NAOMI: BASIC STEPS GUIDE
VERSION 9TH JANUARY 2020

Preparing the data: Prepare and format the key datasets required to run the Naomi model

The following 6 files are needed to run the Naomi model. The templates for datasets 3-6 are available at adr.unaids.org

1. Updated **Spectrum** file
2. **Agreed set of districts and their respective boundary file** in geojson format. The key variable is the Naomi specific ***area_id*** that is required to create unique links to your program and population datasets. [These have been prepared for you based on your agreed upon location hierarchy and are available in your country ADR folder.]
3. **District population** in csv format. Population by five-year age group, sex and district for the year of the most recent survey through 2020. The file must contain the *area_id* variable. [This file has been prepared based on your location hierarchy and is available in your country ADR folder.]
4. **Population-based survey data** in csv format. Geocoded data on HIV prevalence are required at a minimum to run Naomi. If viral load suppression and incidence are available, they should be added. [These have been extracted and formatted for you from your PHIA /DHS population-based surveys. The dataset contains 12 variables.]
5. **ART Program data** in csv format. The number of people on ART for males and females ages <15 and 15+ by district are needed for the year of your most recent survey through 2020. Ensure the data are formatted as per Naomi requirements on the templates. 5 key variables are required and need to be named as follows and are case sensitive: ***area_id***, sex, age_group, year, current_art
6. **ANC Program data** in csv format: Data required for this file include the numbers of ANC clients, women known to be HIV+ at first ANC visit, number already on ART, number tested, and number tested and found positive for the age group 15-49. These data are needed for the year of your most recent survey through 2020. Ensure the data are formatted as per Naomi requirements and saved in .csv format. 9 key variables are required and need to be named as follows and are caps sensitive: ***area_id***, age_group, year, anc_clients, ancrt_known_pos, ancrt_already_art, ancrt_tested, ancrt_test_pos

Tip 1: It is best to have all these data stored in the same folder.

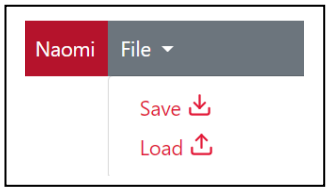
Data validation: The model results depend heavily on the quality of the date entered into the model. Steps to review and validate the input data before running the model are as follows:

1. Check that each of the files has the *area_id* variable.
2. Two R scripts are available at ADR.unaids.org that produce graphs of the trends in the progamme data for each district. The graphs present number on ART over time, male to female ratio of ART, child to adult ratio of ART, the number of ANC clients, ANC prevalence, the ratio of women who already know their status versus those on ART, the percent of ANC clients already on ART. Visually review the trends in the graphs to ensure there are no unexpected values.
3. Additional checks on the format and variable labels as well as a few data checks will be performed as you load the data into the Naomi application.

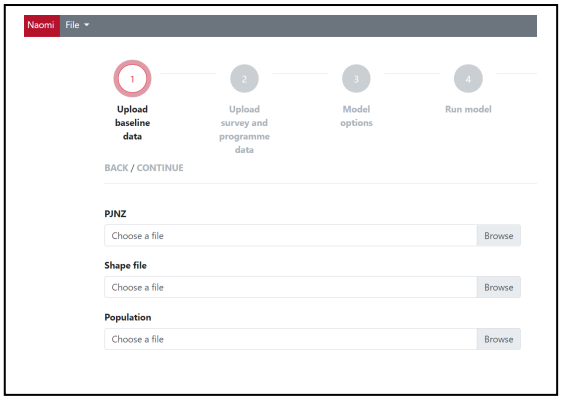
Setting up the model: Loading and viewing the input data

1. Obtain a Naomi login by emailing Robert Ashton r.ashton@imperial.ac.uk
2. Open the following site to run Naomi: https://naomi.unaids.org/

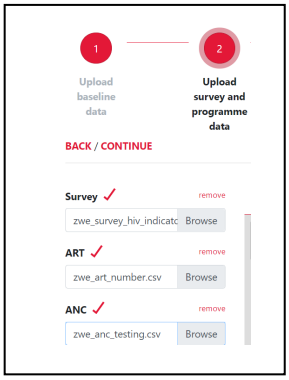
Tip 2: at any point once you have started uploading datasets you can use this button on the top left to save a confirmation file in .json format which will allow you to save what you have done and then later on return to the same point



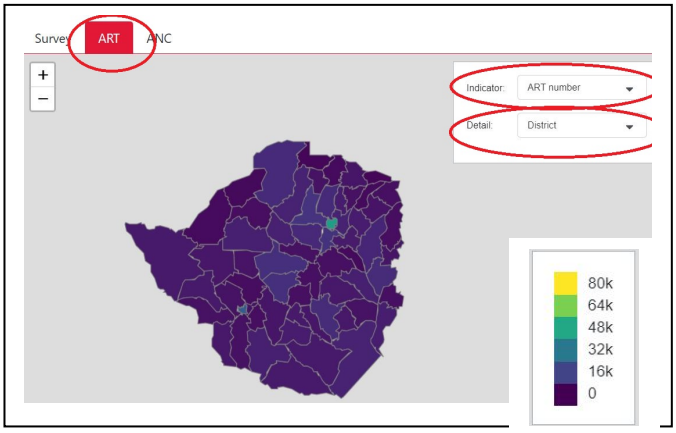
3. On the first page load the following 3 datasets. If there is an error message it is likely the file being uploaded has the wrong format.
    a. Spectrum file (pjzn format)
    b. Boundary file (geojson format)
    c. District population file (csv format)



4. Press continue and on page two load the following 3 datasets
    a. Population based survey
    b. ANC program data
    c. ART program data



Review the uploaded data in a map using filters to display the data for the country or sub-regions, year, age or sex. The example below shows numbers on ART among males +15 by district for the year 2019



5. Press continue

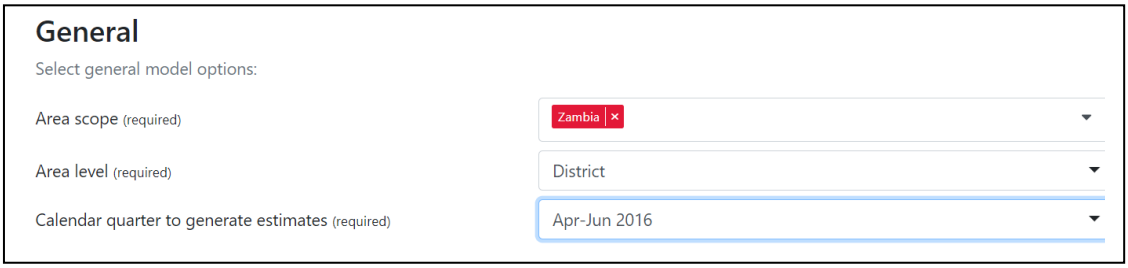
Model options: Identify the parameters to use for the particular run of the model**.** These fall into 5 categories.

1. General

Area Scope: Ensure the country is selected

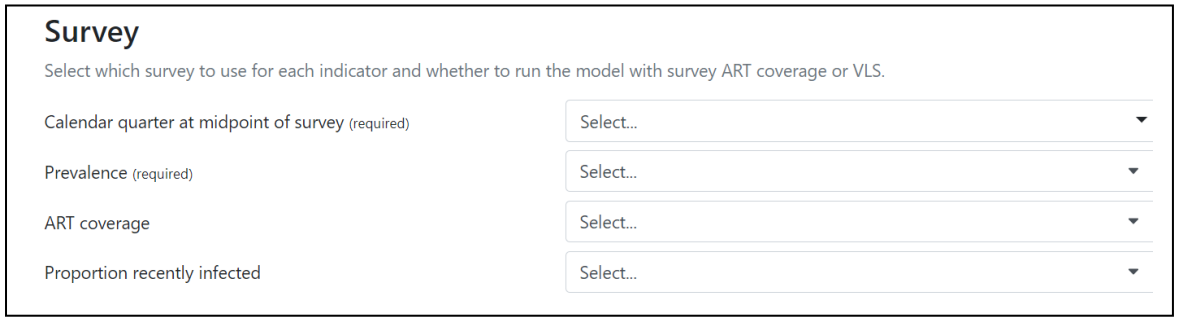
Area level: Select the lowest level of your area hierarchy for which programme and population data were Uploaded

Calendar quarter to generate estimates: Select the last quarter of the year for which data are available



2. Survey

Calendar quarter at midpoint of survey: Select the midpoint of your **most recent** survey used in the model
Prevalence: Select what survey to use for the prevalence value
ART coverage: Optional: *Select what survey to use for ART coverage*
Proportion recently infected: Optional: *Select what survey to use for incidence*



3. ANC

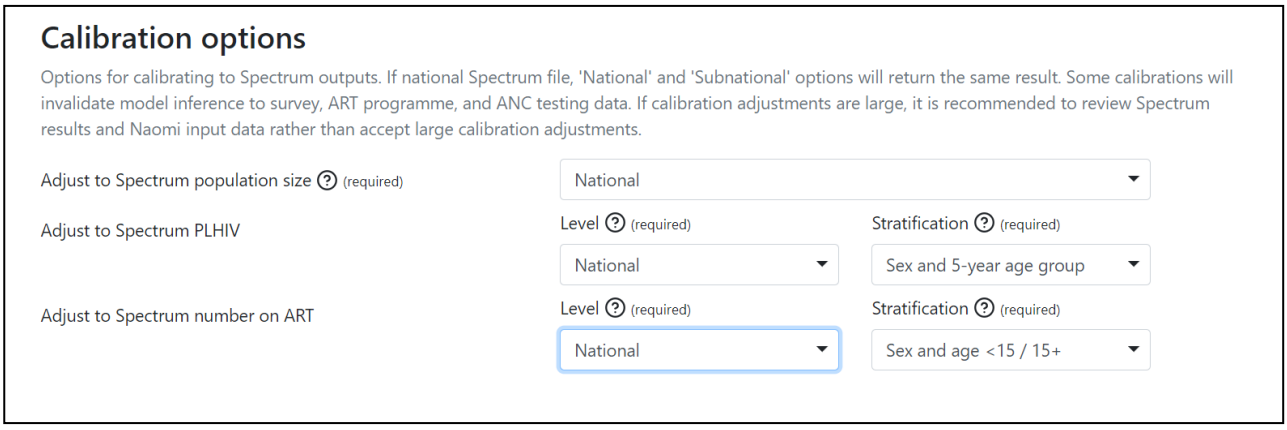
Select whether to include prevalence from antenatal clinic attendees by indicating which quarter and year of data to include. Similarly indicate whether to incorporate the percent of ANC clients already on ART, this is used to inform prevalence in the model.

4. ART

Select whether to include the number of people receiving ART as reported through programmes by indicating yes or no. The years of the ANC data will automatically be used. Also in this section indicate whether to turn on the adjustment for people receiving ART in neighbouring districts (yes or no).

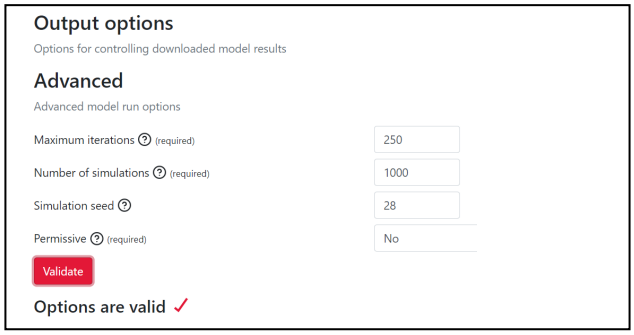
5. Calibration

Adjust to spectrum population size: Select whether the population should be adjusted to match your national spectrum file or the population from your sub national spectrum files. This should be turned on. Naomi will adjust the population by age and sex to match the Spectrum values before running the model.
Adjust to spectrum PLHIV: Select whether the PLHIV should be adjusted to match your national spectrum file or the population from your sub national spectrum files. Turning this option on will calibrate the total PLHIV from Naomi to the value in Spectrum after the Naomi model has run.
Adjust to spectrum number on ART: Select whether those on ART should be adjusted to match your national spectrum file or the population from your sub national spectrum files



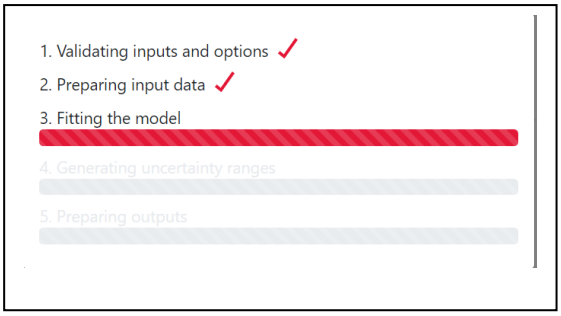
Advanced options

Keep the default options and press validate
Scroll up and press continue to go to page 4

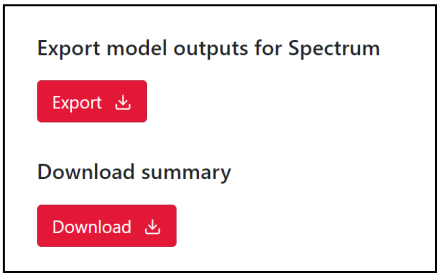


Run the model: This should take approximate 3 minutes for a run to complete. You will see the model going through several steps

Press continue and go to page 5 to review the results.
Take time to closely review and understand the results and triangulate with other sources to see if the results make sense.



Press continue. On page 6 you can download the results for further review. The results are available in excel format.



The download summary can also be uploaded into your Spectrum file. Do this by opening Spectrum, selecting Tools and More tools and then selecting Naomi District Estimates Tool.

Tip 3: if the Spectrum file is updated the Naomi model should be re-run.