

ACROSS – X sectional survey Procedures

Version 0.1

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1.

1. Sampling Frame

1.1. Definitions

1.1.1. Study area

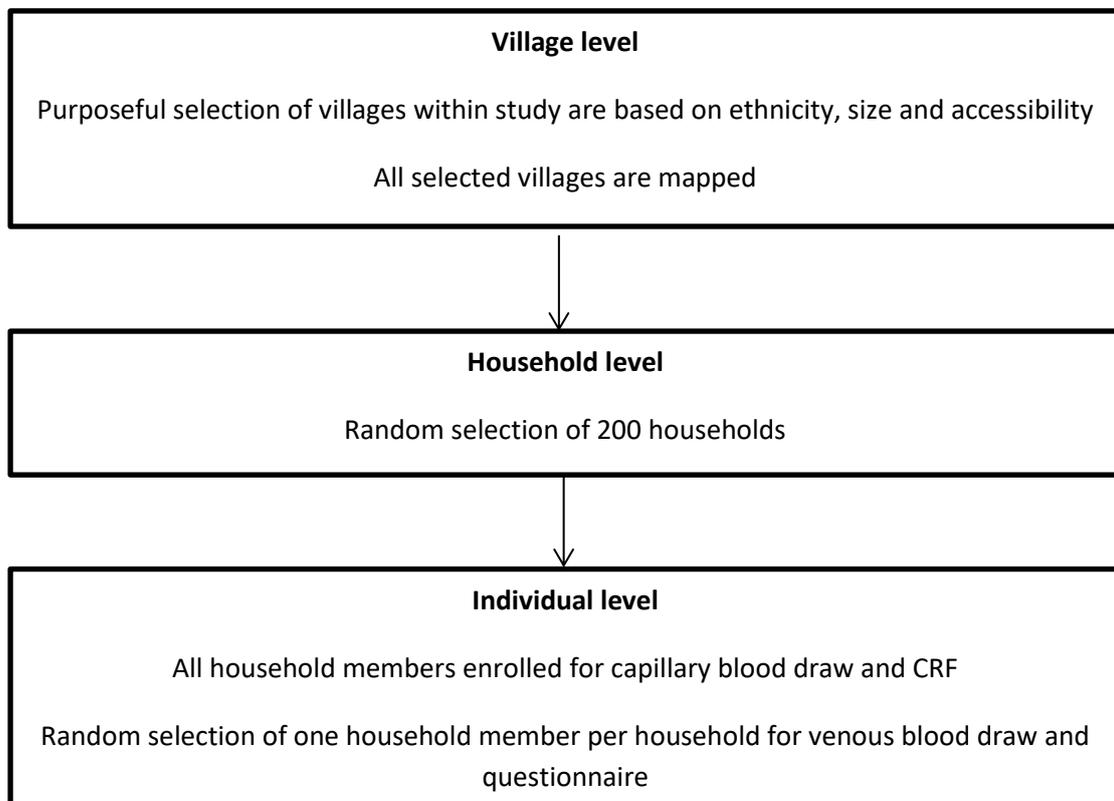
For study sites that do both the X-sectional survey and the hospital based survey the study area is defined as the catchment area of the health facility. For other sites the study area will be defined purposefully.

The study area will be divided into clusters based on predefined administrative or other suitable boundaries.

1.1.2. Household

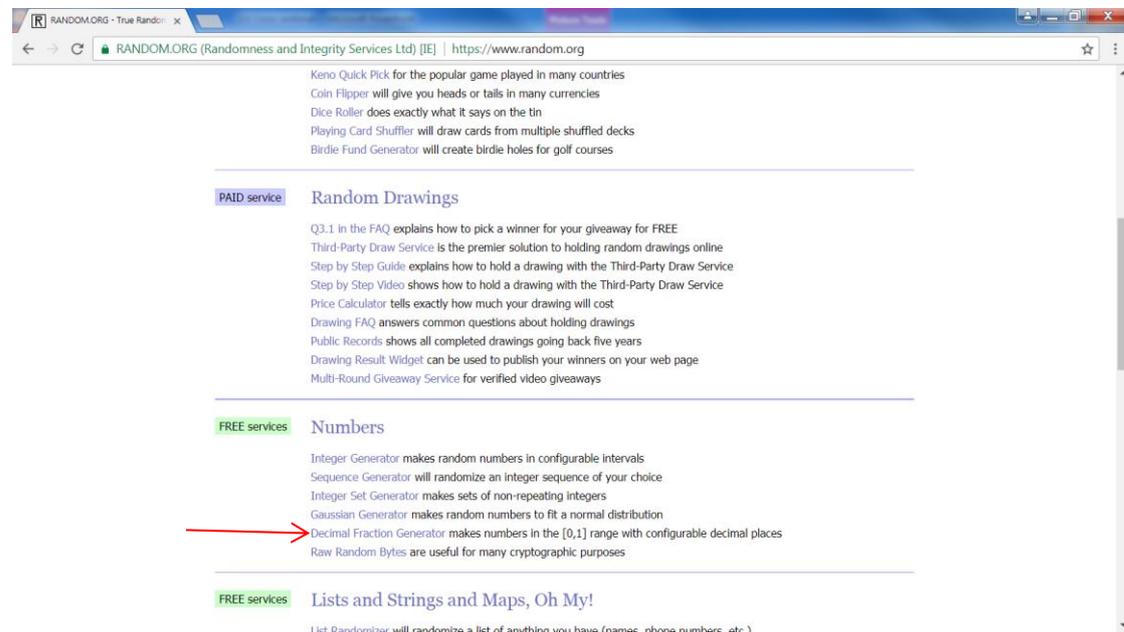
For the purpose of the study a household is defined as all persons living most of the time under one roof or occupying a separate housing unit, having either direct access to the outside (or to a public area) or a separate cooking facility.

1.2. Three step sampling frame



Step 1:

Go to www.random.org and scroll down to the section “numbers” and select the integer set generator.



The screenshot shows the RANDOM.ORG website. The browser address bar displays "RANDOM.ORG (Randomness and Integrity Services Ltd) [IE] | https://www.random.org". The page content includes a list of services: Keno Quick Pick, Coin Flipper, Dice Roller, Playing Card Shuffler, and Birdie Fund Generator. Below this is a section titled "Random Drawings" with a "PAID service" label, listing various drawing services. The next section is "Numbers" with a "FREE services" label, listing: Integer Generator, Sequence Generator, Integer Set Generator, Gaussian Generator, Decimal Fraction Generator, and Raw Random Bytes. A red arrow points to the "Decimal Fraction Generator" link. The final section is "Lists and Strings and Maps, Oh My!" with a "FREE services" label, listing a "List Distributor" service.

Step 2:

Fill in the random integer set generator as shown below.

Do you own an iOS or Android device? [Check out our app!](#)

Change to 1 set

Random Integer Set Generator

This form allows you to generate random sets of integers. The randomness comes from atmospheric noise, which for many purposes is better than the pseudo-random number algorithms typically used in computer programs.

Step 1: The Sets

Generate set(s) with unique random integer(s) in each.

Each integer should have a value between and (both inclusive; limits $\pm 1,000,000,000$).

The total number of integers must be no greater than 10,000.

Step 2: Display Options

Each set will be printed on a separate line. You can choose from the following options:

- Number the sets sequentially
- Use commas to separate the set members
- Sort the members of each set in ascending order

You can select the order in which the sets are printed:

- Print the sets in the order they were generated
- Order the sets by the values that occur in them (in this case, you should also consider sorting the members of each set)
- Print the sets in random order

Step 3: Go!

Be patient! It may take a little while to generate your sets...

Annotations:

- Change to 1 set
- Fill in the number of household you want the program to select (e.g. 200 plus 20 to compensate for refusal)
- Fill in the number of households the program can choose from = the total number of households you have mapped
- Don't sort in ascending order because it includes your backup households

Step 3:

Hit the "Get Sets" button

Step 3: Go!

Be patient! It may take a little while to generate your sets...

Note: This generator guarantees the numbers in each set will be unique within each set, but not that the sets themselves are unique amongst each other.

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Step 4:

You will get a list that looks like this. This is the list of randomly selected households that you will need to include in your X-sectional survey.

Make sure you print the set and save it with your other study documents!

The screenshot shows the RANDOM.ORG website interface. At the top, there is a navigation menu with links: Home, Games, Numbers, Lists & More, Drawings, Web Tools, Statistics, Testimonials, Learn More, and Login. The main heading is "RANDOM.ORG" in large, bold, black letters. To the right of the heading is a search bar with "Google Cust" and a magnifying glass icon, and the text "True Random Number Service" below it. A green banner below the heading says "Do you own an iOS or Android device? Check out our app!". The main content area is titled "Random Integer Set Generator" in blue. Below this, it states: "You requested 1 set with 220 unique random integers, taken from the [1,500] range. The integers were not sorted." It then says "Here is your set:" followed by a long list of 220 integers: "Set 1: 426, 361, 309, 449, 247, 377, 222, 327, 349, 174, 498, 79, 77, 477, 417, 90, 69, 384, 460, 356, 25, 454, 489, 340, 186, 432, 167, 142, 264, 18, 322, 273, 288, 13, 323, 181, 385, 318, 63, 364, 141, 125, 109, 183, 146, 406, 97, 270, 396, 40, 342, 108, 179, 237, 42, 168, 11, 447, 296, 87, 370, 44, 3, 88, 305, 368, 280, 398, 91, 279, 72, 4, 58, 357, 275, 30, 290, 121, 68, 424, 293, 34, 199, 446, 208, 284, 26, 467, 110, 310, 485, 126, 219, 254, 338, 82, 410, 89, 226, 101, 314, 102, 135, 297, 171, 492, 245, 24, 482, 347, 434, 137, 404, 33, 130, 386, 423, 421, 177, 164, 180, 294, 278, 367, 325, 343, 442, 200, 471, 372, 379, 480, 228, 188, 448, 224, 193, 403, 474, 389, 213, 16, 298, 484, 335, 495, 52, 249, 455, 317, 248, 465, 257, 414, 344, 81, 316, 12, 176, 345, 114, 491, 92, 148, 165, 438, 104, 494, 300, 394, 124, 38, 5, 464, 493, 354, 420, 233, 157, 456, 440, 80, 198, 468, 134, 185, 334, 31, 283, 429, 445, 150, 235, 490, 433, 400, 78, 173, 395, 496, 161, 306, 295, 269, 376, 473, 227, 412, 348, 229, 21, 419, 481, 443, 274, 436, 453, 50, 140, 239". Below the list, it shows the timestamp: "Timestamp: 2017-09-27 02:04:51 UTC". At the bottom, there are two buttons: "Again!" and "Go Back".

Step 5:

You can now highlight the selected household numbers on your map and inform your study team which households they will need to visit.

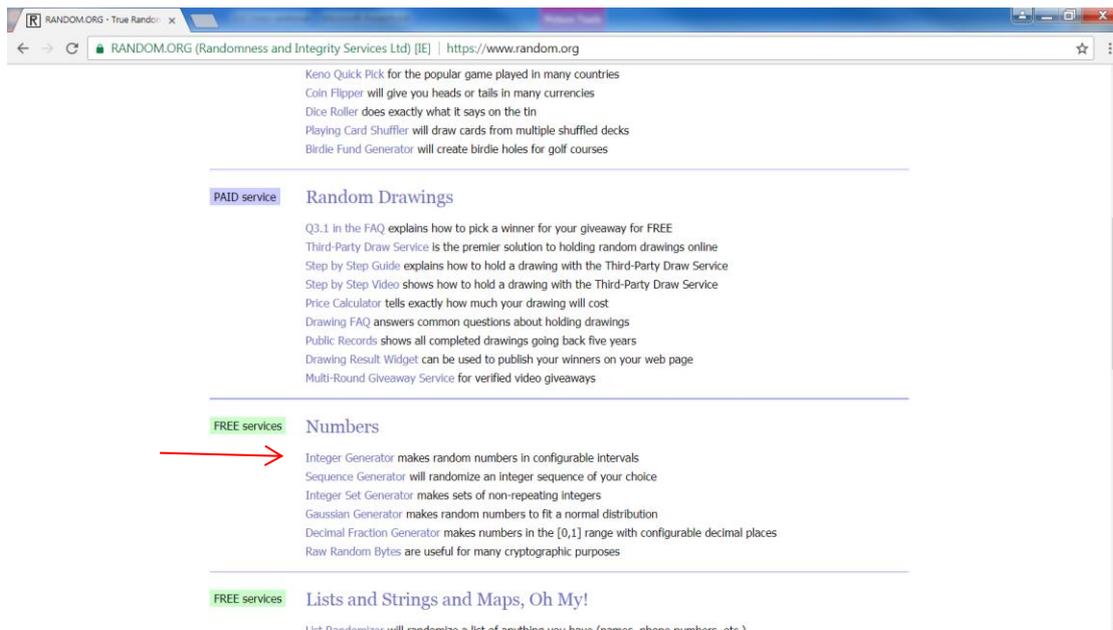
Please note that we selected more than 200 to accommodate for potential refusals. Those additional households are at the end of the list. Please make sure that you start with the first 200 selected households and if a household refuses to participate you add the next household on the list to your study sample.

2.4. Random selection of individuals in household for venous blood draw

In order to randomly select a member within the household to provide a venous blood draw please use random selection of individuals.

Step 1:

Go to www.random.org and scroll down to the section “numbers” and select the “integer generator” (please note this is different to what we used for the household selection!).



The screenshot shows a web browser window with the URL <https://www.random.org>. The page content includes a list of services: Keno Quick Pick, Coin Flipper, Dice Roller, Playing Card Shuffler, and Birdie Fund Generator. Below this is a section for 'Random Drawings' labeled 'PAID service', which includes links for FAQ, Third-Party Draw Service, Step by Step Guide, Step by Step Video, Price Calculator, Drawing FAQ, Public Records, Drawing Result Widget, and Multi-Round Giveaway Service. The 'Numbers' section is labeled 'FREE services' and is highlighted with a red arrow. It lists: Integer Generator, Sequence Generator, Integer Set Generator, Gaussian Generator, Decimal Fraction Generator, and Raw Random Bytes. Below this is a section for 'Lists and Strings and Maps, Oh My!' also labeled 'FREE services'.

Step 2:

Fill in the random integer generator as shown below. This can be done before the start of the survey and before you know the exact number of household members for each household.

RANDOM.ORG (Randomness and Integrity Services Ltd) [IE] | <https://www.random.org/integers/>

Home Games Numbers Lists & More Drawings Web Tools Statistics Testimonials Learn More Login

RANDOM.ORG

Google Cust

True Random Number Service

Do you own an iOS or Android device? [Check out our app!](#)

Random Integer Generator

This form allows you to generate random integers. The randomness comes from atmospheric noise, which for many purposes is better than the pseudo-random number algorithms typically used in computer programs.

Part 1: The Integers

Generate random integers (maximum 10,000).

Each integer should have a value between and (both inclusive) (limited to 100,000).

Format in column(s).

Part 2: Go!

Be patient! It may take a little while to generate your numbers...

Need more numbers than this form supports? Check out our [File Generation Service](#).

Note: The numbers generated with this form will be picked independently of each other (like rolls of a die) and may therefore contain duplicates. There is also the [Sequence Generator](#), which generates randomized sequences (like raffle tickets drawn from a hat) and where each number can only occur once.

Total number of selected participants. E.g. 200 (one per household) plus 20 to compensate for refusal

Enter values between 1 and 10 for the household members (unless you expect households with more than 10 members)

Step 3:

Hit the button "get Numbers" .

Part 2: Go!

Be patient! It may take a little while to generate your numbers...

Need more numbers than this form supports? Check out our [File Generation Service](#).

Note: The numbers generated with this form will be picked independently of each other (like rolls of a die) and may therefore contain duplicates. There is also the [Sequence Generator](#), which generates randomized sequences (like raffle tickets drawn from a hat) and where each number can only occur once.

Step 4:

You will get a list like this. Please print this list as you will need it when you go to the field.

True Random Number Service (Randomness and Integrity Services Ltd) [IE] | <https://www.random.org/integers/?num=220&min=1&max=10&col=10&base=10&for>



True Random Number Service

Do you own an iOS or Android device? [Check out our app!](#)

Random Integer Generator

Here are your random numbers:

| | | | | | | | | | |
|----|----|---|----|----|----|----|----|----|----|
| 8 | 5 | 6 | 6 | 6 | 7 | 4 | 5 | 4 | 8 |
| 10 | 5 | 5 | 8 | 9 | 3 | 5 | 2 | 6 | 6 |
| 8 | 4 | 4 | 4 | 3 | 6 | 2 | 2 | 3 | 4 |
| 7 | 1 | 9 | 4 | 8 | 2 | 7 | 3 | 1 | 7 |
| 9 | 9 | 8 | 10 | 7 | 10 | 1 | 8 | 10 | 3 |
| 2 | 2 | 6 | 2 | 8 | 3 | 3 | 2 | 1 | 7 |
| 1 | 10 | 6 | 3 | 8 | 4 | 9 | 7 | 9 | 4 |
| 7 | 5 | 9 | 1 | 2 | 9 | 9 | 10 | 1 | 6 |
| 5 | 8 | 6 | 1 | 1 | 6 | 8 | 8 | 1 | 2 |
| 9 | 4 | 3 | 3 | 2 | 6 | 6 | 5 | 6 | 5 |
| 9 | 3 | 9 | 2 | 7 | 7 | 4 | 8 | 5 | 7 |
| 6 | 2 | 5 | 5 | 1 | 1 | 5 | 1 | 8 | 1 |
| 8 | 7 | 6 | 8 | 7 | 3 | 7 | 9 | 9 | 9 |
| 6 | 3 | 2 | 3 | 6 | 3 | 10 | 9 | 4 | 3 |
| 5 | 5 | 7 | 1 | 9 | 8 | 6 | 6 | 3 | 8 |
| 4 | 5 | 2 | 1 | 6 | 5 | 10 | 2 | 4 | 8 |
| 1 | 8 | 5 | 5 | 5 | 10 | 5 | 5 | 10 | 4 |
| 1 | 7 | 7 | 10 | 10 | 10 | 5 | 1 | 8 | 6 |
| 2 | 7 | 7 | 7 | 8 | 8 | 3 | 2 | 3 | 2 |
| 3 | 4 | 5 | 4 | 5 | 5 | 8 | 3 | 3 | 10 |
| 6 | 7 | 3 | 1 | 7 | 2 | 1 | 9 | 5 | 9 |
| 9 | 4 | 5 | 2 | 6 | 2 | 4 | 4 | 6 | 9 |

3. Procedures during the study

3.1. Mapping each selected household

When the study team visits the selected households make a list for each selected household listing all household members present at the time of the visit. Sort the list by age, starting with the oldest household member and ending with the youngest. Below is an example of such a list:

| | |
|-------------------------|---------------------|
| Household number | 510 |
| Household member Number | Name or Identifier |
| 1 | Granny (61 years) |
| 2 | Dad (40 years) |
| 3 | Mum (38 years) |
| 4 | Son (18 years) |
| 5 | Daughter (15 years) |

3.2. Filling out the CRF

A Case record form (CRF) will be filled out for each household member present at the time of visit.

[Here we could add information on how to fill it out}]

3.3. Selection of household member for venous blood draw

Step 1:

Use the random integer list that you pre-generated. Please note that the numbers on the list are generated from left to right (across columns).

Do you own an iOS or Android device? [Check out our app!](#)

Random Integer Generator

Here are your random numbers:

```

8      5      6      6      6      7      4      5      4      8
10     5      5      8      9      3      5      2      6      6
8      4      4      4      3      6      2      2      3      4
7      1      9      4      8      2      7      3      1      7
9      9      8      10     7      10     1      8      10     3
2      2      6      2      8      3      3      2      1      7
1      10     6      3      8      4      9      7      9      4
7      5      9      1      2      9      9      10     1      6
5      8      6      1      1      6      8      8      1      2
9      4      3      3      2      6      6      5      6      5
9      3      9      2      7      7      4      8      5      7
6      2      5      5      1      1      5      1      8      1
8      7      6      8      7      3      7      9      9      9
6      3      2      3      6      3      10     9      4      3
5      5      7      1      9      8      6      6      3      8
4      5      2      1      6      5      10     2      4      8
1      8      5      5      5      10     5      5      10     4
1      7      7      10     10     10     5      1      8      6
2      7      7      8      8      3      2      3      2      2
3      4      5      4      5      5      8      3      3      10
6      7      3      1      7      2      1      9      5      9
9      4      5      2      6      2      4      4      6      9
  
```

Step 2:

Check the first number on your integer list. In our example this is 8. However our example household only has 5 members. Therefore you can't use the first integer on the list and move to the next. The next integer on the list is 5. This means the fifth person on our household list is the selected person for the venous blood draw (in our example this is the 15 year old daughter).

The screenshot shows the True Random Number Service interface. It displays a grid of random integers. The first number, 8, is circled in red. The second number, 5, is circled in green. To the right of the grid is a table mapping numbers to household members:

| Number | Name |
|--------|---------------------|
| 1 | Granny (61 years) |
| 2 | Dad (40 years) |
| 3 | Mum (38 years) |
| 4 | Son (18 years) |
| 5 | Daughter (15 years) |

The number 5 in the table is circled in green, corresponding to the second number in the random integer list.

Step 3:

When visiting the next household you can NOT reuse the same integers as before, so you have to cross them off your list (also those that were not used, e.g. in our example the first one with was 8).

If your next household for example has 6 individuals, you can't use the first integer (8) that we didn't use in the first household and we can't use the one that we used for the first household (5) but we have to use the next one, which in this case is a 6.

| Number | Name |
|--------|---------------------|
| 1 | Grandpa (80years) |
| 2 | Dad (40 years) |
| 3 | Mum (38 years) |
| 4 | Auntie (35 years) |
| 5 | Daughter (15 years) |
| 6 | Son (12 years) |
| 7 | Daughter (10 years) |

3.4. What to do in case of refusal for venous blood draw

If the individual that was selected for the venous blood draw refused to participant in the venous draw you choose the household member that is closest in age and sex as a replacement.

In example the 15 year old daughter who was selected refuses consent you check if there is another female household member and choose the one that is closer in age to the person initially selected. In our case this is the mother.

| Number | Name |
|--------|---------------------|
| 1 | Granny (61 years) |
| 2 | Dad (40 years) |
| 3 | Mum (38 years) |
| 4 | Son (18 years) |
| 5 | Daughter (15 years) |

3.5. What to do in case of refusal for capillary blood draw

If one household member refuses to provide a capillary blood draw, please fill out the screening part of the CRF and note that the participant refused.

If the entire household refuses, you need to select a replacement household (please see above).

4. Consent

Depending on the setting we recommend to provide information to entire village/cluster before study start to explain the study to the community – ideally this is done at the same time than the mapping (unless mapping can be done completely using google maps). Make sure you provide information on how households and individuals are selected in an appropriate way. Inform selected households and make sure they will be around when you plan to come. On day of survey collect written informed consent/assent from all participants.