Measuring and aggregating population figures for planning and monitoring

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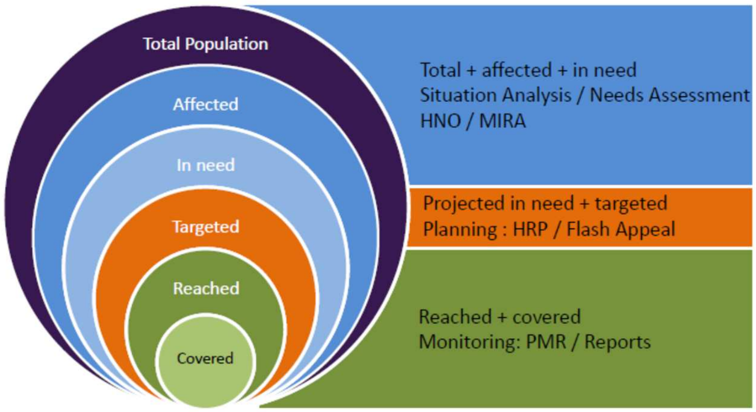
I: Introduction



The “onion model”[1] defines categories within a population group receiving humanitarian assistance, in order to facilitate the planning, implementation and monitoring of the response.

> **People targeted**: The number of people that humanitarian actors plan to assist.
>
> **People reached**: The number of *people targeted* who have benefited from one or several humanitarian activities at least once during the reporting period.
>
> **People covered:** The number of *people targeted* whose targeted needs have been fully met, in terms of type, quantity, quality and/or periodicity.

These 3 categories may be used at various levels:

Level	People targeted…	People reached...	People covered...
Activity	…should benefit from that activity…	…benefited at least once from that activity…	…benefited fully as planned from that activity…
Project	… should benefit from one or more activities of that project…	…benefited from at least one activity of that project…	…benefited fully as planned from that project…
Sector	… should benefit from one or more activities of that sector…	…benefited from at least one activity of that sector…	…benefited fully as planned from all activities in that sector for which they were targeted...
Strategic Objective	… should benefit from one or more activities related to that objective…	…benefited from at least one activity related to that objective…	…benefited fully as planned from all activities related to that objective for which they were targeted...
Response Plan	… should benefit from one or more activities in the plan…	…benefited from at least one activity in the plan…	…benefited so that all their needs, as expressed by the plan, have been fully met…
	… as needed along the duration of the reporting period.	…at least once during the reporting period	…throughout the duration of the reporting period.

<u>This note provides guidance on:</u>
- part II: how to estimate the *people reached* at different levels
- part III: how to aggregate *people targeted* and *people reached* figures, from granular data (activities/project), up to a higher level (cluster or strategic).

[1] Humanitarian Profile Support Guidance for Humanitarian Population Figures, IASC, April 2016

II: Estimating the people reached at different levels

Activity level

A given activity is often monitored with 2 indicators:

- One indicator measures <u>what is delivered</u>. Examples: # of schools rehabilitated, km of road repaired, # of items distributed, # of training sessions delivered, amount of cash given, etc.
- Another indicator counts the <u>number of people</u> who benefited from the activity.

Note: when related to an activity, the terms "beneficiaries", "people reached", "people covered" and "people assisted" are used, with no differentiation.

Note 2: a distinction is sometimes made between:

- **Direct beneficiaries**, receiving direct humanitarian assistance, individually (medical consultation), or at household level (food, water, shelter …)
- **Indirect beneficiaries**, benefitting indirectly from the activity (radio broadcast, rehabilitation of health center). Note: some activities only have indirect beneficiaries: repairing a road, or training civil officers benefit the whole community indirectly, but no particular group directly.

<u>Estimating the number of people who benefited from one activity:</u>

There is not a single methodology for counting the people reached by an activity, as this depends on the nature of the activity. Some methods:

- Directly counting. *Example: the GBV medical service has attended 250 victims.*
- Counting the households and extrapolating. *Example: shelter kits were distributed to 30,000 households. Estimated beneficiaries = 30,000 x 5 = 150,000 people.*
- Counting the items delivered and extrapolating. *Example: 5 wells have been built. Estimated beneficiaries = 5 x 600 = 3,000 people.*
- Estimating through a survey: asking a sample of the population whether they benefited from the activity, and then extrapolating to the whole population group.
- Etc.

<u>Activity over time</u>

An activity may report the number of people reached on a periodic basis, for example monthly. From this, we need to get an overall number of people reached by this activity 'from start to date'.

Depending on the nature of the activity, we have 2 different situations:

Nature of activity	Monthly reached figure:	Total reached figure from start to date:
The activity targets each person at one time. People reached once no longer need to be reached subsequently. E.g., one-time vaccination	Number of individuals benefiting from that activity during that month only	Number of individuals benefiting from that activity from the beginning of the action until end of that month: **the sum of all monthly reached numbers**
The activity targets each person several times. People reached once need to be reached again every period. E.g., monthly food distributions.	Number of individuals benefiting from that activity during that month only	Number of individuals benefiting from that activity from the beginning of the action until end of that month: **the highest monthly reached figure (as people reached in all other months may be a subset of this)**

Project level

A project is a set of activities delivered by one project owner over a period of time. A project is monitored with 2 types of indicators:

- Several indicators measure what is delivered. Examples: *# of schools rehabilitated, km of road repaired; # of items distributed; # of training sessions delivered; amount of cash given; etc*.
- One indicator counts the number of people who benefited from the project.

Note: when related to a project, the terms "beneficiaries", "people reached", "people covered" and "people assisted" are used, with no differentiation.

There is not a single methodology for counting the people reached by a project, as this depends on the nature of the project. Some methods:

- Directly counting the people who benefited. *Example: The Health Center treated 2,000 persons.*
- Counting the households and extrapolating. *Example: the project assisted 30,000 households. Estimated beneficiaries = 30,000 x 5 = 150,000 people.*
- Estimating through a survey: asking a sample of the population whether they benefited from the project, and then extrapolating to the whole population group.
- Aggregating the people reached by the different activities of the project

Cluster / Sector level

A cluster coordinator needs to estimate the people reached by all actions that are performed under the cluster. The cluster coordinator collects the actor-level figures on people reached (by project or by activities) and from these, calculates the sectoral reached, trying to avoid double-counting. Normally, the cluster takes responsibility for this and reports its sectoral people reached total to OCHA. In some cases, with limited cluster/sector capacities, OCHA may have to participate or do the job.

There is not a single standard methodology for determining overall reached figures per sector. Some clusters/sectors may have specific methodologies for estimating their overall people reached. However, in most cases, cluster coordinators will do their calculations aggregating either the 'people reached **per activity'** figures, or the 'people reached **per project'** figures. In both cases, the 'people reached by the cluster' is not estimated by simply adding up the values received from the cluster members, as this would obviously lead to double counting. The calculation should use the standard aggregation methodology based on MAX and SUM, described in part III below.

Aggregating the figures per project

If all cluster members report on the people reached by each project, the people reached by the cluster may be calculated based on the people reached by projects:

- Check the main parameters of each project.
- Check how the projects relate to each other (overlapping or not). 2 projects may deliver different services to overlapping target population.
- Gather from all actors their self-report on people reached by the project.
- The total people reached can be calculated by the standard aggregation methodology presented below.

Aggregating the figures per activity.

If all cluster members report on the people reached by each activity, the people reached by the cluster may be calculated based on the people reached by activities:

- Check the main parameters of each activity.
- Check how the activities relate to each other (overlapping or not)
- When several actors conduct the same activity (e.g. vaccination), check that the activity and indicators are standardized, at the level of the cluster: the different actors speak of the same thing and measure it the same way.
- When several actors conduct the same activity, check that the different actors have different, non-overlapping target population: they target different places / different times / different groups. This is normally the case, as clusters and actors want to avoid the same beneficiary being reached twice by two different actors carrying out the same activity.
- Gather from all actors their self-report on people reached by the activity.
- The total people reached can be calculated by the standard aggregation methodology presented below.

Intersectoral: strategic objective or plan level

A Humanitarian Response Plan presents an overall "people targeted" figure, and sometimes also a target per strategic and/or specific objective. It is therefore necessary to measure the people reached, against these targets, during the implementation, and at the end of the plan. OCHA coordination team should work with the ICCG to estimate these figures. There is currently no inter-agency agreement on a methodology to determine people reached at the inter-sectoral level (i.e., for strategic and specific objectives, and for the plan as a whole). This can be done in different ways:

- The 'total reached per specific objective' may be estimated by aggregating the 'total reached' of the activities grouped under this specific objective;
- The 'total reached per strategic objective' may be estimated by aggregating the 'total reached' of the specific objectives grouped under this strategic objective;
- The 'total reached per plan' may be estimated by aggregating the 'total reached' of all strategic objectives of the plan;
- The 'total reached per plan' may also be estimated by aggregating the 'total reached' of all clusters.

In all cases above, the upper level 'people reached' figure is not estimated by simply adding up the lower-level values, as this would obviously lead to double-counting. It is necessary to use the aggregation methodology described below.

As 'people reached' figures get aggregated to higher levels, they may also become less meaningful, and misleading. When a cluster, having planned a series of activities, reports a 'people reached' figure, it may suggest that *all* these people have benefited from *all* the activities, while in reality, *each* of these people has benefited from *at least one* activity. The same applies to the specific objectives, strategic objectives, and to the whole plan. The figure "people reached" attached to a strategic objective does not mean that all these people have benefited from the full achievement of this objective. Measuring the number of people who fully benefited from a given multi-sectorial assistance (= people covered) is called "coverage" and requires a different approach.

During the year, it is common to have changes of situation and needs, that call for a change of people targeted. It is important to ensure that the people **reached** are reported against the correct people **targeted**.
Example: an initial target of 5,000 people could not receive assistance, for lack of access, and the aid was redirected to another group of 7,000 people, presenting similar needs. The people reached figure, 6,000 people, should not be reported against the original target of 5,000, but against a revised target figure of 7,000.

III: Standard aggregation methodology

This chapter examines how to aggregate population figures from a lower granular level to a higher level.

The aggregation methodology presented here is valid both for “people targeted” and “people reached”. All examples mention “people reached”, but the same logic applies for aggregating the people targeted.

The examples given are about the aggregation of population figures from 2 projects. However, the same logic applies for any “lower to higher” aggregation: activities to project; projects to region; projects to cluster; projects to specific objective; clusters to plan; etc.

III.A: The challenge we face

The obvious issue faced when trying to aggregate at a higher level, the people reached figures that were measured at a lower level is the double counting.

For example, if the activity ‘water distribution’ reached 5,000 people, and the activity ‘food distribution’ reached 3,000 people from the same population group. The total number of people reached could be:

- At least 5,000: the **maximum** of 5,000 and 3,000, assuming the smaller group was fully in the bigger group. This is called the **MAX** value.
- at most 8,000: the **sum** of 5,000 and 3,000, assuming the two groups did not overlap at all. This is called the **SUM** value.

The standard aggregation methodology combines the use of MAX and SUM, in relation to the nature of the entities being aggregated.

III.B: The different situations

Parameters of the project

To determine how to aggregate the figures from 2 projects, we need to know how they relate to each other. For that, we should identify their main parameters:

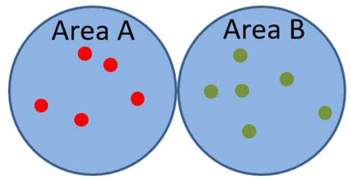
- the area covered by the project
- the time period covered by the project
- the activities conducted by the project
- the people targeted of the project

Below are a few simple typical cases, with the recommended aggregation method.

In each case, the blue background corresponds to a geographical area, and the red and green spots represent beneficiaries.

Case A> Different areas

Two projects deliver (same or different) services in 2 distinct areas, over the same period of time.



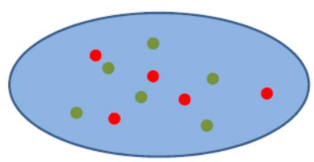
Examples:
- Both projects distribute NFI kits, in 2 distinct areas.
- Or: Project X distributes NFI kits in Area A, and project Y vaccinates in Area B.

As the 2 projects are on different locations, we can consider that they reach different individuals (no one is benefiting from the 2). Therefore, calculating the total reached is easy.

Recommended method: SUM UP
Project X people reached: 1,000
Project Y people reached: 2,500
Total people reached: 1,000 + 2,500 = 3,500

Case B> Same area, reaching different people

Two projects deliver (same or different) services to distinct populations in the same area, over the same period of time.



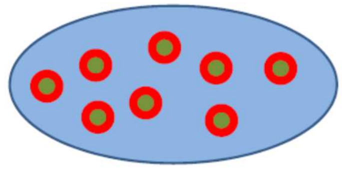
Examples:
- Both projects deliver NFI kits, one in rural areas, the other in urban areas.
- Or: Project X offers safe pregnancy and delivery to women, and project Y vaccinates children under 5.

As the 2 projects deliver services to distinct specific populations, they reach different individuals (no one is benefiting from the 2). Therefore, calculating the total reached is as easy as in the first example.

Recommended method: SUM UP
Project X people reached: 500
Project Y people reached: 1,500
Total people reached: 500 + 1,500 = 2,000

Case C> Same area, reaching the same people

Two projects in the same area deliver different services to the same population, over the same period of time. There is a complete overlap of the beneficiaries.



Example:

- Project X offers NFI kits and project Y installs water distribution systems, both for the whole population of an IDP camp.

In this case, the people targeted of both projects is the same, and they will report very close figures as project people reached. Obviously, summing up the 2 figures would not make sense: one person receiving an NFI kit and water, should be counted as one.

Recommended method: MAX value.

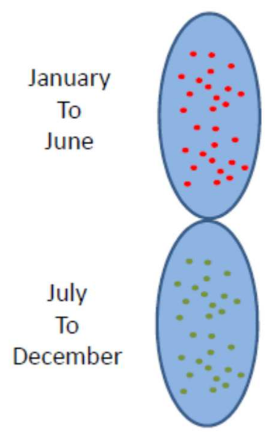
Project X people reached: 5,000

Project Y people reached: 4,900

Total people reached: MAX(5000;4900) = 5,000

Case D> Same area, reaching the same people, at different times

Two projects in the same area deliver services to the same population, but at different periods of time.



Example:

- Project X does water trucking from January to June, and project Y does the same from July to December, for the same population in an IDP camp.

In this case, the people targeted by both projects is the same, and they will report very close figures as project people reached. Obviously, summing up the 2 figures would not make sense: one person receiving water in March, and also in September, should be counted as one beneficiary for the year.

Recommended method: MAX value.

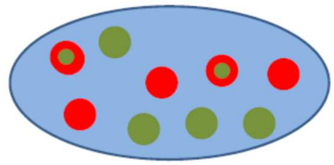
Project X people reached: 500

Project Y people reached: 490

Total people reached: MAX(500;490) = 500

Case E> Partial overlap of people reached

Two projects in the same area deliver different services to populations that partially overlap.



Example:

- Project X offers NFI kits to families (adults, kids) and project Y vaccinates children. Both projects overlap in targeting kids but project X is the only one targeting adults.

- 2 clusters offer different services to the same population.

* In this case, we are between case B and case C. The 2 projects will report people reached figures that partially overlap. Obviously, summing up the 2 figures would not make sense, it would make a higher figure than the actual population!

* Ideally, we should count the overlap: establish how many people benefited from the 2 services. We would then use the formula:
Total People reached = [Project X people reached] + [Project Y people reached] – [overlap].
(In our example: 5 + 6 – 2 = 9)
But that does not work, because in real life, with large numbers, we cannot count the overlap.

Recommended method:

Depending on the actual situation, we will have to choose the best option among 3:

a) SUM UP

We consider that the 2 projects have essentially touched on different people, the overlap is very minor.
We are in a situation close to case B, so we can therefore sum up the 2 figures.
Project X people reached: 500
Project Y people reached: 1,500
Total people reached: 500 + 1,500 = 2,000

Note: using this method, the risk is to have an overestimated result: any person who benefited from both projects is counted as 2 persons.

b) Estimate the overlap

We make a judgement call: we make our best guess on the value of the overlap.
Then we use the formula:
Total People reached = [Project X people reached] + [Project Y people reached] – [estimated overlap].

c) MAX value

We consider that the 2 projects have essentially touched on the same people: all those who benefited from project Y, have also benefited of project X. We are in a situation close to case C, so we can therefore use the MAX value:
Project X people reached: 500
Project Y people reached: 1,500
Total people reached: MAX (500;1500) = 1,500

Note: using this method, the risk is to have an underestimated result: any person who benefited from project Y only, is not counted in the total.

III.C: The standard methodology combines MAX and SUM

In order to aggregate upwards while avoiding overlap the methodology is:

1. Taking the **MAX value** across overlapping actions (e.g., different activities or sectors that target the same beneficiaries), at the lowest possible level of non-overlapping domains (e.g., different geographic regions)
2. Taking the **SUM** of the values collected from all non-overlapping domains

With this method, we can see that:

- By looking at MAX values for overlapping actions, the calculated figure totally avoids the double counting, but provides an underestimate of the real figure.
- The more granular we can make the grouping domain, the more accurate will the estimated figure be, moving upwards to the "real" value.

To apply this methodology, we need

1) to know how the granular entities relate to each other. For that, we should identify their main parameters:

- the area covered
- the time period covered
- the activity conducted
- the people targeted

2) to have consistent data at the same level (non-overlapping domains), across all the granular entities. For example, if all activities have data measured at admin2 level, then this can be used as the 'lowest level of non-overlapping domains'; whereas if one of those activities only has data disaggregated at admin1 level, then it either has to be left out of the calculation completely, or the entire calculation needs to use admin1 level.

III.D: Worked examples of the standard methodology for aggregation by MAX and SUM

People reached: Activity A

	Gender		Population Status			
	M	F	IDP	Host	Returnee	Total
Area 1	10,000	30,000	40,000	-	-	40,000
Area 2	9,000	1,000	10,000	-	-	10,000
Total	19,000	31,000	50,000	-	-	50,000

People reached: Activity B

	M	F	IDP	Host	Returnee	Total
Area 1	12,000	8,000	2,000	10,000	8,000	20,000
Area 2	5,000	45,000	11,000	20,000	19,000	50,000
Total	17,000	53,000	13,000	30,000	27,000	70,000

We want to estimate the total reached for both activities, i.e., having benefited from at least one of the activities.

Each of the methods described below takes a successively more detailed approach using more granular data, which minimizes the under-estimation, and moves progressively upwards towards the 'true figure': we go from 'at least 70,000 reached' with Method 1 to 'at least 112,000 reached' with Method 4.

Method 1: Max value

If we only have the green figures, we will estimate the people reached as

Total MAXIMUM (50000, 70000) = **70,000**

Method 2: Max value with one level of breakdown

2.A: If we have the green figures with the yellow and blue breakdown (geographic), we will estimate the people reached as:

Maximum **by Area**

Area 1: MAXIMUM (40000, 20000) = 40,000

Area 2: MAXIMUM (10000, 50000) = 50,000

Total (As Areas do not overlap)

40,000 + 50,000 = **90,000**

2.B: If we have the green figures with the grey breakdown (gender), we will estimate the people reached as:

Maximum **by Gender**

M: MAXIMUM (19000, 17000) = 19,000

F: MAXIMUM (31000, 53000) = 53,000

Total (As Genders do not overlap)

19,000 + 53,000 = **72,000**

2.C: If we have the green figures with the red breakdown (status), we will estimate the people reached as:

Maximum **by Population Status**

IDP:	MAXIMUM (50000, 13000) = 50,000
Host:	MAXIMUM (0, 30000) = 30,000
Returnee:	MAXIMUM (0, 27000) = 27,000
Total	(As Statuses do not overlap)
	50,000 + 30,000 + 27,000 = **107,000**

Method 3: Max value with 2 levels of breakdown

3.A: If we have the green figures with the purple breakdown (gender and area), we will estimate the people reached as:

Maximum **by Area and Gender**

Area 1	M	MAXIMUM (10000, 12000) = 12,000
Area 2	M	MAXIMUM (9000, 5000) = 9,000
Area 1	F	MAXIMUM (30000, 8000) = 30,000
Area 2	F	MAXIMUM (1000, 45000) = 45,000
Total	(As Areas and Gender do not overlap)	
	12,000 + 9,000 + 30,000 + 45,000 = **96,000**	

3.B: If we have the green figures with the brown breakdown (status and area), we will estimate the people reached as:

Maximum **by Area and Population Status**

Area 1	IDP	MAXIMUM (40000, 2000) = 40,000
Area 2	IDP	MAXIMUM (10000, 11000) = 11,000
Area 1	Host	MAXIMUM (0, 10000) = 10,000
Area 2	Host	MAXIMUM (0, 20000) = 20,000
Area 1	Returnee	MAXIMUM (0, 8000) = 8,000
Area 2	Returnee	MAXIMUM (0, 19000) = 19,000
Total	(As Areas and Statuses do not overlap)	
	40,000 + 11,000 + 10,000 + 20,000 + 8,000 + 19,000 = **108,000**	

Method 4: Max value with 3 levels of breakdown

If we have all the figures, we will estimate the people reached as:

Maximum **by Area, either by Gender or Status**

Area 1 by Gender	MAXIMUM (10000, 12000) + MAXIMUM (30000, 8000) = 42,000
Area 1 by Status	MAXIMUM (40000, 2000) + MAXIMUM (0, 10000) + MAXIMUM (0, 8000) = 58,000
Area 1 highest	MAXIMUM (42000, 58000) = 58,000
Area 2 by Gender	MAXIMUM(9000, 5000) + MAXIMUM (1000, 45000) = 54,000
Area 2 by Status	MAXIMUM (10000, 11000) + MAXIMUM (0, 20000) + MAXIMUM (0, 19000) = 50,000
Area 2 highest	MAXIMUM (54000, 50000) = 54,000
Total	(As Areas do not overlap)
	58,000 + 54,000 = **112,000**