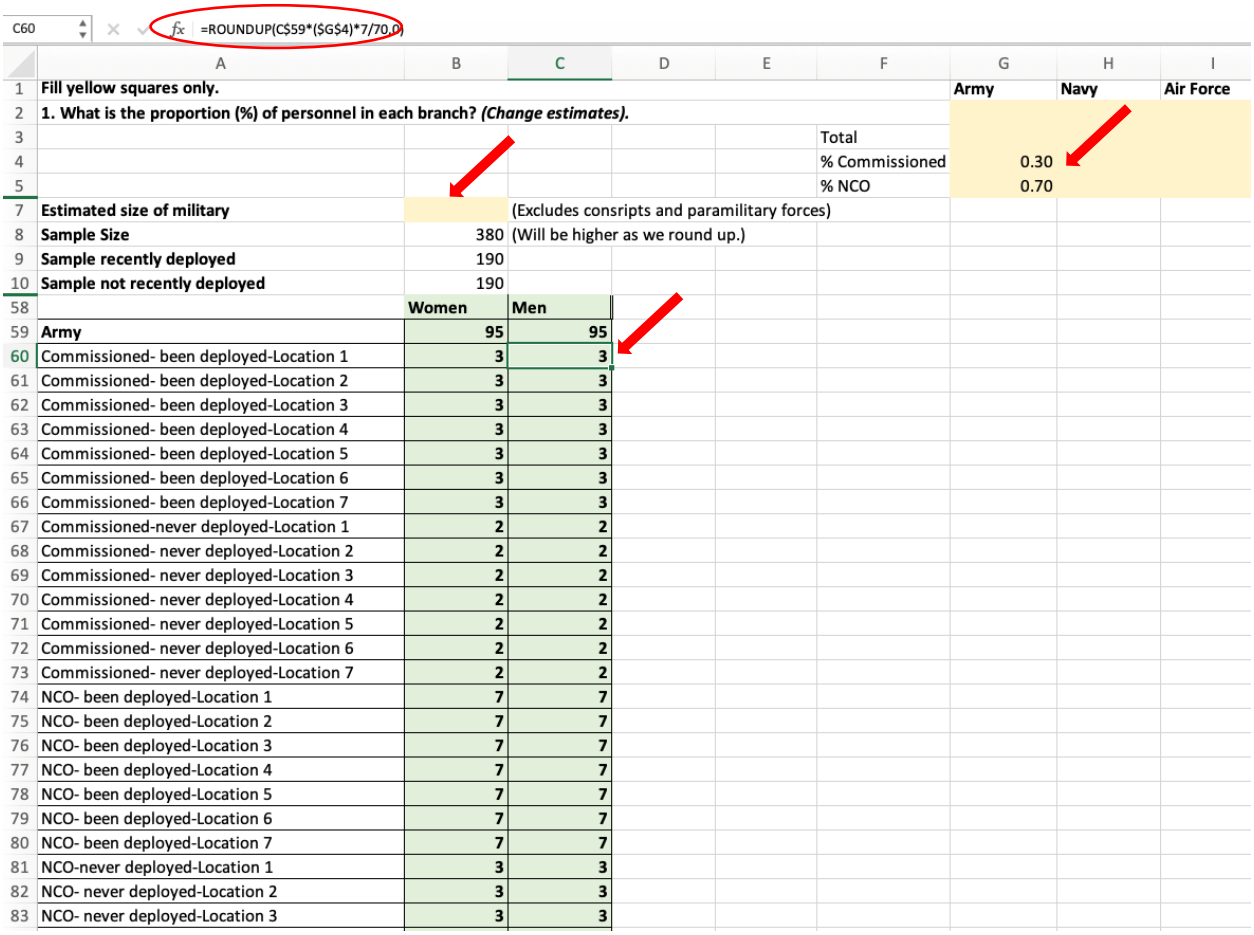
The same process will be executed to draw the total sample for the navy and the air force. As the navy and air-force branches each hold about 25% of the personnel in our example, 50% of the sample is allocated to the navy and the air force (25% each branch), which means that 96 respondents will be drawn from the navy branch and 96 respondents will be drawn from the air force branch. (We round up from 95 to 96 to be able to divide the sample by two.) Of those 96, 50% will be women and 50% will be men. This means that we will have 48 women and 48 men from each branch participating in the study. These 48 women and 48 men will then be divided into four groups: those that have been deployed to UN missions and those that have not, and those who are commissioned and those that are not.

1. What is the proportion (%) of personnel in each branch? *(Change estimates).*								
					Total			
					% Commissioned	0.30	0.08	0.11
					% NCO	0.70	0.92	0.89
Estimated size of military		(Excludes consripts and paramilitary forces under ministry of justice.)						
Sample Size	380	(Will be higher as we round up.)						
Sample recently deployed	190							
Sample not recently deployed	190							

	Total	
	Women	**Men**
Army	**95**	**95**
Commissioned- been deployed	15	15
Commissioned - never deployed	15	15
NCO- been deployed	34	34
NCO- never deployed	34	34
Navy	**48**	**48**
Commissioned- been deployed	2	2
Commissioned - never deployed	2	2
NCO- been deployed	23	23
NCO- never deployed	23	23
Air Force	**48**	**48**
Commissioned- been deployed	3	3
Commissioned - never deployed	3	3
NCO- been deployed	22	22
NCO- never deployed	22	22

However, as we mentioned, geographical units are also an important consideration in designing the sampling frame. They are important in order to generalize the findings to women/deployed/men/undeployed across the entire security forces. The process to include geographical variation is done similarly if there are non-geographical units in the security institution. The figure below demonstrates this process. We have divided the total sample between seven locations in this example.

The processes explained above are similar if we were to design a sampling frame for a police institution. It is important to take into account the units and their proportion within the security institution and quotas for gender and deployment status when designing the sampling frame for any security institution.



	A	B	C	D	E	F	G	H	I
1	**Fill yellow squares only.**						**Army**	**Navy**	**Air Force**
2	**1. What is the proportion (%) of personnel in each branch? *(Change estimates).***								
3						Total			
4						% Commissioned	0.30		
5						% NCO	0.70		
7	**Estimated size of military**		(Excludes consripts and paramilitary forces)						
8	**Sample Size**	380	(Will be higher as we round up.)						
9	**Sample recently deployed**	190							
10	**Sample not recently deployed**	190							
58		**Women**	**Men**						
59	**Army**	**95**	**95**						
60	Commissioned- been deployed-Location 1	**3**	**3**						
61	Commissioned- been deployed-Location 2	**3**	**3**						
62	Commissioned- been deployed-Location 3	**3**	**3**						
63	Commissioned- been deployed-Location 4	**3**	**3**						
64	Commissioned- been deployed-Location 5	**3**	**3**						
65	Commissioned- been deployed-Location 6	**3**	**3**						
66	Commissioned- been deployed-Location 7	**3**	**3**						
67	Commissioned-never deployed-Location 1	**2**	**2**						
68	Commissioned- never deployed-Location 2	**2**	**2**						
69	Commissioned- never deployed-Location 3	**2**	**2**						
70	Commissioned- never deployed-Location 4	**2**	**2**						
71	Commissioned- never deployed-Location 5	**2**	**2**						
72	Commissioned- never deployed-Location 6	**2**	**2**						
73	Commissioned- never deployed-Location 7	**2**	**2**						
74	NCO- been deployed-Location 1	**7**	**7**						
75	NCO- been deployed-Location 2	**7**	**7**						
76	NCO- been deployed-Location 3	**7**	**7**						
77	NCO- been deployed-Location 4	**7**	**7**						
78	NCO- been deployed-Location 5	**7**	**7**						
79	NCO- been deployed-Location 6	**7**	**7**						
80	NCO- been deployed-Location 7	**7**	**7**						
81	NCO-never deployed-Location 1	**3**	**3**						
82	NCO- never deployed-Location 2	**3**	**3**						
83	NCO- never deployed-Location 3	**3**	**3**						

Section 5: How to Deal with Different Sampling Issues

In this section, we explain how to meaningfully implement the MOWIP methodology in cases where there exist some sampling difficulties.

How to deal with cases where there are few women in the security sector?
How to deal with cases where there are few women deployed?

In order to meaningfully study a population and its subsets, we need to have a sufficient number of individuals from those subsets of population in our sample. In the case of the MOWIP methodology, we are interested in studying experiences of women personnel. In order to study this subgroup, we need to have a comparison group, meaning men personnel. We are also interested in studying barriers that personnel face for deployment. As a result, we have two other subgroups deployed and non-deployed personnel. We need these four groups because in order to meaningfully make claims about experiences of women, we need to compare the results of the survey taken from women to the results of the survey taken from men. Similarly, in order to meaningfully make claims about either deployed or non-deployed personnel, we need to have responses from both subgroups. So, we have to survey a sufficient number of women and men, and deployed and non-deployed personnel to be able to conduct the study.

The MOWIP methodology recommends at least 190 women and 190 deployed personnel be included in the sample. However, it could be that some countries have fewer individuals than required within a specific subset of personnel (e.g. if fewer than 95 currently serving women in the institution have previously deployed). In those cases, the MOWIP methodology recommends surveying every individual from that group in order to capture the experiences of the entire subset of the population. In other words, if the total number of women in the organization is below 190, the methodology recommends sampling ALL women.

The same process applies when the total number of previously deployed personnel currently serving in the organization is below 190. The MOWIP methodology recommends sampling ALL deployed personnel in such cases.

Illustrative Example

The security institution has 5000 personnel, but only 100 women. Only 110 personnel have ever deployed (100 men and 10 women). We therefore recommend surveying all 100 women and 110 deployed personnel within the security force, but still surveying 380 personnel in total:

	Women	**Men**
Deployed	10	100
Non-deployed	90	180
Total	**100**	**280**