

Guide to the Goals Model for Assessing Program Impact

Avenir Health, May 2016

1 INSTALL SPECTRUM

You should have Spectrum version 5.44 or higher installed on your computer. If you have not yet installed the latest version, please follow these steps:

1. Download the Spectrum installation file from the Avenir Health website at:

<http://www.avenirhealth.org/software-spectrum.php>



Then double click on the downloaded file, SpecInstall.EXE, to start the installation. You can respond 'Yes' to all questions to fully install the program.

Note that you may need permission or administrator rights to install software on your computer. Please make sure that you install Spectrum before traveling so that you can easily access your IT support if you need it.

Spectrum runs on most computers with Windows. It does not run on Macintosh computers unless you have a Windows emulator installed.

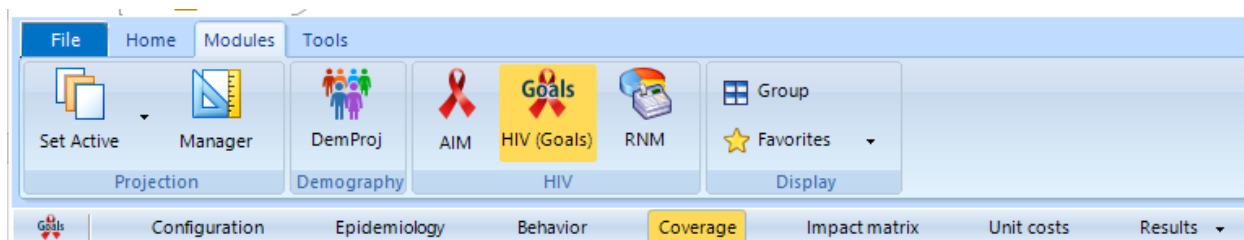
2 START SPECTRUM AND OPEN A FILE

You can start Spectrum by selecting the Spectrum program in the Windows Start Menu. Select 'Open existing presentation' from the Spectrum start screen and open your Goals file. Once the projection is

open the name of the file will be displayed at the bottom of the screen. You can open up to ten files at the same time.

3 REVIEW PROJECTION INPUTS

The main inputs are contained in the Coverage and Unit Costs editors. To access the Coverage editor, select **Modules** from the horizontal menu at the top of the screen and then select the **Goals** icon from the ribbon. Select **Coverage** from the horizontal menu that appears once you have selected **Goals**.



The coverage editor shows the percentage of the target population that is reached by year for each intervention. Note that the interventions are grouped by categories shown in the tabs: General population, Most-at-risk populations, Medical services, Male circumcision, PrEP and Vaccines.

Initially coverage will be constant for all interventions. If the base year coverage is incorrect you can change it by typing a new value into the base year (2015) column. To copy that value to all other years, just highlight the cells to include, right click with the mouse, and select Duplicate (or just press Ctrl+D).

To enter a target coverage value in some future year, such as 2020, just type the target value into the cell for 2020, then highlight all the cells from 2015 to 2020 and right click with the mouse and select Interpolate (or press Ctrl+I). The intervening years will be filled in with interpolation.

To review the unit costs, select the **RNM** (Resource Needs Model) icon from the ribbon, then select **Unit Costs** from the horizontal menu. This will display an editor with tabs similar to the coverage editor. You can review and revise any of the values.

All of the interventions are included in the Goals coverage editor except for ART and PMTCT. You can access those by selecting **AIM** from the ribbon and then **Program statistics**. This will bring up an editor with three tabs: PMTCT, Adult ART and Child ART. To change criteria for treatment eligibility, select **Eligibility for treatment** from the AIM menu.

All of the editors contain a **Source** button. If you click on this button, you can add notes about sources and assumptions. These notes will be saved with your file for future reference.

You can also see the other inputs to the projection. Epidemiological parameters are shown under **Goals - > Epidemiology** and behavioral inputs are shown under **Behavior**.

4 ESTIMATE THE COST AND IMPACT OF THE NATIONAL STRATEGIC PLAN

You can use the Goals model to estimate the cost and impact of your national strategic plan or other targets, such as Fast-Track. To do this you just need to enter the NSP targets in the **Coverage** editor. In most cases you can enter the target for the final year of the plan and then interpolate from the base year to fill in the intervening years and duplicate the target values for all years beyond the target year.

If you wanted to calculate the cost and impact of achieving the Fast-Track targets you would enter the following coverage target for 2020 and 2030 and fill in the intervening years with interpolation:

Intervention	2020 Fast-Track Target	2030 Fast-Track Target
General population		
Condom promotion	90%	90%
Cash transfers for young women and girls (15-24)	30%	30%
Most-at-risk populations		
Services for sex workers	90%	90%
Services for MSM	90%	90%
Services for PWID	90%	90%
Opioid substitution therapy	40%	40%
Voluntary medical male circumcision	90%	90%
PrEP	10%	30%
ART (Coverage among all PLHIV)	81%	90%

Once the coverage targets are set, save your file under a new name, such as COUNTRY_NSP. Then use **File -> Open** to open your original file. Then you will have two files open, one with constant coverage and one with the targets. When you display results you will be able to see both projections.

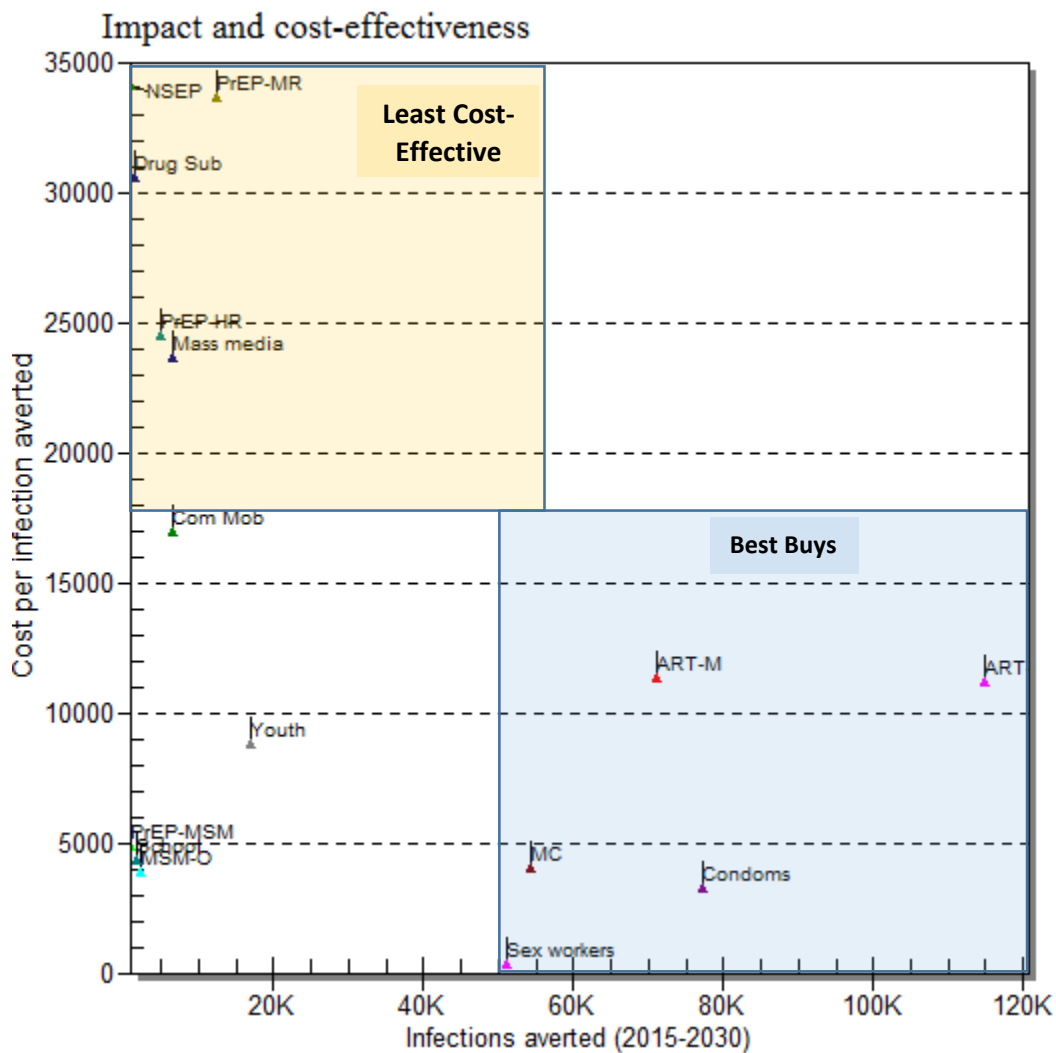
1. Use **AIM -> Results** to see the number of new infections, AIDS deaths, people living with HIV and other indicators.
2. Use **RNM -> Results** to see the resources required and the number of services provided.

5 CALCULATE COST-EFFECTIVENESS BY INTERVENTION

Goals has a special tool, called **Cost-Effectiveness Analysis (CEA)**, for calculating the cost-effectiveness of each intervention. To use this tool, select **Tools** from the top horizontal menu, then **More Tools** and **Cost-Effectiveness Analysis**. You can set the target year (the year by which the coverage targets will be reached) and the discount rate. In the 'Target Year' column enter the coverage targets. These can be the same as your Strategic Plan or Fast-Track Targets. Enter targets only for those intervention you want to analyze. The others can remain blank. The second column shows the coverage in the base year.

Once you have entered all the targets click the **Process** button and the analysis will start. The tool will examine each intervention one-at-a-time. It will scale-up the coverage as indicated and record the

number of infections averted (compared to a base intervention with no scale-up of any interventions) as well as the number of deaths and DALYs averted and the incremental cost. Once all interventions are done the tool will display a table with the results. You can click on the **Display Chart** button to see the result in graphical form. The chart, shown below, displays the total infections averted by the intervention on the horizontal axis and the cost per infection averted on the vertical axis.



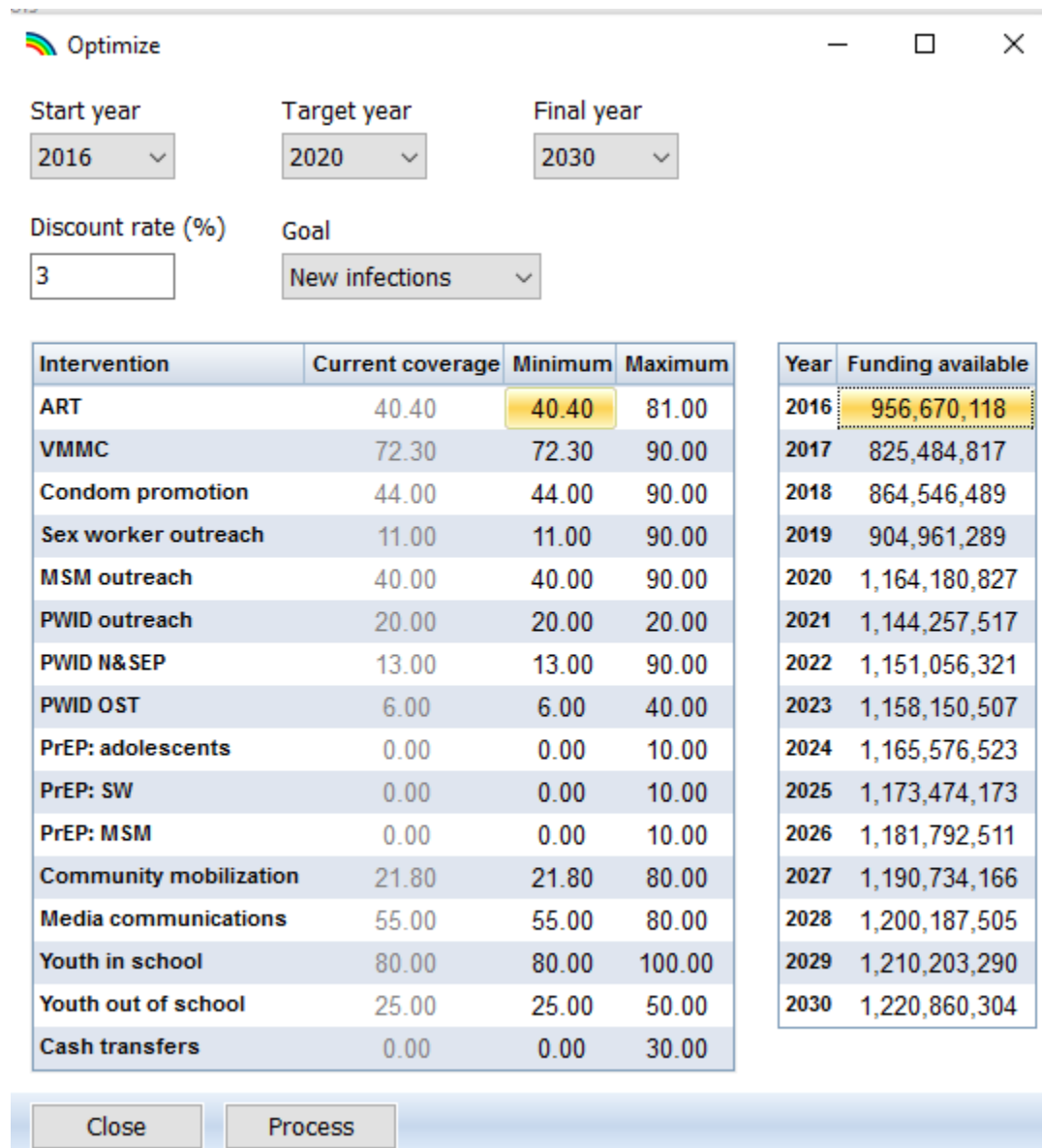
The 'best' interventions are those that avert many infections and do not cost very much. These are in the lower right quadrant of the chart. Those that are expensive and have little impact will be in the upper left quadrant.

This tool can give you an idea of the relative ranking of the intervention by total impact and cost-effectiveness. Note that since each intervention is scale-up individually in this analysis the total impact of a combination of intervention will be less than the sum of individual impacts.

6 OPTIMIZE THE RESPONSE

An important question to ask when planning your response is ‘How can we get the greatest impact for the funds we expect to have available?’ The **Optimize** tool can help with that question.

To use the **Optimize** tool select **Tools, More Tools** and **Optimize**. The screen will look something like this:



The screenshot shows the 'Optimize' tool interface. At the top, there are three dropdown menus for 'Start year' (2016), 'Target year' (2020), and 'Final year' (2030). Below these are a text input for 'Discount rate (%)' (3) and a dropdown for 'Goal' (New infections). The main area contains two tables. The first table lists interventions with their current coverage, minimum, and maximum values. The second table shows the funding available for each year from 2016 to 2030. At the bottom, there are 'Close' and 'Process' buttons.

Intervention	Current coverage	Minimum	Maximum
ART	40.40	40.40	81.00
VMMC	72.30	72.30	90.00
Condom promotion	44.00	44.00	90.00
Sex worker outreach	11.00	11.00	90.00
MSM outreach	40.00	40.00	90.00
PWID outreach	20.00	20.00	20.00
PWID N&SEP	13.00	13.00	90.00
PWID OST	6.00	6.00	40.00
PrEP: adolescents	0.00	0.00	10.00
PrEP: SW	0.00	0.00	10.00
PrEP: MSM	0.00	0.00	10.00
Community mobilization	21.80	21.80	80.00
Media communications	55.00	55.00	80.00
Youth in school	80.00	80.00	100.00
Youth out of school	25.00	25.00	50.00
Cash transfers	0.00	0.00	30.00

Year	Funding available
2016	956,670,118
2017	825,484,817
2018	864,546,489
2019	904,961,289
2020	1,164,180,827
2021	1,144,257,517
2022	1,151,056,321
2023	1,158,150,507
2024	1,165,576,523
2025	1,173,474,173
2026	1,181,792,511
2027	1,190,734,166
2028	1,200,187,505
2029	1,210,203,290
2030	1,220,860,304

By default the first year of the optimization is set to 2016, the target year for coverage is 2020 and the final year of the analysis is 2030. You can change those years if you want. The Goal can be set to minimize new infections, AIDS deaths or DALYs. The first table shows the current coverage for each

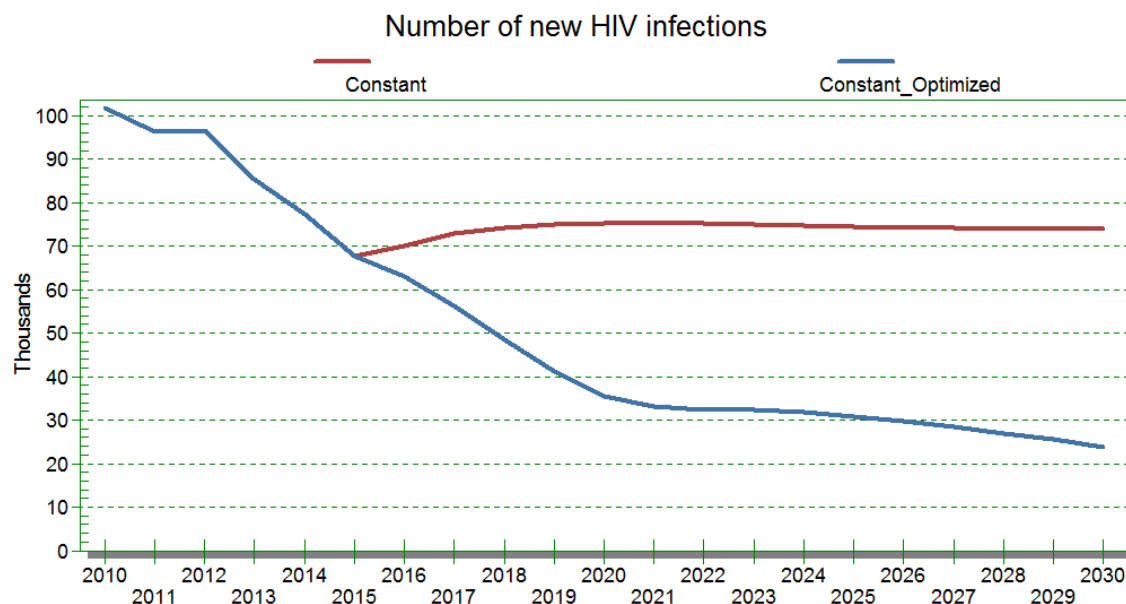
intervention plus the minimum and the maximum. By default, the minimum coverage is set to the current coverage and the maximum is set to Fast-Track goals, but you can change these. Setting the minimum coverage below the current coverage means that resources can be taken away from that intervention and allocated elsewhere, if that is cost-effective.

The second table shows the total funding that you expect to be available in the future. Initially this will be all zeros. You need to fill it in with an estimated funding stream. Once all the inputs set press the **Process** button.

The **Optimize** tool will first run a cost-effectiveness analysis using the CEA tool described above. From that analysis it will prepare a rank ordered list of interventions by cost-effectiveness. To determine an optimum allocation of the available funds, the tool will implement the most cost-effective intervention first, then move to the next most cost-effective intervention, and continue in this manner until all the available funding in that year is used up. Usually the last intervention to be implemented will be partially scaled-up because there will not be enough funds left to fully implement it.

Once the analysis is complete you will see a message showing you the all the interventions that were implemented even partially in some years. Any interventions not shown on the list were not implemented with the available funding.

Click **Close** and **Close** again to return to the main Spectrum page. The optimized projection will be automatically opened. It will have the same name as your original projection with ‘_Optimized’ added to the end. You can then view any of the indicators, such as new infections shown below, and see the impact compared to the base case.



To see which interventions were scaled-up and which were not, look at the **Coverage** editor.

Note that this is a basic optimization that assumes that an optimum mix of interventions can be determined using cost-effectiveness measures calculated by scaling up each intervention one-at-a-time. A more comprehensive approach would test all combinations of interventions and all scale-up amounts, or use a sophisticated optimization algorithm to search for an optimum combination. Such an analysis can take a long time to run and, in practice, the results are not usually very different from this more basic approach. If there is quite a bit of separation between the interventions on the cost-effectiveness chart, shown on page 4, then this basic approach should be fine. However, it may not distinguish well between interventions that have nearly the same cost-effectiveness.

A second limitation is that the Goals model allows unit costs to vary with time but not as a function of coverage. It may be that unit costs should decline with scale and/or rise at very high coverage levels. If so, then some interventions might become less cost-effective when coverage levels are high. However, very little information exists on the relationships between cost and national coverage so this relationship is not included in this tool.

The purpose of the **Optimize** tool is to provide information on two key aspects of strategic planning:

- How much impact can we expect to get from rational allocation of available funding?
- Which interventions should be scaled-up to get the most impact from available funding?

The results from this tool can inform discussions as plans are developed.