Spectrum Quick Start Tutorial:

The Lives Saved Tool: EasyLiST Feature

A Computer Program for Making Child Survival Projections

September 2009
The development of the Lives Saved Tool software and manual was supported by the Bill and Melinda Gates Foundation. It was prepared by Willyanne Decormier Plosky, John Stover, and Bill Winfrey of Futures Institute. The views expressed in this publication do not necessarily reflect the views of the Bill and Melinda Gates Foundation.
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INTRODUCTION

Spectrum is a policy modeling system. It contains modules for a number of reproductive health areas. For the purposes of making a national child survival estimate, four Spectrum modules are used: 1) DemProj, for the demographic projection; 2) AIM, for the incorporation of the impact of HIV/AIDS on the demographic projection and the impact of treatment upon child survival; 3) FamPlan for the incorporation of lower fertility into the demographic projection and 4) the Lives Saved Tool (LiST), for the projection of child and maternal survival with increasing coverage of child and maternal health interventions.

EasyLiST is a special feature of the Lives Saved Tool that allows you to use previously prepared child and maternal health and intervention coverage data to quickly make child and maternal survival projections, by simply choosing the interventions and target coverage for each projection you would like to make.

This manual describes the use of the EasyLiST feature for making a national child and maternal survival projection. This tutorial just provides the information needed to use EasyLiST. The use of the full LiST Module through “Expert Mode”, in addition to the use of the other Modules that work in combination with LiST, is described in the following manuals:


The manuals are available for download through the Health Policy Initiative available at: http://www.healthpolicyinitiative.com/index.cfm?id=software&get=Spectrum

The LiST module is based on the work of the Bellagio Child Survival Study Group, the Child Health Epidemiology Reference Group (CHERG), and the International Child Development Steering Group. Their work has sought to further specify the global burden of disease and developmental impediments for children under-5 years of age both by region and by cause, and to identify and assess those interventions that will be the most effective in increasing child survival and
developmental potential. This work has been published in the 2003 Lancet series on child survival\(^1\), the 2005 Lancet series on neonatal survival\(^5,8\), the 2007 Lancet series on child development\(^9,11\), and the 2008 Lancet series on infant and young child nutrition\(^12,16\).

LiST is a work in progress that is continuously adapting to meet the needs of countries and health organizations. It has recently been revised to allow it to interface with AIM and FamPlan. In addition, further reference to nutrition indicators and interventions, a component on maternal health, and the ability to link to an external costing module are now included.

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WHAT YOU WILL LEARN

At the end of this training, you will be able to:

- Create a child and maternal survival projection using previously prepared data about child and maternal health status and coverage rates for child and maternal health interventions.
- Display various child and maternal survival indicators, such as: child and maternal deaths, child and maternal deaths by cause, child and maternal deaths prevented by cause or type of intervention, the maternal mortality ratio, and the under-five mortality rate.

BASIC STEPS IN USING SPECTRUM

Step 1: Installing Spectrum

The Spectrum program is distributed on CD-ROM or through the Internet at http://www.FuturesInstitute.org or http://twitter.com/SpectrumModel. It must be installed on a hard disk before it can be used. Spectrum will operate on any computer running Windows 98 or later version. It requires about 30MB of hard disk space.

Step 2: Changing the Language in Spectrum

The first time you run Spectrum after installing it, all the displays will be in English. You can change to another language by selecting “Options” and “Environment” from the Spectrum menu. Then select the language you want to use and click the “ok” button.

Step 3: Starting the Spectrum Program

1. To start Spectrum:
2. Click the “Start” button on the task bar.
3. Select “Programs” from the pop-up menu.
4. Select “Spectrum” from the program menu. Alternatively, you can use Windows Explorer to locate the directory “c:spectrum” and double click on the file named “spectrum.exe.”
5. If you get an error saying that the gdiplus.dll file is missing you may have to download this file from Microsoft. It is included with Microsoft Office and recent versions of Windows, but may not be on computers with Windows 2000 or 98.
Step 4: Opening a Demographic Projection with Planned Use for the Lives Saved Tool

The Lives Saved Tool in Spectrum requires a demographic projection prepared with DemProj. A completely new demographic projection may be created (as described in Step 4), or the LiST module may be added to an existing demographic projection (as described in Step 5). To create a new demographic projection, begin by:

1. Select “File” and “New projection” or “New Tend Projection” from the Spectrum menu. Selecting “New Projection” will allow you to work with default files available by country, with a base year of 2003 and default coverage flatlined from 2003 until the target year.

Selecting “New Trend Projection” will allow you to work with default trend files that include all coverage data from surveys between (approximately) 2000 and 2009. Because the trend files are large, at present only three countries (Bangladesh, Brazil, and Kenya) are included within the Spectrum program, as including all country files would make the Spectrum program too large for many users to download. Trend files for countries other than the four aforementioned must be downloaded from the internet, via a link in the Spectrum Program. Therefore, if you have a poor internet connection, or if you would like to only look at a small window of time for your projection (for example 2003-2006), the “New projection” option will likely be your best.

2. If “New projection” was selected, you will see the Projection manager dialogue box. It will look similar to the display shown below (if “New Trend Projection” was chosen, see #10-14 below for instructions):

![Projection manager dialogue box](image-url)
The following information is displayed:

**Projection title:** This title will be printed at the top of all printed output and will be used to identify the projection if more than one projection is loaded at a time. You can change the title to reflect the projection you are about to prepare.

**Projection file name:** This is the name that will be used to store all data files associated with this projection.

**First year:** This is the first year of the projection.

**Final year:** This is the final year of the projection.

**Active modules:** The check boxes let you select other modules that will be used with the population projection.

3. In the Projection manager dialogue box, fill in the projection title, the first year of the projection and the last year of the projection. If intending to use AIM, it is a good idea to set the first year of the projection to one or two years before the start of the HIV/AIDS epidemic. For the purposes of the LiST Tool, the end date may be set to 2015, so as to monitor progress in meeting the MDGs, or to a later date for evaluating specific targets set by the country.

4. Check the box next to “Lives Saved Tool (LiST)” to include the Lives Saved Tool. The box next to “AIM” will then be checked automatically. You may also click on the box next to “FamPlan” if you would like to include that module as well.

   *Please note- Some countries do not have default data for FamPlan. If you try to exit the Program manager box after having activated the FamPlan module for a country for which there is no data, you will see the following error:

   ![Error Message]

   Angola is not in the Family Planning database. Default country data for Family Planning will not be loaded.

   You will need to then either 1) click on the box next to FamPlan to de-activate it, or 2) complete the FamPlan module using your own data. The EasyList program will not be able to run properly without data in an activated FamPlan module for DemProj to draw from and use in projecting child deaths.

5. Click the “File name” button and enter a file name for this projection. Then click “Save.”

6. Click the “EasyProj” button and select your country from the country list. EasyProj is a special feature of DemProj that allows you to use data prepared by the United Nations Population Division and published in *World Population Prospects*. If you click on the EasyProj button, the
program will prompt you to select a country and ask whether you want to use the UN low, medium, or high projection assumptions. You will also see that the AIM, FamPlan and LiST boxes will be checked under the “Load Default Values” section on the right side of the screen. Once you click “Ok,” the program will load the prepared data for the DemProj, AIM, FamPlan, and LiST modules.

7. Click “OK” to return to the dialogue box and click “OK” once more to complete the set-up process.

8. Select “File” and “Save projection” from the Spectrum menu to save this projection.

9. You can then go to “Edit” and click on “Lives Saved Tool (LiST)” to begin working in LiST.

10. If you selected “New Trend Projection” from the File drop-down menu, you will see the “Trend Projection Manager” dialogue box as follows:

11. Fill in the projection title. Then, click the “Projection file name” button and enter a file name for this projection. Then click “Save.”

12. If the country you wish to work in is one of the three included in the program, highlight that country and click “Ok”.

13. If your country is not one of the four included in the program, click on “Update Trend Files” to be directed by the internet to the following:
14. Click on the box in the “Download” column adjacent to the country you would like to work on, and then click “Ok”. Click “OK” to indicate the file was successfully downloaded, and then click “Ok” once more to complete the set-up process.

Step 5: Adding the LiST (and AIM) Module to a Previously Prepared Demographic Projection

The first step in adding the LiST (and AIM) modules to a previously prepared demographic projection that did not originally include them as active modules is to open the demographic projection. To do this,

1. Select “File” from the menu bar.
2. From the pull-down menu that appears, select “Open projection.”
3. Select the projection file from the “Open” dialogue box and press “Ok.” All pre-existing projections that can be loaded will be listed here.
4. Once the demographic projection is open, you need to change the configuration to indicate that the AIM, FamPlan, and LiST modules will be used as well. To do this, select “Edit” from the menu bar and “Projection” from the pull-down menu.
5. You will see the Projection manager dialogue box. Check the box next to “Lives Saved Tool (LiST)” to include the LiST module (only default 2003 projections can be added to a previously saved projection, and not trend files at present). The box next to “AIM” will then be checked automatically. You may also click on the box next to “FamPlan” if you would like to include that module as well.
*Please note- If you are using a file prepared prior to 2009, you will see that next to the EasyProj button it will say “country not found”. You must then enter EasyProj and re-choose your country. Do not select “load default values” for any modules (i.e Demproj, AIM) that were created for the file previous to opening it with the intention to add LiST.

6. Click “OK” to complete the set-up process.

7. Select “File” and “Save projection” from the Spectrum menu to save this projection.

8. You can then go to “Edit” and click on “Lives Saved Tool (LiST)”, “AIM” or “FamPlan” to begin working in the module of your choice.

**Step 6: Select the EasyList Feature**

1. Choose “Edit” from the menu bar.

2. Choose “Lives Saved Tool (LiST)” from the pull-down menu. This step will display the LiST Edit Mode Selection box, as shown below.

3. If this box does not appear, but rather the “Lives Saved Tool” dialogue box does, you may prefer to go to the drop down menu under “Options” and choose “Environment”. Then click on “Enable List Edit Mode Selection” to enable that dialogue box. Users of LiST who only want to work in EasyLiST often prefer to have the “LiST Edit Mode Selection” dialogue box precede the “Lives Saved Tool” box so that they may go immediately to EasyLiST mode.

4. If you have enabled the “List Edit Mode Selection Box”, click on “Expert” and then “Ok”. You will then see both the EasyList editor screen (left side) and the projection results screen (right side):
Step 7: Adapt your projection

1. Click on the “Configure years” button at the top of the EasyList editor screen. In the Configuration box, select the first year of the intervention program and the target year for which you are setting a goal for intervention coverage. In most cases the first year of intervention program is the current year.

2. In the “On/Off column of the editor screen, click the boxes next to the interventions you would like to include in your projection. A green check mark will show that the intervention will be included. Please note the scroll bar on the right side of the editor screen. You may click on the scroll bar and drag down to see all interventions.

3. Next to the “On/Off” column, you will see the current coverage for each intervention. This data comes from the latest DHS, MICS, AIS, MIS, and household surveys for each country. For the vaccination and Vitamin A coverage indicators, the data comes from UNICEF.

4. In the third column of the editor screen are the coverage targets. Values have been provided based upon expert review of available effectiveness trails and the consequent theoretical scale-up for each intervention. However, you may enter in a target coverage value of your choosing.
5. If you would like to set the same target coverage for multiple interventions in adjoining rows, you may click on the first box in the target coverage that you wish to set and then drag your cursor down to the last box in the target coverage column that you wish to set. The area will be highlighted in orange. Right click with your mouse, and click on “duplicate”. All values in the highlighted range will then be changed to the equal the first value in the range.

6. Once you have decided upon the interventions and the associated target coverage for each that you would like to include in your projection, click on the “Recalculate” button.

**Step 8: View Projection Results**

1. Once you click the “Recalculate” button, the program will project the child and maternal survival results using the interventions you selected, and scaling up coverage linearly from the current coverage to the target coverage.

2. The results of the projection can be viewed on the right side of the EasyList screen. The results are shown by age group (for children) and year. In addition, you can compare the child and maternal survival results of your projection to the child survival results if there were no changes to the intervention coverage from the base year.

3. The following results can be displayed:
   - Child deaths
   - Additional child deaths prevented relative to impact year
   - Child deaths by cause
   - Additional deaths prevented by cause relative to impact year
   - Additional child deaths prevented by intervention relative to impact year
   - Maternal deaths
   - Additional maternal deaths prevented relative to impact year
   - Maternal deaths by cause
   - Additional maternal deaths prevented by cause relative to impact year
   - Additional maternal deaths prevented by intervention relative to impact year
   - Maternal mortality ratio
   - Neonatal mortality rate
   - Infant mortality rate
   - Under 5 mortality rate
   - Mortality rates summary
   - Percent stunted
   - Average height/length
   - Breastfeeding prevalence
   - Diarrhea incidence
   - Intrauterine growth restriction
   - Abortions
4. The program by default displays the projection results by child deaths. To change the results setting, click on the drop down box next to the “Configure” button, and choose which category of results you would like to see.

5. If you would like to change how the results are displayed on the screen, click on the “Configure” button. You will see the following screen:

![Configure dialog box]

6. The exact choices available will depend on the indicator you have selected. The display will normally be in single years but you can change it to display every five or ten years if desired. The chart type is also set through this dialogue box. Click on the button next to the type of display you want. You may also select the age cohort to display for some indicators, by using the drop-down menu for “Select age cohort to display”.

7. Normally the display will show all the years in the LiST projection, which are established in the “Configuration” box under Expert mode. However, if you want to see only part of the projection (for example, results beginning only in the first year of intervention coverage), you can change the first year or final year through the “First Year” and “Final Year” drop down boxes.

8. To copy the charts you may press “Print Screen” on your keyboard, and then “Ctrl and V” to paste into Paint, Word, or Powerpoint. To export data from a screen, mouse over the top left corner of any table, right click to copy all, and then press “Ctrl and V” to paste into Excel.

**Step 9: Switching to Expert Mode**

1. You must close EasyList, and enter LiST from the “Edit” drop-down menu into order to work with the program in Expert mode. In the expert mode of LiST you may edit any of the following:
a. the base year of coverage (the starting point from which the Lives Saved Tool begins to project child and maternal survival) or the first year of the intervention program (which is the base year for evaluating the mortality impact of interventions with coverage scale-up);

b. intervention coverage data;

c. baseline health status, child and maternal mortality, abortion, or economic status data;

d. the effectiveness of maternal interventions, the effectiveness of interventions <1 month, the effectiveness of interventions 1-59 months, the herd effectiveness of vaccines, the effectiveness of nutrition interventions, and the impact of under-nutrition on mortality.

2. Please note that you may carry over the intervention coverage targets in EasyList to the Expert mode, by clicking on the “Transfer scale up values to expert mode” box at the bottom of the EasyList screen before closing EasyList and moving to Expert mode.

**Step 10: Save the Projection**

1. It is always a good idea to save the projection whenever you make a change to any assumptions. If you are in EasyList, click the “Close” button, or if you are in Expert mode click the “Ok” button. Then save the projection by selecting “File” and “Save”.

2. To save the projection with a different name, choose “File” from the menu bar and “Save projection as” from the pull-down menu. You will then have a chance to specify a new file name for the projection. Normally when you save the projection with a new name, you should also change the projection title. This step will avoid confusion if you have two or more projections loaded at the same time.

**Tools Supporting LiST**

The tools in Spectrum allow for further use of the data generated while creating projections. Those currently available for use with LiST include:

- The extract feature, which enables you to extract the projected data from one projection (or multiple projections) on one or more indicators. The extracted data is then saved to a CSV file, and can be imported into excel for further analysis. An example would be to use the extract feature to extract the data for “Child deaths” and “Maternal deaths” for both Brazil and Mexico into an excel table all at once.

- The scenario generator feature enables you to quickly vary the target coverage for one or more child and/or maternal health interventions, across multiple projections. An example would be to generate one scenario for all African countries where target coverage of insecticide treated nets reaches 50% by the target year, and another scenario where target coverage of insecticide treated nets reaches 80%.
Extract

1. After entering Spectrum, go to “Tools” and click on “Extract” from the drop-down menu. (Note: You cannot use the Extract function if you have a projection file open. If the “Extract” menu appears in grey, select “File” and “Close Projection” to close the projection. Then you should be able to select “Extract”.) An “Extract” window will open, in which the white “choice” boxes will be empty. Below is an example of what the “Extract” window looks like once filled in, followed by instructions on how to do so:

![Extract Window]

a. For the “Chosen Projections” box, click “add” to browse and add a previously saved projection. Highlight a projection from the “Chosen Projections” box and click “remove” to remove it.

b. Once a projection is added to the “Chosen Projections” box, the indicators for that projection will appear in the “Indicators” box. Click on the “+” to open a category and see the indicators housed within it.

c. To pull an indicator into the box of “Selected Indicators” that you wish to work with, highlight the indicator in the “Indicators” box and press the “>>” button. To remove an indicator from the “Selected Indicators” box, highlight it and click “<<.” In other modules of Spectrum, you may further refine your selected indicator by sex or region (urban/rural) through highlighting the indicator in the “Selected Indicators” box and clicking “Configure.” However, there are currently no indicators in LiST that have such breakdown data, and thus this function is not applicable for Extract with LiST projections.

2. To process the extraction, click the “Process” button. Enter the file name you wish to save the extraction as, and click “Ok.” It will then be saved as a CSV file, ready for use in Excel.
3. If you do not wish to process the extraction immediately, but would like to save the “Extract” window in which you have pulled out the mix of projections and indicators that you would like to use in the future, click the “Save” button. Enter the file name you wish to save the “Extract” window as, and click “Ok.” It will then be saved as an .ex file.

4. If you have a previous “Extract” window saved as an .ex file, you may open it by clicking the “Open” button.

**Scenario Generator**

1. After entering Spectrum, go to “Tools” and click on “Scenario Generator (LiST)” from the drop-down menu. A “Scenario Generator (LiST)” window will open, in which the white “choice” boxes will be empty. Below is an example of what the “Scenario Generator (LiST)” window looks like once filled in, flowed by instructions on how to do so:

```
Scenario Generator [LiST]

- choose the “Intervention Year” and “Target Year”. Often, the intervention year is the current year.

- choose a “Scenario Name”. Then, in the “Selected Projections” box, click “add” to browse and add a previously saved projection. Highlight a projection from the “Chosen Projections” box and click “remove” to remove it. Then, select where to save the projection by clicking on the file folder icon beneath “Save projections in the following location” and choosing from the drop-down list. It will then be saved as a Scenario Generator file (.SG file).
```
c. Check the boxes in the “On/off” column next to the indicators you wish to use in your scenario.

d. In the Target year column, click on the box in the row for each intervention you want to include and enter in a target coverage.

e. Click on the “Flatline unchecked interventions” box if you would like the program to flatline coverage for all interventions that were unchecked in the “On/off” column, from the intervention year to the target year. Often, this will be the preferred choice, as it allows you to project the impact of only the intervention/s that you select in the “On/off” column and set a target coverage for (as compared to the status quo). However, in some cases the user may have previously prepared projection files that have target coverage already set for a specified set of indicators, and they may wish to have the program keep those coverage settings with the exception of one (or more) indicators for which a new target coverage will be applied through the scenario generator. In that case, the “Flatline unchecked interventions” box should remain blank. A simple example would be if an organization had set target coverage in the selected projected files for all interventions to be 80% in 2015, but wanted to explore the effect of increasing antenatal care to 90% by 2015.

2. To process the scenario generation, click the “Process” button.

3. If you do not wish to process the scenario generation immediately, but would like to save the “Scenario Generator (LiST)” window in which you have pulled out the projections that you would like to generate scenarios for in the future, click the “Save” button. Enter the file name you wish to save the “Scenario Generator (LiST)” window as, and click “Ok.” It will then be saved as an .ex file.

4. If you have a previous “Scenario Generator (LiST)” window saved as an .ex file, you may open it by clicking the “Open” button.
**EASYLiST “CHEAT” SHEET**

1. **Open Spectrum**
   
2. **Create a new Projection**
   a. Under File, click New Projection
   b. Enter the Projection title (i.e. Mali – Millennium Development Goal)
   c. Select the first and final years of the projection
   d. Enter a projection file name (i.e. mali-mdg.pjn)
   e. Choose the appropriate modules
      i. Child Survival (LiST)
      ii. AIM (if working in a country with a significant HIV+ population)
      iii. FamPlan (if interested in the impact of contraception)
   f. Click EasyProj
      i. Select the country of interest
      ii. OK
   g. Save this baseline Projection
      i. Under File on the Main Menu, Click Save Projection
      ii. OK

3. **Enter EasyLiST**
   a. Under Edit, click Child Survival (LiST)
   b. Choose EasyLiST
   c. Choose the ‘Configure Years’ button
      i. Enter the ‘First year of intervention program’
         1. This is the year that the scale-up will begin.
      ii. Enter the ‘Target year of coverage’
         1. This is the year at which full scale up should have occurred
         iii. OK
   d. Choose the Interventions to change
      i. Click the check-box associated with the interventions of interest
      ii. Change the target value of the checked interventions, if needed
      iii. Press on the ‘Recalculate’ button at the bottom
   e. Select the display of choice
      i. On the bottom right hand corner, scroll through the indicator choices
      ii. Once selected, click on the ‘Configure button’ and chose the appropriate display
   f. If additional changes are made to the data, you must click the ‘Recalculate’ button

4. **Save the Projection with the Coverage Changes**
   a. Close EZLIST
   b. Under File on the Main Menu, Click Save Projection As and rename (twice)