Welcome to the National Health Accounts Production Tool

National Health Accounts (NHA) is an internationally standardized methodology that tracks public and private expenditures on health in a given country, illustrating the flow of funds from financing sources to agents, providers and ultimate services on which they are spent. NHA is designed to provide health expenditure information to policymakers and stakeholders in ways that can be clearly and directly linked to a country's health financing challenges and health system performance and therefore has been accepted as a critical policy tool in many countries.

In many countries, the complexity of NHA methodology has been an important deterrent to routine, consistent, and low-cost production of NHA estimates. Many low-income countries have come to rely heavily on foreign technical assistance to implement NHAs. Documentation of the methods used is often inadequate and estimation techniques vary from year to year, compromising the comparability of different NHAs. Together, these challenges have prevented countries from successfully institutionalizing NHA (i.e. routinely producing and using high quality NHA data).

The NHA Production Tool (NHAPT) was developed to streamline and simplify the NHA estimation process, thereby reducing the need for technical assistance and facilitating institutionalization of NHA as a regular part of a country’s efforts to monitor and improve health system performance. The NHAPT achieves these goals through a series of features designed around the themes of data quality, efficiency, ease of use, collaboration, consistency, and flexibility, as outlined in Figure 1 below.

Overall, the NHAPT provides a more efficient way to conduct an NHA estimation, aiming to increase the quality and applicability of the data produced. This procedure manual is designed to serve as a guide to help teams produce NHA estimations using the NHAPT. It walks through each of the tool’s six steps:

1. Home
2. Customization
3. Data Collection
4. Data Import
5. Mapping
6. Audit

Recognizing that the NHAPT changes the traditional procedure for conducting an NHA, as each of these steps is explained, the procedure manual will also describe how the traditional NHA methodology changes as a result of the tool.
Figure 1: NHA Production Tool Themes and Features

<table>
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<th>Theme</th>
<th>Features</th>
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<tr>
<td><strong>Data Quality</strong></td>
<td>• Built-in auditing function facilitates review and correction for double-counting • Interactive flow diagram helps NHA teams visualize and analyze funding flows • Option to apply weighting to survey data from NGOs, employers, and insurance companies improves precision of expenditure estimates</td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td>• Survey creator and import function streamlines data collection and data analysis • Automatic generation of standard NHA output tables after analysis is complete eliminates this time-consuming step from the estimation process</td>
</tr>
<tr>
<td><strong>Ease of Use</strong></td>
<td>• Step-by-step directions guide country teams through the NHA estimation process • Platform to manage large datasets reduces the burden of editing, sharing, and keeping track of multiple disparate files of expenditure data</td>
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<tr>
<td><strong>Collaboration</strong></td>
<td>• Multi-user functionality allows NHA team members to work collaboratively on the estimation while maintaining version control</td>
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<tr>
<td><strong>Consistency</strong></td>
<td>• Customization and storage of NHA codes allow for easy reference during the analysis/mapping stage • Storage of past NHA estimations allows countries to update the numbers while maintaining country-specific classifications and assumptions</td>
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<tr>
<td><strong>Flexibility</strong></td>
<td>• Multiple options for data transfer facilitate harmonization with other resource tracking tools (e.g., importing data sets of health expenditures) and systems (e.g., exporting NHA tables to WHO’s Global Health Expenditure Database)</td>
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0. Entering the NHAPT

When you double click on NHAPT icon on your desktop, you will view the NHAPT Welcome Screen. From this page, you can click on the user type that applies to your position on the NHA team - either Team Lead or Team Member. To provide better version control within the system, the Team Lead has certain privileges that team members do not. The procedure manual will follow the work process of a team member and will use blue call out boxes to describe functions that are specific to the Team Lead.

From the welcome page, you can also click on Advanced Settings to install new versions of the tool or to set a password. Once a new password is set, it will be required for entry into the system by all NHAPT users. Finally, you can click About to read about the purpose and background of the NHAPT.

Opening the NHAPT
Advanced Settings: Installing new NHAPT updates

1. All new updates will be listed under the **Install Update** tab. Simply double click on the update you would like to install.
Creating an NHAPT password

2. To add a password, click **Turn ON**, and then type in a **New password**. Be sure to **Confirm** your password before you click **Ok**.
1. Home Page

Upon opening the NHAPT application, you will first visit the Home page. During this step, the NHA Team Lead and members enter into the system and specify the NHA estimation they will be working on. Also in this step, the NHA team can export data, access previously completed NHA estimations, and track progress towards completion of a given NHA. It improves upon the traditional NHA process by storing relevant information in one easily accessible place and by allowing the team members to better track their progress according to a predetermined timeline.

1.1 Navigating from the NHAPT Home Page

Once you click Team Lead or Team Member, you will enter into the home page of the system. From the home page, you can view the progress bar to see the steps that have already been completed and the most recent page that you or your team members have worked on. When the NHAPT is used for multiple exercises, the user can decide to start a new NHA by clicking Start New NHA, or revisit previous NHAs by selecting Open Previous NHA.

To increase version control and reduce human error as multiple users access the NHAPT, Team Members cannot input information on all screens in this tool. These responsibilities fall to the Team Lead. Therefore, since data sharing is an important aspect of any NHA estimation, particularly using the NHAPT, the Export NHA and Import NHA buttons allow for easy transfer of data. Click Export NHA to share data with others or Import NHA to access data other team members have worked on.
Navigating the Home interface

1. Track your progress towards completing your NHA here.

2. Click here to **Start New NHA** or **Open Previous NHA**.

3. Click here to **Export NHA** data from or **Import NHA** data into the system.
By selecting *Open Previous NHA*, as portrayed in the image below, a new interface will appear and you will be directed to double click on the NHA that you would like to work on.

**Selecting a previous NHA**

1. Select the NHA you would like to open from the list and then click *Open.*
You can also export all existing data from the system from the current or previous years, by clicking **Export NHA** on the home page, and then specifying the data that you would like to export.

**Exporting NHA data**

1. Name the data you are exporting and select a folder to export to by clicking **Browse**

2. Specify whether you would like to export the **Entire study**, or just a **Selected areas** from the list below

3. Once you have specified the NHA you would like to export, details like the **Creator**, **Description** and the **Progress** made will appear

4. Click **Ok** to export the data
Similar to exporting NHA data, you can import data from an excel file into the NHAPT by clicking **Import NHA**, and specifying a file that is saved to your computer to import into the system. Once the appropriate file has been imported, the user will need to return to the home screen to open the NHA and begin working with the data (see below).

**Importing Data into the NHAPT**

1. After importing data, return to the home screen and **Open Previous NHA**. Then, select the relevant NHA estimation from the pop-up window.

2. Select the **Resume** button to begin working on the selected NHA.
You have different options for navigating through the NHA Production Tool: 1) select the directional arrows at the bottom of the screen, 2) select the colored tab located on either side of the main tab selected, 3) click on the drop-down menus on either side of the colored tabs or 4) select the large navigational buttons at the top of the screen.

Moving from screen to screen in the NHAPT
Additional Features Available on all NHAPT Screens

At the bottom of each screen, the user will find the Library, a Tutorial, and Contact Expert information. The library is a central repository for relevant NHA materials, including training guides, methodology documents, and any other resources pertinent to the NHA. The NHA team can use this for reference and to record key decisions made throughout the entire process. A tutorial is available for each page and guides the user through the functions of each screen. Finally, the contact expert button provides contact information for an NHA expert that can provide help on the NHAPT or the NHA in general.

Information on How to Use the NHAPT

For additional information on a particular question or function on any screen in the tool, the user can hover the mouse over the question marks for greater detail.

Mouse Hovering Function
2. Customization

Step Two in the NHAPT is Customization. The customization page establishes the general information of the NHA as well as the NHA codes that will be applied during the analysis. During a traditional NHA, these codes are established by the team at the beginning of the process using the NHA codes provided in the System of Health Accounts during a training workshop. The codes that are developed are then saved in an Excel file or stored in paper documents. However, codes that were applied in previous estimations can be difficult to find, and modifications that are made during the NHA process can be difficult to communicate to all team members and incorporate into the methodology. This method results in difficulties with comparing spending over time, as the codes used in a given country may not be consistent.

The NHAPT allows the NHA team to develop codes and save them in the system where they can be accessed year to year. This is advantageous for two main reasons. First, it improves quality by ensuring that classifications are consistent and will lead to more accurate time series analysis. Being able to store the codes in one location also reduces errors that result from transferring code lists electronically or on paper. Second, having the custom classifications directly within the tool saves time in later steps when NHA team members would otherwise have to switch back and forth between documents or track down the latest version of the file to refer to the classifications.

Sections 2.1 to 2.3 explain how to customize the NHA codes within the NHAPT.

Customization is completed by the Team Lead. The Team Lead is prompted to enter general information and set codes that are then applied to the NHA surveys and all other web pages. This information shows up on all other team member’s web pages where it can be referenced during future NHA estimations.
## 2.1 General Information

The Team Lead will be responsible for inputting eight pieces of pertinent information on the General Information screen.

As illustrated in the figure below, the Team Lead is responsible to:

1. Select the country in which the NHA is being done.
2. Select the time boundary for the exercise. All stakeholders will be required to report their expenditure data according to this boundary, so it should be based on either calendar year or government fiscal year.
3. Indicate the subaccounts that will be included in this NHA estimation, which may include reproductive health, HIV, TB, malaria or child health. Completing more than 3 subaccounts at one time is not recommended due to the effect on data quality. Hence, an NHA expert should be consulted if more than 3 subaccounts will be included in the estimation.
4. Provide any relevant information on steps 1-3 in the description box that could be useful to other team members or when looking back on the NHA estimation in future years.
5. Select the currency in which the NHA will be reported.
6. Identify the currency for government data.
7. Identify the currency for household data.
8. Since donors and international NGOs may report in different currencies, the Team Lead should add the various currencies that will be used in this study. To add a currency, simply select **Add** and enter the name and exchange rate. The exchange rate should be in relation to the exercise’s reported currency (i.e. local currency exchange rate =1.0).
Entering general information into the NHAPT

When adding currencies in step 7 on the general information screen (see above), the user can add a new currency by selecting the currency name from the drop down menu, specifying the exchange rate as compared to the reported currency and then clicking OK. The “Invert” button allows the user to toggle between displaying the number of units of the new currency for every one unit of the reported currency, or vice versa.

Adding Currencies

Once the Team Lead enters the information listed above, all other team members will be able to view the information, but not make changes to it.
2.2 Defining NHA Codes
The Define NHA Codes screen allows the NHA team to create classifications that will be applied to all health expenditures in the health system. The NHAPT provides a list of OECD International Classifications for Health Accounts (ICHA) codes organized by financing source (FS), financing agent (HF), health provider (HP), and health function (HC). The NHA team can also create customized NHA codes to ensure that all health expenditures are captured in the estimation.

Defining NHA codes

This page presents the NHA codes that are automatically entered in the NHAPT system.
2.3 Customizing NHA Codes

The goal of this screen is to assign codes that are mutually exclusive and collectively exhaustive so that every health expenditure is captured by one NHA code per entity (4 codes in total). Due to the unique health financing landscape in each country, the NHA team has the option to build on the standard ICHA code list by creating country-specific codes. Codes can be imported from a previous NHA, or the team can add new categories (first digit) and sub-categories (second, third, or fourth digit).

To import codes from a previous NHA, click on the **Import** button and select the NHA containing the desired list of classifications. To add a category, click on the parent classification in the list provided, then drill down and click on the classification under which the new category will fall. Select the **Add Category** button and enter the relevant information such as code number and code name. The code description entered here can later be accessed by hovering over the code in the **Customization** and **Mapping** steps. To add a sub-category, select the code under which the new classification will fall and choose **Add Sub-Category**. Enter the same information as with the category. Codes added by the NHA team can easily be modified or removed using the **Edit** and **Delete** buttons.

The NHA team needs to customize codes for financing sources (FS), financing agents (HF), health providers (HP), and health functions (HC). To navigate between entities, click on the tabs across the top of the screen under 1. Define Classifications. The process for customizing codes is the same on all four tabs, with one additional step required under health functions. For every HC code created, the user will need to assign a subaccount if they are included in the study.
Adding a new category and sub category

1. Click here to Add a Category.
2. Or, click here to Add a Sub-Category.
3. Click here to Import a list of classifications from a previous NHA.
4. This screen will appear. Add the Code number, Name and Description and then click OK. See the screen below for more detail.

1. The code number will be generated automatically or the user can select a number for each new code.
2. Select a subaccount for the new HC code. If it is not subaccount specific, select General.
3. Provide a descriptive name for the code.
4. Enter a detailed description explaining the type of source, agent, provider, or function.
Helpful Hints
Throughout the customization step, keep these helpful hints in mind:

• Use the **Search Box** in the upper right-hand corner to quickly find codes. By entering a key word, the NHAPT will filter through the list and present only codes containing the key word in the name.

• To quickly generate a list of codes by subaccount on the HC tab, use the subaccount filter to the left of the Search Box.

• Quickly expand or collapse a classification list by right-clicking on a plus or minus sign and selecting either **Expand All** or **Collapse All** as portrayed in the screenshot below.

Expanding and collapsing classifications
3. Data Collection

Step Three of the NHAPT is **Data Collection**. During this step, the NHA team must identify all major contributors of funding to the health system. In a traditional NHA, surveys are designed and distributed to donors, NGOs, employers, and health insurance providers. Information is also collected from relevant government agencies. The NHAPT improves on the traditional method by providing standardized survey templates to circulate to potential funding sources and agents. The pre-designed surveys help to improve data quality, as the use of electronic surveys increase the response rate and have built-in validation rules that prevent respondents from typing in the wrong cells or entering information that is not possible (e.g. percentages that add up to more than 100%). The NHAPT also reduces the overall time that must be spent on data collection, as the pre designed surveys reduce the time needed to create and pre-test new surveys. Finally, the NHAPT is also flexible in that it can read data from non-standardized Excel sheets, as described in more detail below.

The Team Lead is responsible for formatting the survey, compiling the list of entities to be surveyed, and exporting the surveys to a central computer’s hard drive. Then, the team members can assist with sending out surveys, in either electronic or paper versions.

For a more detailed listing of Team Lead responsibilities for the NHA estimation, see the text box in Section 2.1 General Information.
3.1 Identifying Entities to be Surveyed

The first step in collecting NHA data is to create an exhaustive list of all organizations within a given category. For example, in screen 3.1 Donors, you would need to add a comprehensive list of all donors. An entity can be added in one of three ways: 1. import a list from a previous NHA; 2. use the Add button and enter information into the pop-up window; or, 3. simply click on the cell and begin writing.

To use a list from a previous NHA, select Import and identify the NHA study containing the desired list. Otherwise, to compile a list, add the name and then select the appropriate NHA classification. Codes that are assigned during this stage will automatically appear in the mapping stage. Also, be sure to add contact information in case the entity needs to be contacted later for validation.

If you intend to send a survey to the entity, check the Survey box to the right. If a non-standardized Excel sheet will be used (ex. datasheets from a central level donor database), check the Secondary box to far right. The user will follow the same process for distributing surveys to all key health system actors, including donors, NGOs, employers, and insurance companies.
Identifying Entities

1. Select a survey type to distribute to different donor entities from this drop down box.

2. Enter information for all entities that will receive a survey by typing the relevant information or by clicking Add. In both instances, type in the Donor Name, select the relevant NHA Code from the drop down box, add Contacts information and check the box if you will be sending a survey to this entity.

Adding a new entity

After clicking Add on the screen presented above, the following box will appear:

Enter the relevant information for the entity and click OK once you have finished your entry.

Helpful Hint

The NHA team should consider going through screens 3.1-3.4 and completing the list of entities to be surveyed before exporting any surveys because information on one screen may be relevant for surveys on another screen. For example, the NGO list must be completed before the Donor surveys are exported because the list of NGOs must be available in the dropdown menu on the Donor survey. Likewise the Donor list must be completed before exporting the NGO surveys.
3.2 Exporting Surveys

To access a survey template for distribution, select the survey type from the drop down menu entitled *Choose a Survey*. Because the entire list of entities at this point has been created for a given health system actor, the user can export the survey into a specific folder on the desktop where it can be stored until sent to the appropriate entity. To do so, click *Export*. Then, indicate a folder on the computer where all surveys will be stored. Once the folder has been identified, click the *Export* button. One Excel file per entity will then be added to the specified folder and can be sent to the donor, either by email or traditional mail. The entity’s name will appear in the Excel file, so be sure to send the file to the correct entity.

**Exporting Surveys**

1. Once all donor names have been entered, click *Export Surveys*.
2. After clicking *Export Surveys*, the following screen will appear. Click the “…” button to identify the folder where you will export your files.
3. Once you have selected a file, click *Export*. A survey for each donor will be saved in the designated file.

**Exported files**

- donor (global fund)
- donor (usaid)
- donor (world bank)

The survey files exported by the NHAPT will list the associated donor, NGO, etc.
Helpful Hints
You have the option to edit some features of the survey, although cells, columns, and rows cannot be moved or else the imported surveys will not be read properly by the NHAPT. To collect data from the remaining entities, follow the same steps outlined in section 3 for the web pages 3.2 for NGOs, 3.3 for employers, 3.4 for insurance, and 3.5 for government.
4. Data Import

After surveys have been returned from the various entities, the NHA team can proceed to Data Import, validation, weighting, and double-counting. During a traditional NHA, once the surveys are completed and returned to the team, team members enter the information into an Excel-based data entry screen and follow up with various entities to clarify or fill in missing information. This is not only a time consuming task, but entering data manually increases the likelihood of human error which will reduce the overall quality of the final NHA estimation. Also during the traditional NHA, the team weighs the entries to account for organizations that did not respond, provided incomplete data or were not surveyed. Weighting the data requires keeping track of many assumptions and is prone to human error. Finally, to eliminate double-counting, the NHA team would traditionally compare information from different data sources with possible overlapping expenditures (e.g. donor and NGO; government and donor; employer and insurance, etc.). This presents a challenge because double-counting is traditionally assessed by isolating specific expenditure flows from surveys and relies heavily on the expertise of the NHA team.

The data import feature of the NHAPT facilitates importing information, applying weights to data, and managing double-counting. First, it can eliminate days spent on data entry if entities return electronic surveys instead of paper copies. Using electronic copies, the NHA team can directly import the data into the system. The team can immediately move to validating the information, adding comments when follow up may be necessary to improve the quality of the data. Second, the NHAPT automatically calculates weights for each of the entities reporting into the system. This reduces both time required to make these calculations as well as possible errors that could take place during this process. Finally, the NHAPT automatically highlights potential overlaps for double-counting, which allows the NHA team members to more easily compare financial flows and indicate whether each possible overlap is a double-count.

Sections 4.1 to 4.4 explain how to import data, validate it, weigh it and adjust for double-counting.
4.1 Manual Data Entry
Entities have the option of completing the survey on the computer or manually. If surveys are returned in electronic form, data can be directly imported into the tool following the instructions below. However, if surveys are returned in paper form, a team member will be responsible for manually entering the data into the electronic survey that was exported with the entity’s name in the file. It is important that data be entered into the correct Excel file and placed in the appropriate folder for import.

4.2 Importing Survey Data (Donor, NGO, Employer, and Insurance Surveys)
As surveys are returned to the NHA team, all surveys must be saved in a single folder on your computer. Once all surveys have been collected and are ready for import, click Import Survey. To import multiple surveys at a time, hold down the Shift key and select all files in a range. Or, hold down the Ctrl key to select only certain files.

Importing Survey Data

To import surveys, first click Import Survey, and the pop up window below will appear. Select the folder in which the surveys are stored and click Open.
4.3 Data Validation

Once all files have been uploaded into the tool, a list of imported surveys will appear on this screen. The status of each survey when imported will read **Need to validate.** It is important that the analyst go through and validate each and every survey imported to ensure that data is properly entered and answers are logical. To do so, select a survey to review and click on the **Edit Survey** button at the top of the list. The survey under review will be brought up on the screen for the analyst to look over thoroughly. Should there be any questions or concerns over information provided, the analyst should contact the person listed under **Contacts.**

Once a survey has been reviewed and considered complete, the analyst will need to change the survey’s status to **Completed. Important:** The survey data will not be available on the mapping page if the survey status is not marked as completed. As a note, data validation and cleaning can take place even before being imported into the tool. The survey status will still need to be changed to **Completed** once the validated surveys are imported.

**Validation**

Manage the each survey collected by specifying whether it is completed, needs to be validated, or has no data.
4.4 Importing Data from Non-standardized Excel Sheet

For household data, secondary data, and government executed budgets, the data import process varies slightly. Since there are no NHAPT survey templates for collecting these data, the information will be stored in non-standardized Excel files. It becomes the responsibility of the analyst to decide what information from a non-standardized Excel file will be imported into the NHAPT. After selecting Import, the analyst will need to indicate the relevant Excel file as well as the sheet on which the information is found. Then, for all the columns in the File binding box on the left, the analyst will select a heading or leave the column as deselected. The analyst can double-click on the red cell and choose the appropriate heading for each column. If a column should not be included in the data import, leave the column as Not selected. Finally, choose Import to finalize this step.

While surveys do exist for donors and NGOs, information may also be available in non-standardized Excel files. Follow the same instructions provided above for donors and NGOs in this situation. Simply use the Import Data button instead of Import Survey.
Selecting files for households, secondary data and government executed budgets

1. Click **Import** to upload your data

2. Select the relevant file and then click **Open**
Importing data for households, secondary data and government executed budgets

1. Select the Excel file; then, indicate the appropriate sheet within the Excel file where the data can be found.

2. Double click the heading to change it from **Unselected** to the appropriate column title. Leave nonessential data as **Not selected**.
4.5 Applying Weights

Weights are needed to inflate the surveyed responses to account for entities that either were not surveyed or did not return a completed survey.

- Donors are generally not weighted because it is important to receive a survey from every donor in the study universe.
- NGOs are typically weighted according to either relative size (small, medium, large) or relative estimated health spending compared to other NGOs in the universe.
- Employers are weighted by either number of full time employees or size of the employer relative to its industry type.
- Insurance providers are inflated according to the number of people covered.

For NGOs, employers, and insurance providers, the NHA team will need to determine how to weight the surveys. For more information on different methods of weighting, please see the weighting document provided in the NHAPT Library. Or, hover over the drop down menu for an abbreviated description.

To apply weights, first select a weighting logic in the dropdown menu at the top of the screen. Then, for NGOs and insurance providers, choose the number of groups the entities will be separated into at the far right. For example, if you would like to weight by quartiles, select “4”. Once surveys are imported, the NHAPT will automatically place entities into a group. The analyst then only needs to determine which group non-surveyed entities will be placed into, based on their estimated overall health spending relative to the other entities of that type.

**Weighing data for NGOs and insurance providers**

For employers, the NHA team will also need to select the appropriate industry type for each entity. A standard list of industry types is provided by the NHAPT, but the NHA team may add other relevant industry types. To do so, click on *Industry Types*, select *Add*, and enter the name of the industry to be included.
Weighing data for employers
4.6 Double-Counting

Checking for and correcting double-counting are important steps in the NHA process. Consider that Donor A reports giving $100 to NGO B, and that NGO B also reports spending $100 on a project funded by Donor A. It may seem that in total $200 has been spent on health, when in reality, both entities reported spending the same $100. The NHA team will be responsible for comparing donor disbursements and NGO expenditures to determine whether or not double-counting has taken place. If the analyst does not adjust for double-counting, the estimate for total health expenditures will be too high.

On this screen, a complete list of donors and NGOs will appear. By selecting a single donor in the list to the left, the NHAPT will generate a list to the right of NGOs to which the donor reported disbursing funds. Then, the NHA team must determine whether or not a double count has taken place. To do so, click **Compare Spending**, and a new window will appear showing more detailed information on the exact donor disbursements versus NGO expenditures.

Comparing spending to eliminate double-counting

When an incidence of double-counting is discovered, the analyst will need to decide which expenditures need to be excluded, either those of the donor or NGO. Typically, donor spending is excluded in these situations because the NGO, or financing agent, is considered to be closer to the actual expenditure. To
exclude an expenditure, select the checkbox to the left of the line item. Additionally, the user can exclude an entire list of expenditures by selecting **Select/Unselect All**. Click **OK** to review another donor/NGO relationship. Continue this process for all combinations of donors and NGOs. Once the NHA team is satisfied with the decisions made, continue on to the mapping stage.

### Eliminating double-counting

1. The disbursements reported by the donor (World Bank) to the NGO (National Health Alliance) are presented here.

2. The expenditures reported by the NGO (National Health Alliance) are presented here.

3. In this example, the Team Lead selected the donor’s disbursements to be excluded by clicking the exclude boxes next to the associated entry.

The **NHA Team Lead** will be responsible for comparing the donor’s disbursements with the NGO’s expenditures to determine whether or not they are being double-counted. Once the Team Lead has completed this step, it will show up on the other the interface of the other team members. However, they will not be able to make changes to the Team Lead’s work. The Team Lead should continue this step for all combinations of donors and NGOs. Once the entire NHA team is satisfied with the decisions made, continue on to the mapping stage.

The same process is followed on screen 5.8 to account for double-counting between employers and insurance companies.

### Helpful Hints

Typically, donor spending is excluded in these situations because the NGO or financing agent is considered to be closer to the actual expenditure. Hence, in this example the Team Lead would check both entries made by the Global Fund.
5. Mapping

The **Mapping** step deals with analyzing the data collected from the various entities surveyed. For NHA data analysis, each expenditure needs to be given four separate codes, one to indicate the financing source (FS), financing agent (HF), health provider (HP), and health function (HC). In a traditional NHA, mapping takes place in an Excel file where a comprehensive list of expenditures is compiled and each is assigned 4 codes. The entire analysis process, including splitting of health providers or health functions, is repetitive, time-consuming, and requires a high level of proficiency in Excel.

The NHAPT improves on the traditional method by providing easy-to-follow (and easy-to-document) steps for assigning NHA codes to expenditures. The tool provides codes and descriptions that are directly available for the mapping exercise, assisting teams in choosing the most accurate classifications. In addition, where applicable, the tool automatically assigns relevant NHA codes based on survey data. Furthermore, it allows the user to create rules so that expenditures with the same characteristics can be automatically mapped to certain codes. The mapping section of the NHAPT is advantageous because while it still requires an NHA expert to be present, it reduces the need for external consultants to lead the activity due to extensive guidance provided by the tool. The NHAPT leads the NHA team logically and systematically through each expenditure, providing all relevant information to assign an NHA code to that expenditure.

Sections 5.1 and 5.2 describe how to map data using the NHAPT.
5.1 Mapping Data to NHA Codes

This is the first screen where the analyst begins mapping the data by assigning NHA codes for financing source, financing agent, provider, and function to each expenditure.

To review reported data from a specific donor, the analyst can select the organization from the drop-down menu. If no selection is made, the NHAPT will automatically guide the analyst through the all data from reporting donors, one by one. The percentage displayed next to the organization’s name represents the percentage of expenditures mapped for that specific donor.

All expenditure data reported by the selected donor will appear. For each expenditure, this window will display all the relevant information entered by the respondent in the questionnaire. If the descriptive information for the expenditure is unclear, the analyst can scroll down to see the contact information for that organization.

Underneath the information, the Row icon shows the expenditure the user is mapping out of total rows for the specified donor. The user can scroll through expenditures by selecting the up or down arrow in the row icon or by choosing Previous or Next.

Also below the mapping window are the options to Flag for Review or Exclude from Estimation. If the analyst has questions, concerns, or doubts on the mapping for a given expenditure, it can be flagged for review by selecting the checkbox. Then, the user can return to all expenditures under review by selecting the Review button at the top of the mapping window. If the user determines that an expenditure should be excluded from the estimation, the checkbox should be selected. Any expenses that were excluded during the double-counting step will automatically be marked as excluded from the estimation.
1. Select a donor from the drop down box here. The percentage of mapping completed is displayed in the menu.

2. The All tab will display all expenditures to be mapped per entity. Quickly review Mapped and Not Mapped expenditures per entity by choosing the tab here.

3. All information necessary to determine, source, agent, provider, and function is available in this mapping window.

4. The Rows icon monitors progress through expenditure mapping. Scroll through expenditures here or using these buttons.

5. Flag for Review and later revisit the expenditures under Review, tab above. Or, choose to Exclude from estimation.
1. The amount of the expenditure being mapped is presented here.

2. Use the drop down boxes in steps 4-7 to specify the funding source, agent, provider and function of the expenditure.

3. Click **Split** if the expenditure has more than one provider or function.

4. Share relevant information with your team members by adding a comment.
**Helpful hints**

To learn more about the codes that you are assigning, the user can hover their mouse above a given NHA code to see the associated description.

**Code Descriptions**

The user can learn more about the codes in the dropdown menu by hovering over the code to read the description.
The *Repeat Mapping* button allows the analyst to make rules so that expenditures with the same characteristics are automatically coded the same.

**Repeat mapping**

1. The **repeat criteria** are the characteristics that must be held in common in order for the mapping rule to be applied.

2. For expenditures with the same repeat criteria listed above, determine which codes should be assigned.

3. For expenditures with the same repeat criteria listed above, determine which codes should be assigned.
5.2 Splitting Expenditures

At times, a single expenditure needs to be split between multiple providers or functions. To split a provider, select the **Split** button. In the pop-up window, the user will be asked to create a splitting rule. To create a new rule, select **Add** and a new window will appear asking the analyst to select a classification and assign a certain percentage associated with the split for this code. The analyst will have to repeat this process for at least one other code so that the percentage for both codes equals 100.

Splitting expenditures
Creating new splitting rules with percentages

1. Insert a name for your rule, for example district hospitals vs. private hospitals split.

2. Select an NHA provider type that the rule will apply to from the drop down menu.

3. To specify your split between district hospitals and private hospitals click Add.

4. After clicking add, this screen will appear. Specify the category (ie: general hospital) and then the percent split for the category. Once you are complete, click OK.
The user can also create a split by amount following the same process. To begin, select *Split by Amount* when the split window opens.

**Creating splitting rules with amounts**

![Image of split rule creation](image)

Click **Add** and the screen to the right will appear. Add the category you would like to split (e.g., General hospitals) and the associated amount of the split. Click **Ok** when you are done.

Once a provider split has been applied, it should be noted that there will be multiple health functions. To assign a health function code for an expenditure split between providers, first select one provider and assign the corresponding function. Then, select the other provider and assign codes for the function. Note in the images below how the selected provider has different health functions. As with providers, functions can be split following the same procedure.

**Assigning health function codes**

![Image of health function assignment](image)

**Helpful Hints**

Any split that is created by the user will be saved in the Split Library to be reused throughout the entire study. NHA teams can also refer back to previous NHAs to use or reference former splits used.
6. Audit
The sixth and final step of the NHAPT is auditing the data by visually examining the charts and tables produced to determine whether they are accurate. During a traditional NHA, the preliminary tables are shared with key experts and stakeholders and the NHA team may choose to sketch the flow of funding once tables have been created (although there is no clear template or guidance for how to present this information). This poses as a challenge because there is no clear, systematic or easy way to validate data at this stage. Furthermore, NHA tables are not intuitive to read for those who are not familiar with the methodology.

The NHAPT addresses this issue by providing a built-in system that allows for visualization of the funding flow. As a result, the NHA team is able to see clearly and critically analyze how resources flow through the health sector. If a flow looks incorrect, the team can quickly revisit the mapping to re-evaluate classifications. Beyond the NHA team, the diagrams produced by the tool allow non-NHA experts to more easily understand the flow of funding. Finally, the traditional NHA tables, which are normally time-intensive to produce, are automatically created. All of the tables produced by the NHAPT can be exported from the system so that they can be shared with a larger audience. They are also standardized so they can be uploaded into global databases to be used for cross-country and time comparison analysis.

Sections 6.1 and 6.2 explain how to use the NHAPT to generate graphs and tables.
6.1 Graphs

A key step in the post-analysis validation step, the graph screen is flexible in that it allows the NHA team to display data in various ways.

Graph of NHA results

The graphing function of the NHAPT allows the NHA team to:

1) Specify which sub account, data source and entity they would like to visualize
2) Use the toggle to adjust the graphic to fit the screen of the NHAPT
3) Specify whether you want to show specific financing sources, financing agents, providers and functions. The graphs can also be formatted to show NHA codes and amounts, and to align the thickness of the arrows (which representing funding flows) with the proportion of the expenditure. Once the graph is customized, it can then be exported from the NHAPT so that it can be distributed to relevant stakeholders.
4) Finally, the diagram can be exported, printed, and sent to relevant parties for review.
Select subaccount:
Reproductive Health

Select data source:
Government

Select entity:
All

Select levels to display and an entity or function to visualize in the funding flow diagram:

**Financing Sources**

- Financing Sources

**Financing Agents**

- Financing Agents

**Providers**

- Providers

**Functions**

- Functions

- Show NHA codes?
- Line thickness proportional to amount?
- Show amounts?

Export Diagram
6.2 Tables
The final NHAPT interface presents the standard NHA tables, which are the main output of the NHA exercise. The tables explain the flow of funding from source to agent, agent to provider, provider to function, and agent to function. The NHAPT automatically generates these tables and thereby completely eliminates this time consuming step for the NHA team. You can use this page to jump between different tables (FSXHF, HFXHP, HPXHC and HFXHC) by selecting the appropriate button on the bottom left. Furthermore, you can use the drop down menus at the top of the interface to focus in on a single entity. Once again, the tables generated here can be exported to Excel files or .pdf for distribution to relevant stakeholders.

2. Indicate which type of sub account and associated variable you would like to view in the table.

1. Select the table that you would like to view by clicking on one of the tabs at the bottom of the page: