Spectrum/OHT Update List

Version	Spectrum 6.42
Date	26 March 2025

- AIM
    - Fixed uncertainty bounds for PMTCT
    - Fixed problem with Shiny 90 from producing estimates of KoS lower than #On ART in the treatment cascade
    - Fixed problem with waterfall chart.
    - Shin790 adjustment
- Goals
    - Goals RSM has been updated to model treatment for advanced HIV disease, new PrEP methods including broadly neutralizing antibodies, and a hypothetical HIV cure
    - Corrected a bug in Goals introduced in Spectrum 6.42 beta 2 that caused ART coverage in Goals to differ from AIM
- LiST
    - Calculation adjustments
    - Fixed problem with incorrect Preterm SGA results appearing
    - Added anemia calculations to disaggregate by interventions.
    - Added new result "Number of anemia cases prevented by intervention"

Version	Spectrum 6.41
Date	21 February 2025

- AIM
    - Added EasyAIM data 2024
- FamPlan
    - Increased projection creation time with Famplan active.
- LiST
    - Added Preterm SGA to Interventions for Birth Outcomes editor in LiST.

Version	Spectrum 6.40
Date	29 January 2025

- Aim
    - Fixed small problem with CSAVR with certain countries.

Version	Spectrum 6.39
Date	17 January 2025

- Aim

- o Fixed an issue that could cause CSAVR to pass an incorrect HIV incidence trend to AIM
- o Fixed problem with Spanish Strings not displaying properly.

Version	Spectrum 6.38
Date	14 January 2025

- • General
  - o Spectrum default data moved to Avenir Resources from SpectrumBeta
- • AIM
  - o Added in EPP 2025_R1
  - o Added new translation strings
- • LiST
  - o Added new interventions in the extract of costs
  - o Updates for MAM and SAM calculations in LiST
- • OHT
  - o Fixed problem with large projection not calculating due to memory problems

Version	Spectrum 6.37
Date	29 November 2024

- • General
  - o Various Extract issues resolved
  - o Added WPP 2024 country data files
- • AIM
  - o Added EPP2024_R4
  - o Fixed problem with HIV testing editor not saving data

- • LiST
  - o New Default data
  - o Updates to Economic status in LiST (updated labels, calculations, and default data)
  - o Added descriptive label for Maternal nutritional deficiencies in LiST
  - o No longer showing default data source for LiST Costing
  - o neonatal resuscitation now appearing in stillbirth efficacy editor in LiST when show all checkbox is checked
  - o added three new interventions to Interventions for birth outcomes editor in LiST when in developer mode
- • OHT
  - o Fixed problem with locking projection import
  - o Fixed problem with HR Programme costs

Version	Spectrum 6.36
Date	12 April 2024

- AIM
  - Added default AIM country data.
- LiST
  - Updated household survey data

Version	Spectrum 6.35
Date	4 April 2024

- AIM
  - Includes EPP (2024_R3)
- LiST
  - Update costing defaults

Version	Spectrum 6.34
Date	8 March 2024

- Demproj
  - Fixed problem with deaths calculation in base year
- AIM
  - Updated CSAVR/Shiny90 dll
- LiST
  - bug fix in LiST Calcs: The evaluation of the impact value for the impact of complementary feeding on wasting to determine it went into the negative loop or the positive loop was not evaluating numbers close to zero correctly.

Version	Spectrum 6.33
Date	8 February 2024

- General
  - Added more room to display default data source information in Projection Manager
- AIM
  - Updated EasyAIM data base source
  - Updated CSAVR/Shiny90 dll
- LiST
  - Updated LiST country data sources
  - Updated LiST subnational survey data
  - Updated LiST Micronutrient deficiency sources
  - Updated WUENIC vaccine data for LiST
  - Bug fix for Stillbirths calculation in LiST

Version	Spectrum 6.32
Date	24 January 2024

- AIM

- EPP2024_R1
- New string translation for all languages
- ART mortality: correction to time
- trends for MENA
- Completeness Checker: Add check
- for EPP max adjustment set to 10
- CSAVR: remove training runs
- Database: Added Tanzania 2022-23 to survey database
- Displays: Add (%) to titles and labels on several charts
- ECDC: correct input to refer to 15+ rather than 15-49
- KOS: correct child calculations
- KOS: standardize years when copying results to Excel
- Languages: Update language translations for Spanish, French, Portuguese, Russian, Chinese and Arabic
- Validation: corrected ART coverage prediction when ANC ART coverage is > 100%
- Validation: restore AIDS mortality comparison chart
- Validation: restrict final year of all cause deaths chart to 203

Version	Spectrum 6.31 Beta 1
Date	7 December 2023

- LiST
  - New default data.

Version	Spectrum 6.30
Date	30 November 2023

- AIM
  - Fixed problem with reading Shiny90 csv files that have more than 256 records.
  - New Validation charts
    - Previously treated children
    - Compare number on ART from programs and surveys
    - Compare ART coverage to coverage predicted from ANC already on ART
    - Simplified waterfall chart
    - Treatment adjusted prevalence
  - Inputs
    - Renaming LTFU to 'Treatment interruption
  - Defaults
    - New on ART mortality patterns for AP and LA regions
    - Renaming the region 'Developed countries' to 'High income countries'
    - Update breastfeeding patterns
    - New survey data for Eswatini, Mozambique, Zambia)
  - Incidence

- ▪ Ability to read new ECDC output files
- FamPlan
  - o Updated default data for FamPlan
  - o added ability to disaggregate TFR and Births by age in FamPlan Extract.
  - o extract now working for Summary of outputs in FamPlan
- LiST
  - o Food insecurity disaggregated from complementary feeding for stunting, wasting impacts on postneonatal mortality
  - o Food insecurity disaggregated from BES for birth outcomes, neonatal mortality and stunting (and postneonatal mortality impacted by stunting)
  - o Simple interventions implemented for impacting food insecurity, as well as downstream events including stunting, neonatal mortality and postneonatal mortality
  - o bug fix in LiST calculations (misallocation of stillbirths by intervention by cause for MMS)
  - o changed the following intervention's name in LiST from "Antibiotics for preterm or prolonged PROM" to "Antibiotics for preterm PROM"
  - o removed Other - NCD from post neonatal efficacy and impact of stunting and wasting on mortality in LiST
  - o regenerated default missed opportunities data in LiST
  - o Renamed LiST intervention "ITN/IRS - Households protected from malaria"
  - o removed coverage for Complementary feeding-- supplementation and education in LiST for all countries
  - o bug fix in LiST calculations (misallocation of stillbirths by intervention by cause for MMS)
  - o changed the following intervention's name in LiST from "Antibiotics for preterm or prolonged PROM" to "Antibiotics for preterm PROM"
  - o removed Other - NCD from post neonatal efficacy and stunting and wasting impacts on mortality in LiST
  - o updated national stunting, wasting, coverage and breastfeeding data in LiST
  - o updated subnational LiST data
  - o no longer reading in default data for Other NCD in LiST
  - o removed double counting of Maternal lives saved by intervention by cause for MMS in LiST
  - o Meningococcal A, Malaria vaccine, and Antenatal corticosteroids for preterm labor now included in Missed Opportunities in LiST
  - o Update to allow Malaria vaccine to show results in LiST
  - o added Adjusted relative risk to Stillbirth efficacy in LiST
  - o bug fix: range check error in LiST subnational post neonatal causes of death editor (recent split of "Other" into two new causes of death)
  - o bug fix for LiST subnational wizard: treating regions spelled the same with different upper/lower casing as the same region

- o updated default missed opportunities data and subnational data for LiST
- o updated calculations for still births averted by intervention in LiST
- o Iron supplementation in pregnancy now appearing in Interventions for birth outcomes only in developer mode
- o Food insecure balanced energy supplementation no longer appearing in Interventions for birth outcomes
- o Now reporting multiple micronutrient supplementation and iron supplementation as combined "Micronutrient supplementation (iron and multiple micronutrients)" in Suboptimal birth outcomes averted by intervention
- o updated national and subnational LiST data (particularly for WASH interventions)
- o point of use filtered water data now being included in LiST subnational wizard
- o bug fix in how measles vaccine subnational data is saved in LiST
- o updated LiST data and survey info
- o filtered water coverage no longer being treated as a ratio of national coverage in LiST subnational wizard
- o Changed "Folic acid fortification/supplementation" to "Periconceptual folic acid" in LiST
- o Fixed some issues with Interventions for Birth Outcomes in LiST
- o Fixed some issues with vaccine sources in LiST
- o Updated sources and WUENIC vaccine data for LiST
- o Added Percent of pregnant women with active syphilis to LiST
- o Removed "external shock to food security" from the efficacy editor in LiST
- o Added "Prevalence of food insecurity" result in LiST
- o Stunting averted by interventions now works for negative scale up of interventions in LiST
- o Updated maternal morality ratio and source in LiST
- o Vaccines B, C, and D now hidden in LiST input editors
- o Updated Micronutrient deficiency data for LiST
- o November 2023 Pelotas national data release for LiST
- o Updated source for Maternal mortality rate in LiST
- o Adjusted the output for wasting distribution such that it is based upon the impact of complementary feeding but not MAM and SAM
- STI
  - o Fixed problem with reading file with large number of entries.

Version	Spectrum 6.29
Date	10 May 2023

- General
  - o Removed support to directly open pjn formatted projection files. PJNZ is the supported format for all projections.
  - o Removed support to directly open zipped pjn projection files.

- o Fixed range check problem in various editors.
- o Helpfile updates for LiST
- o Updated digital certificate for install file and spectrum.exe
- o Added digital certificate to eppcsavri686.dll file
- **AIM**
  - o Fixed problem where some users were not able to enter program statistics editor.
  - o Posted Namibia_516_2023_02_24.subp to FTP cloud for download.
  - o Worked on regional problem when opening certain country projection which cause OleStr error.
  - o Fix implemented to correct HIV+ migrants in CSAVR fitting tool.
  - o Modified IRR data accessing for CSAVR as necessary.
  - o Shony90 specific changes
    - Removed extra character added to input files generated by shiny90.
    - Outputs correct years in output files generated by shiny90.
    - Fix implemented prevent shiny90 from producing #KoS greater than #PLHIV in AIM results.
    - Fix implemented to prevent shiny90 from ignoring survey data collected for HIV positive.
- **LiST**
  - o Adjustments to Stunting and Wasting calculations.
  - o Updating nutrition costing inputs including treatment inputs, PINs, drugs and supplies
  - o Bug fix in LiST calculations for issue regarding stunting related outcomes.
  - o Updated LiST coverage, breastfeeding, stunting and wasting data by country.
  - o Regenerated Missed Opportunities default data.
  - o Added four placeholder interventions in LiST related to Food Insecurity
  - o Bug fix in LiST calculations for issues with attribution of neonatal mortality and Direct entry of wasting.
  - o Fixed allocation issue with attributing neonatal lives saved for maternal nutrition impacting birth outcomes.
  - o Fixed problem with calculating number of services for treatment of syphilis.

Version	Spectrum 6.28
Date	22 February 2023

- **AIM**
  - o Correction to ANC testing: Implausible prevalence when numbers tested are missing
  - o HIV% calculation was using numbers retested instead of numbers tested. This has been fixed.

- Clearing the value in a cell required to calculate HIV% now clears old HIV% values. These previously could persist.
- Entering an HIV% denominator of 0 will now clear the calculated HIV%.
- Corrected an issue in ANC testing 'HIV prevalence at ANC' introduced in 6.27 that could inadvertently suppress the calculated prevalence. Effects: No effects on results

Version	Spectrum 6.27
Date	17 February 2023

- AIM
  - Corrected the ANC testing 'HIV prevalence at ANC' calculation to correct for implausible prevalence when numbers tested are missing

- GASM
  - Fixed out of bounds error when trying to use Goals ASM module

- STI
  - Fixed problem with EPP file name

- LiST
  - Bug fix in LiST calculations: secondary allocation issues for wasting when coverage declines
  - updated LiST Subnational data from Pelotas April 2022 release
  - updated baseline birth outcomes and mortality rates data for LiST
  - Bug fix: reading in default Detailed Vaccine Efficacy data in LiST
  - Bug fix related to breastfeeding for cases averted by intervention for diarrhea in LiST and changed the name of the result
  - Bug fix: the number of stunting cases averted by intervention not equaling the total number of stunting cases averted in LiST.
  - Bug fix: handling negative stunting cases averted for birth outcome related interventions.
  - updated mortality rates data for LiST
  - updated sources for baseline birth outcomes and child mortality data in LiST
  - updated WASH data in LiST

Version	Spectrum 6.26
Date	2 February 2023

- General
  - Fixed problem with projection start year of 2024

- LiST
    - Fixed problem with negative deaths appearing with a zero-baseline coverage of complementary feeding

Version	Spectrum 6.25
Date	30 January 2023

- AIM
    - Working on program statistic editor

- OHT
    - Program costing RHD Made number to build editable and also displayed number of RHD surgeries

Version	Spectrum 6.24
Date	14 January 2023

- AIM
    - Added single chart display to Shiny90 outputs form
    - Added buttons to allow CSV importing to Shiny90 entry form

- LiST
    - Newly changed 'antibiotics for maternal sepsis' efficacy values=0 and affected fractions=1 under 'Neonatal Prematurity' and 'Neonatal Sepsis'
    - Updated ORs for provision of complementary food and stunting/wasting
    - Updates to stunting and wasting calculations in LiST

Version	Spectrum 6.23
Date	12 December 2022

- AIM
    - Updated eppcsavri686 DLL

Version	Spectrum 6.22
Date	12 December 2022

- AIM
    - Fixed problem with SaveAs and AEM implementation.

Version	Spectrum 6.21
Date	4 December 2022

- AIM
    - Fixed problem with Shiny90 execution

Version	Spectrum 6.2
Date	1 December 2022

- Global
    - Fixed problem with Spectrum Update not working when installed on Windows Server.
    - PJNZ file format change. Moving EPP and UA file to dedicated sub folder
    - Added WPP 2022 data
- AIM
    - Upgraded mapping library used for Naomi
    - New EPP Jar file (EPP 2023_R1)
    - New EPP Jar file (EPP 2022_R3)
        - Adds in EPP modifications to deal with Spectrum's change in handling of PJNZ files, where it puts all EPP-related files and sub-files in an "EPP" sub-directory when unzipped in the temp directory and then stores them in that revised organizational format when saved.
        - Adds in right click graphs on the PopSetup and ART Distribution pages that allow the user to see the trends over times of the variables there. The PopSetup page graph is done on a log scale to allow good separation of the smaller population sizes normally associated with key populations.
        - Fixed a null pointer exception in the Reassign graph if there has not been a recent fit.
        - Removes the need for the "EPP.ini" file in the PJNZ to locate help files. Help files are now found automatically in the %APPDATA%\Avenir Health\Spectrum\EPP directory.
    - Updates to Spectrum/AIM software for 2023 Round of Estimates
    - Data entry
        - ANC testing editor. Rows have been added to enter program data on the number of births in health facilities and the number of women who are known to be HIV-negative at the first visit. The number of births is displayed on the chart that compares birth, visits and the number of women tested.
        - Read program data from ADR. For child and adult ART there are new buttons 'Read from ADR' to read the data directly from the same CSV files used for Naomi. Spectrum will aggregate to the national level and put the result in the editor. The current version requires that the user download the ART from the ADR first. We are working to add direct access to the ADR.
        - World Population Prospects 2022. The new estimates from WPP 2022 are available for all countries. HIV mortality has been deducted from all-cause mortality for the 37 countries with the highest HIV burden. To

update to the WPP 2022 numbers you will need to select 'Manager" > 'Default data' and check 'DemProj'. Then 'Ok'.

- Shiny90*. We are working on integrating Shiny90 into the Knowledge of Status editor, but it will not be ready for the first round of testing.
- Fertility rate ratio*. Data on prevalence among ANC attendees that is used for fitting the local adjustment factor is now read directly from the ANC testing editor rather than from EPP.
- COVID-19 deaths. The editor for COVID-19 deaths by age has been modified to split the 0-4 age group to <1 and 1-4.
- Sub-populations. The sub-populations table can now be displayed for any year range. Previously it was restricted to 5 years before the current year.
- Treatment cascade. The treatment cascade labels have been updated from 90-90-90 to 95-95-95.
- ART monthly data. We removed the data entry screen for monthly ART data, as it was not having any impact on the estimates.
- Default multiplier for on-ART mortality in the Asia region*. The default multiplier for the Asia region has been changed from 1 to 4. This will only have an effect if the Asia region is selected. Countries that have entered a custom pattern will not see any difference unless they change to the Asia pattern.
- CSAVR alternate estimates of mortality*. CSAVR will allow the entry of up to three alternative estimates of HIV-related deaths. All alternatives will be saved with the file. The selected source will be used for CSAVR fitting. This is not yet implemented for the first testing sprint.
- Testing data*. There is a new editor under 'Program statistics' for entering testing data.

o Default Patterns
- On-ART mortality trends. The time trend of adult ART mortality has been updated. For SSA countries, it now declines from 1.0 in 2017 to 0.95 in 2021 and then remains constant. For countries outside SSA the trend is constant from 2017.
- On-ART mortality in high income countries. The mortality rates for >500 CD4 counts have been adjusted to be no higher than the rates for 350-500. The correct background mortality adjusted pattern for high income countries is now implemented.
- HIV+ migrants. We are adding a new display to show HIV+ migrants. It will not be ready for the first sprint but should be ready shortly after.

o Outputs
- ART. A new indicator has been added for all-cause deaths to people on ART under the 'Adults 15+' sub-menu.

- Reference period for demographic estimates. We implemented a number of changes to be consistent with World Population Prospects 2022.
- All level indicators now refer to Dec 31 of each year (e.g., output of the total population in 2022 refers to Dec 32, 2022)
- All rate indicators now refer to the calendar year (e.g., output of the number of deaths in 2022 refers to deaths from Jan 1 to Dec 31, 2022)
- ART coverage is now calculated as the number on ART on Dec 31 divided by PLHIV on Dec 31. Previously the denominator referred to July 1.
- Validation
- All-cause mortality to those on ART. A new validation screen under 'ART' allows you to compare your data on the number of all-cause deaths to people on Art with the Spectrum estimate.
- Waterfall analysis*. A waterfall display has been added under 'Validation' > 'ART' to illustrate the dynamics of ART change. We are still working on this display but hope to have it in the software for the first testing sprint.
  - Warnings
    - File not re-projected. We had some problems last year with people not re-projecting before saving the file. When this happens the results could be different if the results are Extracted or Aggregated with an automatic re-projection or without re-projection. We added a warning when the user saves the file if it has not been re-projected. (This warning can be disabled in Developer Mode.)
  - Calculations
    - WPP 2022. Changes have been made to the calculation code to accommodate the ½ year shift in reference period. All migration is now added at the end of the year rather than throughout the year as was the case previously.
    - HIV+ migrants. Spectrum applies age- and sex-specific prevalence to the net migrants as specified in DemProj in order to estimate migration of PLHIV. In cases where HIV+ migrants are entered directly through the separate editor, this estimate of PLHIV migrants will be skipped. This is not yet implemented for the first sprint.
    - Knowledge of status from CSAVR. To avoid synchronization problems between CSAVR and AIM, CSAVR will now pass to AIM the percentage of those not on ART who know their status. AIM will use this to estimate the total number knowing their status.

- FamPlan
  - Changed default to estimate unmet need by prevalence

- LiST
  - Added new costing indicators
  - Added new LiST intervention: Neonatal vitamin A supplementation
  - Made the affected fraction for the two iron rows in Maternal anemia effectiveness editor come from Percent iron deficient. Updated some corresponding calculations
  - Added second row under % below $1.90/day health status editor for % food insecure
  - Updated affected fraction for Folic acid supplementation or fortification
  - Added Zinc supplementation in pregnancy to Maternal nutrition editor
  - Update to make iKMC appear in neonatal and post neonatal efficacy editors in LiST
  - Updated Fe fortification and Fe supplementation in pregnancy calculations for LiST
  - Added population by age groups extractable result to LiST
  - Updated malaria vaccine efficacy in LiST
  - Bug fix for Zinc supplementation in pregnancy calculations in LiST
  - updated LiST calculations to incorporate iKMC
  - Added data for vitamin A deficient for LiST and linked to affected fraction for neonatal vitamin A supplementation
  - Updated LiST Efficacy
  - Switched the row ordering of the Poverty/food insecurity table in LiST
  - Updated red flag notes for LiST efficacy related to folic acid insufficient
  - Update to switch breastfeeding coverage tab in LiST when invalid data found
  - Bug fix to remove "inputs" sector from bottom of LiST result menu
  - Updated "effectiveness" to be "efficacy" in all strings for LiST
  - Removed impact of Pregnant women iron fortification in Impacts on maternal anemia in LiST
  - Removed check to ensure measles first dose is greater than measles second dose in LiST coverage
  - Updated calculations in LiST for Interventions for Birth Outcomes Adjusted Relative Risk
  - Affected fraction for Balanced energy supplementation in LiST now linked to Household status
  - Updated treatment inputs for Progesterone (formerly Cervical stitch)
  - LiST calculation update to fix bug in Nutrition cases averted
  - Updated antenatal corticosteroids efficacy (0.15) and affected fraction (1.00) and citation "McGoldrick et al"
  - Updated progesterone for high-risk pregnancy comment to "all 2nd and later births times rate of preterm births in the total population"
  - Updated LiST Database:

- - - Updated antenatal corticosteroids efficacy (0.15) and affected fraction (1.00) and citation "McGoldrick et al"
      - Updated progesterone for high risk pregnancy comment to "all 2nd and later births times rate of preterm births in the total population"
  - Adjustment to LiST calculations to take care of the affected fraction of malaria prevention on preterm birth
  - Updated Missed Opportunities and Equity data for LiST
  - Updated red flag comment for Prevention of malaria in pregnancy in Interventions for Birth Outcomes editor in LiST
  - Progesterone intervention name updated in LiST along with red flag comment in Interventions for Birth Outcomes editor
  - updated baseline birth outcome data in LiST for 2020 for 156 countries.
  - Fixed bug with Zinc supplementation in pregnancy in Interventions for Birth Outcomes in LiST
  - Updated red flag comment for low-dose aspirin in Interventions for Birth Outcomes editor for LiST
  - update to attribution of deaths and stunting in LiST calculations to include both pieces of MMN (BMI<18.5 and BMI > 18.5)
  - Fixed problem where ACTs was using wrong disease when calculating PIN in LiST Costing
- NCD
  - Added "Exclude disease-free state from impact summary table" for NCD summary result

- OHT
  - Added RHD interventions" (OHT)

- TIME
  - Re-worked the TB notification editors to edit historical data

- Malaria
  - Updated calculations.

Version	Spectrum 6.19
Date	25 April 2022

- Demproj
  - Some results such as Total Births were not showing first year when displayed. This has been corrected.
- AIM
  - Removed status update popup when opening projection. Still available under validation menu.

- o Fixed problem with AIM editors not working with new projections

- FamPlan
  - o Fixed problem with pregnancies not be calculated correctly with reduction in CPR
- LiST
  - o Removed antiquated code to uncheck fertility risks checkbox in LiST if FamPlan is on

Version	Spectrum 6.18
Date	7 March 2022

- AIM
  - o Updated French and Spanish translations for Validation Checker and ANC testing
  - o CSAVR display re-organized to display all information on low resolution screens
  - o CSAVR display fixed so that IRR check boxes are not lost on form close
  - o CSAVR DLL created with new compiler. CSAVR will run faster. This should also correct problems with CSAVR freezing or crashing after running many times.
  - o Correction to nosocomial infections among children 5-14 early in the epidemic. They were being lost if there were no PLHIV already in that age group
  - o For South Africa files only, AIM will now apply the trend in mortality reduction for pediatric ART mortality to CLHIV not on ART as well, in order to match Thembisa. This removes the need for a special version for South Africa.
  - o Correction to map display in the Naomi District Estimates Tool. It will still display a warning message that the browser is out of date but the map will display
  - o Updated efficacy for Maternal nutrition editor in LiST
  - o Updated data by country for LiST, including new values for the affected fraction for Balanced energy supplementation, Stop smoking education, and data points used in the calculation for the affected fraction of Low dose aspirin
  - o Bug fix: now reading in Percent of women with previous pre-eclampsia and Percent of women with chronic hypertension in LiST

Version	Spectrum 6.17
Date	23 February 2022

- AIM
  - o Update to Datapack export feature in Naomi District Estimates Tool to provide additional age groups (50-54, 55-59, 60-64, 65+) for VMMC data and to output September 2022 estimates.
  - o
  - o Update to EPP to allow comparisons with older files when the older file does not have ART coverage variables.
- LiST
  - o Fixed problem with creating projection with LiST module active.

- - Added SGA/Preterm calculations for LiST with the new intervention Zinc fortification and new impact calculation links.
    - Bug fix for reading of nutritional deficiencies default data in LiST

- TIME
  - Fixed problem with multi projections

Version	Spectrum 6.16
Date	16 February 2022

- AIM
  - EPP survey information
  - The title on the Excel Summary tables have been changed to '2022 HIV Draft estimates'
  - The latest PHIA and DHS surveys are now included in the databases
  - The District Estimates Tool has been updated to include the full range of age groups from 0-4 to 65+ now used by the PEPFAR datapack, the output is for 2022Q3 and the new infections indicator has been added.
  - The Naomi District Estimates Tool has been updated to ensure that the table display shows districts as the lowest level, even for countries that have five geographic levels.
  - A new display has been added to show new infections (all ages) and deaths to PLHIV (all ages) on the same graph. It is under Results just after the Dashboard.

Version	Spectrum 6.15
Date	15 February 2022

- AIM
  - Updates to the surveys in the Spectrum database to include the latest surveys for Botswana, Haiti, Lesotho, Malawi, Uganda and Zimbabwe.
  - Added EPP 2022_R2

Version	Spectrum 6.14
Date	4 February 2022

- AIM
  - Updated version of CSAVR
  - Updates to French and Spanish displays to allow longer labels using Tool Tips that appear when the mouse is hovered over the button
  - Updates to GAM extract
  - Correction to Uncertainty Analysis

- LiST
  - Updated the hover hints for the interventions for LiST Costing and OHT in the Population in need editor
- TB
  - Calculation changes

Version	Spectrum 6.13
Date	12 January 2022

- LiST
  - New help files
  - New subnational numbers added to database

Version	Spectrum 6.11
Date	13 December 2021

- AIM
  - Various bug changes.
  - EPP 2022_R1
- LiST
  - Fixed infrequent problem with breastfeeding impact not being calculated without the editor being visited

Version	Spectrum 6.1
Date	1 December 2021

- AIM
  - UNAIDS 2022 changes

Version	Spectrum 6.09
Date	29 November 2021

- AIM
  - Version 6.09 will include the addition of an option to enter ART coverage by age and sex. The option is only available in Developer mode
  - Added additional DALY calculation in AIM so that if the discount rate is being used it will discount remaining life expectancy
  - Changes to default data

- Famplan

- o Updated database to include default age group disaggregation

- LiST
  - o New default data for new LiST Econ editors.
  - o Updated calculations for economic impacts on nutrition
  - o String updates
  - o Adjustments for aspirin and malaria treatment in LiST calculations, and bug fixes for the reports generated by LiST UA
  - o Fix for the Impacts on lifetime earning in LiST; one of the editors a value was being multiplied by 100 which shouldn't've been
  - o Fixed problem with negative mortality rates being calculated when adjusting Demproj via feedback of intervention scale-up
  - o updates to LiST and DemProj calculations to remove negative mortality numbers

- Malaria
  - o Fixed problem with ITN numbers

- NCD
  - o NCD Psychosis associations not reading in for Russia

- OHT
  - o NCD coverages are no longer automatically interpolated when reading in a projection
  - o Treatment for those with very high cholesterol but low absolute risk of CVD/diabetes (< 20%)" and "Treatment for those with high blood pressure but low absolute risk of CVD/diabetes (< 20%)" OHT interventions are now linked to < 30 to match NCD defaults
  - o Updated coverage transfer for NCD to send coverages to active interventions only
  - o Fixed range check problem when creating projections

Version	Spectrum 6.08
Date	12 May 2021

- General
  - o Added more debugging info should unknown error occur.
  - o Fixed missing file with NCD module.

- FamPlan
  - o Fixed problem with cells locked in editor for annual expenditures.

- o Fixed problem with range check error when entering goals with fourth goal option and 5 year age selected.
- LiST
  - o Fixed problem with coverage editors resetting to zero when using OHT mode.

- Malaria
  - o New default data

- OHT
  - o Fixed bug in Governance where changing the final year of the projection caused governance activities to become displaced

- OHT/LiST Costing
  - o Changed default target population for Malaria treatment (children 0-4) and Treatment of severe malaria (children 0-4) to Children 1-59 months
  - o Updated default unit cost of zinc 20 mg tablet to $0.0137

Version	Spectrum 6.07
Date	19 April 2021

- AIM
  - o Added new Excel Summary output that we have in AIM

- Demproj
  - o Added COVID-19 editor
  - o Calculation of life expectancy now includes the effects of COVID deaths

- FamPlan
  - o Fixed problem with Age and Birth order tab indicating error with o sum to 100, even though it was normalized
  - o Removed the editor for Child Survival and the results under Mortality rates.
    - ▪ The child survival sub-module for FamPlan was created before LiST incorporated calculations for the impact of family planning on neonatal and under-five mortality. Since then, the approach in LiST and the approach in FamPlan yield far different results because of different calculation methods. To eliminate this potential source of confusion for users, we are removing the FamPlan calculations of impact on infant and child mortality.
- LiST
  - o updated Iron coverage data in default database
- NCD
  - o Calculation adjustments

- TB
    - Small calculation adjustment
- Malaria
    - Updates to calculations

Version	Spectrum 6.06
Date	3 February 2021

- AIM
    - Added copying of 50+ data from VMMC file into PEPFAR datapack, via Naomi District Estimates tool
    - Fixed bug which was causing new ANC results in Naomi District Estimates tool to not display, because of their lack of data for both sexes
- LiST
    - Added FamPlan options to scenario generator Excel template

Version	Spectrum 6.05
Date	2 February 2021

- AIM
    - Fixed an issue where children were cloned across perinatal and breastfeeding transmission timing strata when they drop off ART

Version	Spectrum 6.04
Date	29 January 2021

- Demproj
    - Fixed problem where first year population numbers could potentially reset to national numbers under rare conditions

Version	Spectrum 6.03
Date	27 January 2021

- Demproj
    - Added UN Population option to ASFR editor
- LiST
    - Updated French labels for stunting and wasting indicators in LiST
    - bug fixed: LiST Costing returning wrong delivery channel labels in Extract
- Malaria

          o   Adjustments to country data

Version	Spectrum 6.02
Date	6 January 2021

- AIM
  - o Added EPP 2021_R1
  - o Rule disallowing negative inputs in certain CSAVR configuration have been removed
  - o New CSAVR fitting engine to fix Spline fitting option

Version	Spectrum 6.01
Date	5 January 2021

- AIM
  - o Adjustment for new DataPack import format
- LiST
  - o Fixed small read problem with defunct default data

Version	Spectrum 6.00
Date	18 December 2020

- AIM
  - o Fixed problem with projection stating in 2021 and program Statistics editor

- LiST
  - o Revisions to the modeling approach of interventions delivered during antenatal care and childbirth
  - o Coverage is now calculated by utilization and readiness (structural quality). Additionally, the childbirth interventions are now organized in accordance with signal functions for basic emergency obstetric and newborn care. Coverage for cesarean delivery is also now estimated using estimated C-section coverage using household survey data on C-section births
  - o Additions of indirect (herd) effects of vaccines on mortality
  - o Revisions to the modeling approach of interventions to reduce stillbirths
  - o Revisions to the modeling approach of water, sanitation and hygiene interventions
  - o Updates to the Subnational Wizard which include estimates of coverage by rural/urban population and by region

o Updates to the Missed Opportunity Tool which include an estimate of the single year incremental costs in $US for scaling up that intervention

Version	Spectrum 5.94 Beta 1
Date	18 December 2020

- LiST
  - o New Missed Opportunities and equities database

Version	Spectrum 5.93
Date	17 December 2020

- AIM
  - o Changes to CSAVR

- Demproj
  - o Fixed problem with custom ASFR values not holding

- FamPlan
  - o Updates to Unmet need from UNPD in default country database
  - o Fixed problem with table results not working when disaggregated

- Goals ASM
  - o Update to ASM impact matrix values

- LiST
  - o Updates to Help File

Version	Spectrum 5.92
Date	6 December 2020

- General
  - o Fixed problem with creating projection with start year > 2006
- AIM
  - o 2021 changes

- LiST
  - o Updated LiST database
  - o Updated Missed Opportunities and Equity data

- Updated approach for measles vaccine in Missed Opportunities and Equity Tool

Version	Spectrum 5.91
Date	3 December 2020

- AIM
  - 2021 changes

Version	Spectrum 5.90
Date	29 November 2020

- AIM
  - 2021 Changes
- LiST
  - New default data for country and sub national level
- RAPID
  - Fixed Arabic strings
- Programme Costing
  - Fixed range check error with preventive activities when changing the final year of the projection.

Version	Spectrum 5.89
Date	6 November 2020

- LiST
  - Fixed a bug in how the WASH intervention data was being reloaded in LiST for old projections (projections made with Spectrum 5.88 beta 17 or earlier)
  - Changed the name of "Folic acid supplementation / fortification" to "Folic acid fortification"

- FamPlan
  - Added Method Mix input to Extract
  - Fixed problem with newly created projections calculating different results after initial file save

- NCD
  - Updates to default data

- OHT GCEA
  - Fixed range check error on large data files

- Governance:
  - Fixed out-of-memory issue when deleting governance activities.

- Intervention Costing:
  - ART interventions no longer produce zero cases when direct entry is chosen for target populations.

Version	Spectrum 5.88
Date	1 October 2020

- Global
  - Update to STI Help files

- Aggregate
  - Fixed problem with the way deaths by age were being aggregated

- Demproj
  - Fixed memory leak with multiple projections being created

- AIM
  - Added the ability for EasyAIM to set the local adjustment factor variable for the calcstate temporary projection
  - Added new EasyAIM structure
  - Change Number to Percent calculation to use Adults in Need of ART rather than PLHIV
  - Correction to the calculation of mother-to-child transmission calculations.
  - Small correction to PMTCT calculation
  - Fixed problem with Shiny90 data being lost after a SaveAs

- FamPlan
  - Correction to default CPR country data

- GOALS
  - Added a new fitting tool in Goals
  - Fixed problem with results
- LiST
  - Updates to default data
  - New database with updated poverty rate data from the World Bank

- o String change: Surgery to Cesarean delivery
- o Added Prevalence of early initiation of breastfeeding to extract under "Inputs in alternative format"
- o Bug fix in LiST Scenario generator: values for Micronutrient supplementation (iron and multiple micronutrients), Case management of premature babies, and Case management of neonatal sepsis/pneumonia being updated correctly now when using manual data entry mode
- o Removed Neonatal resuscitation and Oral antibiotics for neonatal sepsis from Maternal deaths by intervention results in LiST
- o Vaccine coverage items were rationalized in calculations
- o Updates to LiST Calculations (CS_CalcAFsforMeningInc)
- o Added Early initiation of breastfeeding to Extract for LiST --> Inputs
- o Fixed bug in LiST Subnational Wizard (coverage not being set correctly)
- o Added special Extract result for SG excel template coverage values
- o LiST Costing, Modified PINS for the following interventions: MAM, SAM, ORS, Antibiotics for treatment of dysentery, Zinc for treatment of diarrhea, Oral antibiotics for pneumonia.
- o Incorporated new databases to treat the values for these interventions as ratios and calculate the subnational coverage for them using the national coverage from DataByCountry.

- **Intervention Costing / GCEA:**
  - o Fixed problem where Outpatient visit and inpatient day unit costs did not apply the exchange rate going in/out of the editor in disease-specific costing mode
  - o Fixed issues with HPV and neuropathy intervention coverage transfers

- **OHT:**
  - o Split TB prevention interventions into adult and children versions.
  - o Fixed problem with adding new custom interventions.
  - o When using the number of diagnostic tests from DAT, the Active case finding programme area and active pathway interventions are now turned on
  - o Added ability to import costing components from OHT, GCEA, LiST Costing, and TIME Econ into OHT projections
  - o Added ability to import delivery channel distributions, target populations, PINs, and coverages into a projection.
  - o Fixed bug with custom intervention editor occasionally breaking upon deleting custom interventions.

- **TIME Econ:**

- o Active pathways only show up in costing areas now if target populations are drawn from DAT.
- o Added custom intervention system

Version	Spectrum 5.87
Date	19 February 2020

- • LiST
  - o Updates to default data

Version	Spectrum 5.86
Date	13 February 2020

- • AIM
  - o Updates to CSAVR

- • LiST
  - o Fixed problem when coverage of SAM is non-zero in calculation of reduction in the number of severe wasting cases
- • FamPlan:
  - o Update to country database

Version	Spectrum 5.85
Date	7 February 2020

- • AIM:
  - o Updated CSAVR incidence fitting tool to accept inputs by, and fit to: new diagnoses by sex, age and CD4 counts, and AIDS deaths by sex and age
  - o Modifications to GAM tool

Version	Spectrum 5.83 Beta 1
Date	27 January 2020

- • AIM:
  - o Now allowing Naomi files with more than 256 unique areas to be loaded into the Naomi tool

Version	Spectrum 5.82
Date	23 January 2020

- AIM:
  - ○ Added EPP2020_R2 to install file

Version	Spectrum 5.81
Date	20 January 2020

- AIM:
  - ○ Increased precision for CSAVR Parameters when writing to the .DP file.
  - ○ Fixed logical inconsistency in Sex Age Pattern custom value entry.
  - ○ Changed Cascade editors and result to span 2012-2018, a change from 2012-2018.
  - ○ Moved Previously Treated from results to validation.
  - ○ Changed output format of Naomi tool's zip file to a zip-of-zips when multiple PJNZ files are selected.
  - ○ Moved Migration editor from Program Statistics to the CSAVR dropdown submenu, as it is only used for CSAVR.
  - ○ Relocated Validation menu to be before Results.
  - ○ Removed validation items: Child ART, PMTCT and Pregnant woman prevalence
  - ○ Corrected Detailed Cascade result calculations to account for invalid values

- Goals
  - ○ New feature for goals/aim called, "Percent by risk group". This feature extends the adult ARTsheet to add new risk groups. eg male/female IDU, msm, and fsw. This feature should only be seen in goals projections and will alter result values accordingly
- LiST
  - ○ Fix for issue with direct entry of stunting and wasting checkboxes in MultiProj are working now
  - ○ Fixed issue with Inputs in alternative formats for LiST in Extract
  - ○ Fixed issue in LiST Subnational wizard where subnational utilization values were not being used to calculate subnational coverage
  - ○ Updates to flags governing which interventions appear in which effectiveness editors and results in LiST
  - ○ Updates to LiST calculations impacting Rotavirus vaccine
  - ○ Update to Single stunting and wasting indicators for LiST Scenario generator (unlock them when in Single entry mode)
  - ○ Updated LiST subnational data and flags

- STI
  - Added seventh diagnostic test type 'RPR >=1:8 threshold + TPHA'.
  - Reloaded Syphilis database with Bangladesh entries featuring the new Diagnostic test category.
- Time
  - Added total population, direct entry, and custom populations to available target populations

Version	Spectrum 5.8
Date	7 December 2019

- LiST
  - Fixed problem with Scenario Generator
- LiST Costing
  - Fixed problem with target populations not resetting properly when turning off OHT and turning on LiST and LiST Costing
- OHT
  - Added ability to add governance categories
  - Fixed problem with Logistics Warehouse target form doing nothing when you click cancel
  - Fixed year headings in SDG Metrics Summary Output
  - Fixed problems with calculated warehouse operating costs and construction costs getting lost in Logistics
  - Added clinical diagnosis with x-rays from DAT results to the Number of chest x-rays target population
  - Fixed issue where some Infrastructure and Logistics Programme management costs were not saved out
  - Fixed problem with Budget Mapping mappings getting lost for Logistics and Infrastructure Programme management sections
  - Update Staff Capacity Utilization (by programme area/channel) result table to reflect the corresponding graph
- TIME Econ
  - Fixed problem with target populations not resetting properly when turning off OHT and turning on TIME and TIME Econ
  - Now running DAT calculations before viewing costing results if the DAT calculations have not been run yet
  - Added clinical diagnosis with x-rays from DAT results to the Number of chest x-rays target population

Version	Spectrum 5.78
Date	4 December 2019

- AIM

- o Added a dropdown to Naomi tool for map level selection.
- o Implemented the Viral suppression calculations.

Version	Spectrum 5.77
Date	27 November 2019

- • General
  - o Fixed problem with MultiProj not creating projections correctly

- • Demproj
  - o Added WPP 2019 population files

- • AIM
  - o Added EPP 2020 Beta0
  - o Updated the IMR calculation
  - o Fixed the epidemic type file reading for EPP subpopulations calculation and result display
  - o Enabled sex options for Deaths by age and AIDS Deaths by age results single age tables
  - o CSAVR: Added new results and a results table to the CSAVR Extra Results; options for sex and table/chart
  - o Added button to Knowledge of Status editor to link to Shiny 90 website
  - o Added new Program Statistics editor, Number on ART by age
  - o Modified charts on Program Statistics ANC Testing tab to show data from 2012-2018
- • Goals
  - o Added advance parameters (likelihood and inflation) in Goals ASM Fitter
- • GOALS ASM
  - o Fixed Coverages array initialization. It was being initialized across incorrect dimensions
  - o Updated Goals ASM key populations data structures to include new age dimensions (5-24, 15+)
  - o Fix for intergenerational sex reduction factor.
  - o Completed Goals ASM calculations for key populations by age categories
- • FamPlan
  - o Fixed problem with defaults not being read correctly for a small number of countries
  - o Updated FamPlan country database
- • LiST
  - o Quality functionality added
  - o Fixed problem with Childbirth coverage editor strings
  - o Updated effectiveness values

- Added ability to toggle Thermal protection on and off in coverage editor
- Updated LiST Scenario Generator Excel workbook to work with quality measures of Pregnancy and Childbirth interventions
- Updated Reduction in mortality result
- Fixed issue with reading default coverages
- Uncertainty Analysis
  - Removed Population 80+ indicator, export button, and batch mode.
  - Added ability to view results as line graphs.
- Updated explanatory string on the projection manager page of the LiST Subnational Wizard
- Fixed a bug in the Coverage editor in the LiST Subnational Wizard preventing it from being opened
- Updated flags used by spectrum to determine which kinds of effectiveness (maternal, stillbirth, etc.) apply to which interventions
- Extract
  - Changed default number of iterations to 400 for UA
- Moved Thermal care and Clean cord care from Preventive tab to Childbirth tab in LiST Coverage editor
- Updated French and Portuguese strings pertaining to LiST Subnational Wizard
- Made UI changes in LiST Coverage editor and LiST Subnational Wizard to accommodate string changes
- Update to how blanket Fe vs Fe in pregnancy vs MMN are handled in LiST for the calculation of impacts on birth outcomes and anemia
- Added subgroups to childbirth interventions in LiST
- Updated checkbox options in LiST Scenario generator spreadsheet
- The value for Relative risks of mothers with more than three births who are less than 18 years old wasn't being read in from the FamPlan database. Now it is being read in.
- Added a flag in FamPlan to control whether to display Default data loaded message (for use by MultiProj tool)
- Updates to LiST Scenario generator spreadsheet code to recalculate stunting and wasting distributions if single stunting or wasting is selected
- Update to LiST calculations. Stripped out iron coverage based on blanket Fe supplementation to all women. Now only Fe supplementation to pregnant women is included.
- Fix to Deaths by 1 year age groups and Cases by one year age groups results in LiST (they weren't getting their data from the right variables)
- Changed Live and still births to Pregnancies carried to term and set this as the default target population for several interventions. Updated PINs for Tetanus toxoid and Parenteral administration of antibiotics.
- Changed PIN of Parenteral administration of antibiotics to 2.5% when FamPlan is off.
- LiST Costing: Fixed problem with extracted intervention costs not including costs for Antenatal care (1, 4 visits).

- Malaria
  - Updated Malaria database and set default data into first year if first Year > 2016
  - Fixed summary bug where deaths were incorrectly the same for all provinces
  - Added new feature to allow the user to choose which year to start long term impact coefficient values
  - Added new editors for ITN and IRS relative effectiveness by year (use to be a single value)
- NCD
  - Fixed result (probability of death 30 t0 70) for extract. It was writing out all zeros.
  - Added a new NCD result, recurrence
  - NCD Database update for depression, bipolar, and Psychosis (8-8)
  - Moved RHD disease to be first in the list (only seen in developer mode)
  - Merged in new RHD calculation code (requires DP to calculate on creation of projection)
  - Fixed bug where calculating inputs was trying to grab RHD disease treatments that don't exist. RHD only exists for southern sub-Saharan Africa regions. There is a check now to make sure they exist.

- Resource Needs
  - Fix for primary and secondary education to apply population adjustment uniformly to males and females
- STI
  - Added 'Best Estimate' to all results
  - Fixed contagious blue rows in Syphilis editor and added blue coloring to default rows for Gonorrhea and Chlamydia
  - Added syphilis fit type options for low- and high-risk groups, by sex
  - Added Syphilis fit type selections by population type
  - Added table allowing users to input the number of years to extrapolate past years with data
  - Added Best Fit to all results
  - Reloaded Syphilis database to add new Bangladesh surveys
- TIME
  - Fixed TB Care N Ctrl graph strings. (8-13)
  - Added discount rate
  - Modified TIME icon on app bar to reflect that TIME Econ is active when TIME Econ is turned on
  - Fixed hover notes for first year of costing in configuration form
  - Changed DALYs discount rate from 0% to 3%
  - Reorganized TIME Econ controls in configuration

- OHT
  - Fixed problem with summary result
  - Fixed calculations for Infrastructure in PHC vs. Total costs result
  - Updated default data in GCEA for Cape Verde
  - Fixed problem with new facility data not being initialized properly in Infrastructure
  - Changed LEEP and cryotherapy functionality in Intervention Coverages
  - Changed calculation algorithm so that all diseases are calculated for NCD when an OHT projection is opened. After the initial calculation, diseases are only calculated if the coverages of related interventions are changed in OHT
  - Fixed bug with some editors showing local currency instead of USD in labels when the USD checkbox is selected in the OHT Configuration

Version	Spectrum 5.761
Date	26 August 2019

- LiST
  - Fix for childbirth interventions' effectiveness not being read in from default country data.

Version	Spectrum 5.76
Date	18 June 2019

- General
  - Added /RECALC_PROJ to the command line
- AIM
  - Fixed problem with Index 0 error when entering Paediatric transition parameters editor
- LiST
  - Fixed problem with missing default data.
  - Added new default country data
  - Fixed problem with Uncertainty Analysis
  - Changes to subnational wizard

Version	Spectrum 5.756
Date	16 April 2019

- AIM
  - Fixed problem with regional settings not working correctly in the editors after visiting CSAVR
  - In CSAVR, fixed the following: when users entered extreme values (diagnosis parameters) in the set condition menu, the optimizer "converged" to unrealistic estimates

- In CSAVR, the fitter now performs a check on the starting values. When these are "too large", a grid search is performed (on "reasonable ranges") before calling the Nelder-Mead (Simplex) routine
- EPP 2019 R8
- LiST
  - Fixed small error in Stunting default data
- STI
  - Fixed summary table range check error when no result data is available
  - Added new prevalence result options

Version	Spectrum 5.755
Date	24 February 2019

- AIM
  - EPP 2019 R7a

- TIME
  - Changes for TB MAC benchmarks, added in incidence on burden percent combo

- LiST
  - Updates to LiST subnational wizard
  - Updates to French and Portuguese strings

Version	Spectrum 5.754
Date	11 February 2019

- AIM
  - EPP 2019 R7
- TIME
  - Added "Base Cascade on Incidence" TB Mac benchmark feature

Version	Spectrum 5.753
Date	5 February 2019

- AIM
  - Fixed minor problem with CSAVR
  - Various fixes to district estimates tool

Version	Spectrum 5.752
Date	1 February 2019

- General

- o Fixed various bugs with opening, saving, and calculating projections

- • TIME
  - o TB Mac summary results have been included for the LSHTM group Added EPP 2019 R6

- • GCEA
  - o Adjustment of calculations

Version	Spectrum 5.751
Date	25 January 2019

- • Goals
  - o Fixed problem with module icon not working for new projections

Version	Spectrum 5.75
Date	24 January 2019

- • AIM
  - o Added EPP 2019 R6
- • FamPlan
  - o Fixed problem with default data being read incorrectly. It was off my 1 year for various inputs.
- • GCEA
  - o Fixed problems with the Skilled staff cost result

- • Time
  - o Add costing mode (Time Econ)

Version	Spectrum 5.74
Date	14 January 2019

- • General
  - o Delphi 10.3
- • AIM
  - o Added EPP 2019 R5
  - o Added in eppcsavri686.dll for CSAVR
  - o Added extract tool for HIVE inputs
- • STI
  - o Updates to default data
- • OHT
  - o Fixed bug with extending final health system year in Delivery Channel Mode
  - o Fixed bug with selecting default interventions

Version	Spectrum 5.73
Date	10 December 2018

- General
  - RDec for Healthy Life Expectancy output in Extract changed from 1 to 3
  - Added back in the ability to transpose extracted results in CSV file format. This was previously removed. This only works for extracted results, it will not work for extracting inputs.
- AIM
  - Added EPP 2019 R4
  - Fixed problem where Update, Download EPP sub-population files" was not installing the file correctly which led to Spectrum reporting the files as needing updates
- Demproj
  - Fixed problem with LE being displayed incorrectly in the base year with projections using Calcstate
- LiST
  - Coverage in alternative format transposable by year in Extract now
  - Updated default data
  - Updated Equity tool calculations so that target coverage is 0 by default rather than 90
- Malaria
  - Database updates
- STI
  - Various modifications
  - Updated database
- GCEA
  - Update to the isoquant graph

Version	Spectrum 5.72
Date	27 September 2018

- AIM
  - EPP 2019 Alpha 6
  - Fixed problem with Aggregate and Aggregate Uncertainty not creating properly.
  - Fixed problem with TFR Reduction not being set for new China projections.
- LiST
  - Incorporated latest data
  - Added functionality to control if Meningococcal A vaccine is recommended
  - Regional average message in LiST to MBB tool is now suppressed
  - Fixed validation issue with Severe anemia editor on the Baseline maternal health status tab on the Health Status form

- o Incorporated new database
- o Fixed bug with the National single wasting indicator in the subnational wizard
- o Updated subnational wizard to use coverage from ANC related interventions correctly
- o Incorporated new database.
- o Fixed Breastfeeding ID's in subnational database
- o Incorporated Early initiation of Breastfeeding in Subnational database
- o Changed "Subnational projection" to "Subnational Wizard" in GBTools and in caption of Wizard itself
- o Updated MAM and SAM calculations
- Goals
  - o Fixed minor problem with Uncertainty
- Malaria:
  - o Updated default database.
  - o Fixed ITN coverage problem.
- TIME
  - o Fixed bug with DAT screening.
  - o Added new result for DAT.
- NCD
  - o Fixed target populations bug.
- OHT
  - o Removed GHCA from developer mode
  - o Fixed an error when calculating Intervention Costing if LiST is turned off
  - o Fixed range check error when showing a Total cost's result.
  - o Memory leak fixes in GCEA

Version	Spectrum 5.71
Date	26 July 2018

- Extract
  - o Fixed problem with Country name not showing
- LiST
  - o Changes to internal editor buffers
  - o Updated country default database
  - o Updated LiST's Scenario Generator template feature
  - o Incorporated new translated strings
- RTT
  - o Fixed problem where first year population was not being read from workbook into the projections created by the RTT or SDG tools.

Version	Spectrum 5.70
Date	27 June 2018

- LiST
    - Fixed inadvertent Scenario Generator problem where it would not start in 5.69.

Version	Spectrum 5.69
Date	27 June 2018

- General
    - Adjusted healthy life years calculation

- Age Incidence
    - Modification to module

- AIM
    - Corrected default data for a small number of countries.
    - Aggregate uncertainty now allows the ability to select projections with varying start and end years.
- Intervention Costing:
    - Updated PIN hover notes
    - Changed default target population for TB prevention: therapy for HIV+
    - Fixed issue with displaying percentages in results

- LiST
    - Fixed bug with custom interventions not calculating
    - Fixed problem with MultiProj not activating LiST costing
    - Coverage data not pulling in from LiST database, resolved
    - Incorrect first year in projection sources, resolved
    - Add back the ability to edit Measles 2nd dose coverage on input side
    - Fixed problem with survey source not being read into projection manager correctly.
    - Fixed problem with LiST costing default data not loading correctly when added to an existing projection
    - Fixed problem with vaccine coverage data not loading correctly for older projections
    - Updated country database
    - Fixed problem concerning ORS and antibiotics for dysentery where the incorrect affected fraction was used.

- TIME

- o Added new indicator to Epidemiology Summary result
- o Calculation modifications
- o Fixed missing ART values problem in calculations

Version	Spectrum 5.67
Date	10 May 2018

- • LiST
  - o Fixed problem with text on child birth tabs

Version	Spectrum 5.66
Date	9 May 2018

- • General
  - o Added warning to Projection Manager for loading Malaria without default data

- • LiST
  - o Fixed problem with deaths prevented by intervention not matching deaths prevented by cause due to HIV.
  - o Added greater control for consistence with random draws for uncertainty values.
  - o Added ROI Tool for testing.

- • NCD
  - o Took "Do equilibrium run" option out of Developer Mode. (NCD)

- • Age Incidence
  - o New default values

Version	Spectrum 5.65
Date	26 April 2018

- • General
  - o Fixed problem with subnational region name

- • AIM
  - o Fixed problem with 'Use Regions Mode' option in Aggregate Uncertainty.

- • FamPlan
  - o Fixed problem with method mix not reading correctly for new projections

- LiST
  - Updated vaccine treatment inputs and costs.
  - Updated database
  - Fixed bug in calculations for MMN
  - Adjusted ACTs PIN
  - Updated treatment inputs
  - Changed default target population for folic acid supplementation
  - Updated database with new effect sizes for nutrition (comp feeding, MMN split).
  - Updated database with new WASH effect sizes.
  - Update calculations for WASH interventions.
  - Updated calculations for MMN.
  - Fixed discrepancy in maternal deaths.

- DemProj
  - Made calculations faster

- Age Incidence Model
  - Fixed issue with age sex comparison form.

- Sexually Transmitted Infections
  - Now applying male-to-female ratio to national risk adjusted prevalence.
  - Fixed display error when there are too many surveys in the same year.
  - Adjusted the random number generator uncertainly analysis.

- OHT
  - Updated treatment inputs.
  - Changed default target population for folic acid supplementation.

Version	Spectrum 5.64
Date	11 April 2018

- General
  - Fixed problem with reading pjn files

- AIM
  - Added EPP 2018_R3
  - Fixed problem with French language not working with Advanced Options -> Adult transition parameters.
  - Fixed problem with aggregate display
  - Fixed problem with GAM tool.

- Added advanced heap options for EPP

- Extract
  - Added new feature in Extract to output data with greater precision.

- FamPlan
  - Fixed problem with sample country data causing read problems.
  - Fixed problem with disaggregate option in Results
  - Updated to database
  - When a country has no family planning default data then male condoms is selected at default and is set to a 100% method mix. Additionally, the third goal is selected and percent in union is set to 50%
  - Fixed spacing and limiting problem.

- LiST
  - Added sub national database for the wizard
  - Subnational database available in developer mode only
  - Breastfeeding has a more appropriate impact on Additional neonatal lives saved by intervention
  - Multiple micronutrient supplementation in pregnancy is split up into low BMI and normal BMI in the Maternal nutrition effectiveness editor
  - Impacts on stunting and Impacts on wasting editors are grayed out with default values when Direct stunting and Direct wasting are selected
  - Updates made to the input extract in Uncertainty Analysis
  - Updates made to support special formatting with uncertainty outputs

- Resource Needs
  - Fixed various currency input problems.

- RTT Transfer
  - Added the ability to use existing projections
  - Fixed problem with adolescent birth rate calculation

- AIM
  - Corrected problem in GAM tool with divide by zero error.

Version	Spectrum 5.63
Date	8 January 2018

- AIM

- o   Added Release 2 of EPP 2018.
- o   Fixed issue with results not showing for 15-24 HIV+ pregnant women.

- **Famplan**
    - o   Added proximate determinants by time to default country data.

- **LiST:**
    - o   Calculation updates for cases by pathogen by one year age groups.
    - o   Severe diarrhea cases by pathogen by one year age groups added to extract and uncertainty analysis.
    - o   Added beta result for cases, deaths and number protected by 1 year age groups.

- **Extract:**
    - o   Made the "Transpose data" option in extract specific to the LiST module.
    - o   Added the ability to Extract Demproj and AIM input editors in the same format they are presented in Spectrum.
    - o   Added option to transpose all data in xlsx format.

Version	Spectrum 5.621
Date	5 December 2017

- **AIM**
    - o   Hid knowledge and viral suppression input screens and the cascade output under results.

Version	Spectrum 5.62
Date	4 December 2017

- **Demproj**
    - o   Restructure of internal calculations for improved efficiency.
    - o   Fixed problem with Display results defaulting incorrectly.
    - o   Fixed problem when loading older urban/rural projections and female population.
    - o   Added in WPP 2017 data. Spectrum will prompt the user to download a new version of the country data file when opening or creating projection and the 2017 country data file does not exist.
    - o   Fixed problem with Cote d'Ivoire 2017 data.

- **AIM**
    - o   Added the following results to Uncertainty Analysis.

- New infections
- People on ART
- Population size by age and sex
- Fix problem with Aggregate not working correctly.
- Fixed error where CD4 Distribution of 5-14 year olds on ART was showing 0-4 values.
- Fixed calculation error involving a misplaced parenthesis in perinatal transmission rate calculations.

- LiST
  - Added red comment flags for complementary feeding results in Mortality by intervention.
  - Reordered Mortality by intervention results by standard intervention categories.
  - Forced regional averages to be used whenever default data is unavailable for stunting, wasting or breastfeeding.
  - Updated to allow change in ratios to affect data in subnational wizard editors.
  - Removed coverage backfill in data by country database.
  - Updated regional averages message.
  - Incorporated latest database data.
  - Complementary feeding via reduction in wasting no longer showing up inappropriately in results.
  - Stunting and wasting labels in subnational wizard in French now show up in their entirety without being cutoff.
  - Fixed problem with new projection not loading default coverage values correctly when using French regional setting.
  - Fixed bug in the Coverage editor.
  - Updated Effectiveness of interventions on incidence editor, specifically the affected fractions of Rotavirus vaccine on diarrhea and severe diarrhea.
  - Fixed label issue on wasting editor in subnational wizard.
  - Fixed issue where calculated values were being set into the Pathogen tab of the Health status form by the subnational wizard inappropriately.
  - Fixed issue where Breastfeeding prevalence results were being improperly labeled in Extract.
  - Updated Single Stunting and Single Wasting editors of Coverage form to only be editable from the current year onwards.
  - Updated excel version of the scenario generator.
  - Fixed bug in calculation of Number of under-five cases averted by cause relative to impact year where Rotavirus was producing results even though its coverage was zero.
  - New ANC related data in DataByCountry provided by Bianca
  - Result menu items given cleaner, shorter names
  - Bug fixed in subnational wizard where stunting and wasting single indicator values were defaulting to zero.

- o Bug fixed in subnational wizard where subnational vaccine coverages were not defaulting to the same values as the national vaccine coverages.
- o Added shell of two new incidence and etiology results (deaths and cases by pathogen by 1 year age groups).
- o Fixed bug in subnational wizard where childbirth and breastfeeding subnational coverage was not the same as national coverage by default
- o Incorporated new LiST database data.
- o Fixed bug in LiST UA batch mode where projections with different year ranges were being written out improperly.
- o Adjust apportionment for death averted attributed to HIV interventions.

- • OHT
    - o Added in beta result for Healthy life expectancy.
    - o Fixed error with Staff capacity utilization result

- • CHOICE
    - o Fixed error with LiST.

Version	Spectrum 5.61
Date	7 August 2017

- • DemProj
    - o Enabled right-click Normalize on ASFR editor
- • AIM
    - o Adjustment of number of AIDS orphans.
    - o Fixed problem where children who were infected via breastfeeding after 7 or 12 months were not included in need for ART by age reported under AIM →Results→Total Population.
    - o Small fix to the number of HIV births calculation.
    - o Fixed problem with rerunning uncertainty analysis causing error.
    - o GAM (Global AIDS Monitoring) Tool added
    - o Enabled right-click Normalize on Distribution by CD4 Count and Percent editors
    - o Fixed bug that allowed GAM tool processing without valid path for result file
    - o Fixed Scenario Generator issue that was causing alerts to the user to be suppressed

- • LiST
    - o Label fix for Complementary feeding results
    - o Fixed issue where certain effectiveness values in the Neonatal and Postneonatal effectiveness editors were not being saved
    - o Updated default databases

- o Took Malaria vaccine out of developer mode in Postneonatal effectiveness editor
- o Fixed issue with ANC proxy calculations
- o Fixed problem with AIM mortality not showing correctly in the editor.
- o Made it possible to hide message having to do with updated ANC calculations for multiple projections.
- o Fixed severe pneumonia and pneumonia labels.
- o Included updated data by country.
- o Fixed bug with display for MO.
- o Updated calculations so that results for interventions connected with Micronutrient supplementation (iron and multiple micronutrients) show up with that intervention name only for stunting averted by interventions.
- o Impact of early initiation of breastfeeding added into Age appropriate breastfeeding practices in results.
- o New message regarding updated ANC proxy calculations listing specific interventions involved.
- o Default number of iterations is now 400 for UA.
- o Default LiST data sources are now reading in correctly for all editors in the Health Status form, the Effectiveness forms, and most of the Coverage form.
- o Fixed issue with Stunting and Wasting calculations in the Health status form
- o Fixed issue with user-entered zeros disappearing in effectiveness editors
- o Fixed issues with the ANC proxy calculations

- Sexually Transmitted Infections (STI)
  - o Modified fitting code to only use data which has 'Use Data' field checked
  - o Fixed error causing a crash when adding a data entry to Gonorrhea Case Reports
  - o Changed results configuration form to use last selected Final Year

- Extract
  - o Fixed problem with reading projections with LiST module.

- FamPlan
  - o Fix random bug with multi projections loaded.

- Goals
  - o Fixed problem with Goals import.

- LiST
  - o Various label changes for Breastfeeding.
  - o Changed the calculation of the impact of anemia on maternal mortality from relative risk to odds ratio.

- o Added Low BMI in WRA as new affected fraction for Balanced Energy Supplementation
  - o Incorporated data from latest LiST database

- Resource Needs
  - o Updates to the RN optimizer (interpolation now happening starting from the base year + 1.
- NCD
  - o New result in NCD for (YLD).

- OHT
  - o Fixed HPV access violation.
  - o Fixed an issue with Lab equipment costs not updating after exiting the editor.
  - o Exchange rate and cost updating is now applied to 5.2: Establishment of new laboratories and associated drilldown editors.

- Choice
  - o Fix for bounding CPR in scenario projections.

Version	Spectrum 5.6
Date	19 June 2017

- General
  - o Redesign of Internal editor tables and result displays to separate UI components from Data. This is a non-visual or internal change.
  - o Removed STI module from Beta mode.

- Demproj
  - o Removed Urban/Rural designation to the RAPID module. It is recommended that regional demographic projections be modeled with separate projection files.
- GCEA:
  - o New Deaths results added.
  - o Added number of services (by intervention) as a result.
  - o Hid "Outputs" icon and changed name for "Inputs" to "Analysis".
  - o Added international dollar exchange rate default database.
  - o Facility costs number of decimal points increased to 2 by default.

- GOALS
  - o Removed memory leak from editors

- LiST
  - Malaria appearing in HERD Effectiveness editor outside of developer mode.
  - All user-edited values no appear in <1 month effectiveness editors, even if they are 0 and the "Show all interventions" checkbox is unchecked.
- STI
  - Added results to Extract.

Version	Spectrum 5.58 Beta 1,2,3,4,5,6,7
Date	30 May 2017

- General
  - Added Digital signature to spectrum.exe.

- AIM
  - Added Nigerian sub national data to incidence fitting tool.
  - Changed Sex Age Pattern editor to reset pattern-specific default data and set selected pattern back to default.
  - Fixed projection name being displayed in summary table when multiple projections are opened.
  - Fixed an incorrect file read of postnatal dropout rate of those on ART.
  - Made a change to Projection calculation code to more accurately calculate number of incident HIV infections over very short periods of breastfeeding.

- DemProj
  - Removed Scaler Option from Dempoj configuration.
  - Added value checking to DP International Migration by age editors so that they must add up to 100% before exiting form.
  - Enabled normalizing by right-click in Migration by age editors.
  - Added a fix to calculations that removes range check error in orphan calculations for projections with less than 16 years.

- LiST
  - Removed Meningococcal A and Malaria vaccines from developer mode and changed order of their appearance in coverage editor.
  - Removed ANC out of coverage editor (can no longer edit it).
  - Linked new DataByCountry, Default Data and Intervention Default Data to Spectrum.
  - Linked many of the new sources to the effectiveness editors.
  - Fixed problem with LBWF not reading in correctly.
  - Added decimal places to Single Stunting and Single Wasting editors in Health Status form and Subnational Wizard.

- o Increased size of IPTp editor on the Health Status form.
- o Incorporated data from most recent LiST database (5/25/17)

- Resource Needs/Goals:
  - o Fixed calculation for cost per infection or death averted using the difference between intervention cost and base projection cost. Goals previously, incorrectly took the cost per infection averted from RNM and reported it as the cost per death averted.
  - o Previously, plotting the number receiving PrEP by all methods would not display the number using vaginal ring PrEP, a change has been made to ensure all PrEP methods are shown.
  - o Goals previously counted the number of PrEP users as (coverage times total population size). After the change, the number of PrEP users is (coverage times HIV-uninfected population size).
  - o Fixed an issue with changing first year to display for most results that would cause an exception.

- STI:
  - o Fix to Projection calculations to fix a minor bug.
  - o Changed order of Syphilis fitting options, minor text fixes, changed default fitting option for new projection.

Version	Spectrum 5.571
Date	18 May 2017

- GOALS
  - o Update to data base file to improve model fits.

Version	Spectrum 5.57
Date	12 May 2017

- Demproj
  - o Fixed minor problem with calculations requiring two projection to stabilize total deaths with a new projection.

- AIM
  - o Made several additions to Incidence options and CSAVR tool so that the age ranges used for calculations are being set correctly.
- Extract

- o Fixed problem when selecting "Extract UA process date" and "AIM Inputs simultaneously and the processing.
  - o Restored the labeling and data fix for the 'Distribution of HIV+ pregnant women by treatment regimen' indicator.
  - o Added two new extract items for TIME impact. They are the screening result and general summary result.

- LiST
  - o Make LBW conversion algorithm editable.
  - o Calculations adjusted such that Blanket iron supplementation has an impact on birth outcomes.

- RAPID
  - o Fixed a bug in RAPID where GDP of the first year was being used in the first displayed year of GDP and GDP per capita results.
- STI
  - o Spanish strings added.

Version	Spectrum 5.56
Date	3 May 2017

- General
  - o Fixed obscure problem where projections were being renamed outside of Spectrum and were not loading properly.
  - o Fixed problem when reading older projection with misdated Exchange rate information.

- Demproj
  - o Minor code restructure.
  - o Fixed an issue that was preventing disease progression in some children who became infected via breastfeeding.
  - o Changed survival rate accuracy to 8 decimals in projection file.

- AIM
  - o Changed calculations to accurately sum ART over treatment duration categories.
  - o ECDC tool, changed the variation in incidence to give a more accurate distribution of curves for use in Uncertainty Analysis.
  - o Fixed the calculation of the effect of incident infections on mother to child transmission, the cumulation of children infected by breastfeeding at ages above 1 year.
  - o Fixed minor issue in the calculation of adults 50+ on ART that is sent to EPP.

- o Correcting the calculation of HIV+ children in the orphan calculations (to use the new CD4 categories and modes of infection.
- o Fixes issue for display of PMTCT coverage of more efficacious regimens when PMTCT is entered as percentage, rather than numbers.

- Extract:
    - o Updated processing for the 'Distribution of HIV+ pregnant women by treatment regimen' indicator.
    - o Updated handling of the configuration options for the 50+ category of indicators for AIM.

- GOALS
    - o Fixed problem with importing GOALS data into a non-native (>1986) projection and maintaining proper GOALS-State information for successive calculations.

- LiST
    - o Updates to Global Wasting Rate calculation.
    - o LiST Costing
        - ▪ Fixes problem where zeros were displayed in the last year for drug and supply costs.

- STI
    - o Added Chlamydia results and made incremental fixes to the Chlamydia editor.
    - o Enabled the ability to add STI results to favorites and groups.
    - o Added results tables to all results.

- GCEA:
    - o Costing results available for comparison packages.
    - o Updated calculations of package results.
    - o GCEA projection read fix.

Version	Spectrum 5.55
Date	14 April 2017

- Extract
    - o Fixed problem with AIM indicator names not saving correctly in config file.

- AIM
    - o Fixed problem with AIM editor failing to open when newly created projection was not saved.

- LiST
  - Fixed problem with sub national wizard failing to create projections under special circumstances.

Version	Spectrum 5.54
Date	12 April 2017

- Global
  - Fixed problem with regional reads of projection files.

- AIM
  - Fixed problem with ECDC tool and creation of SPU file

- LiST

  - If unchecked interventions are flatlined, they are flatlined to the final year of the projection rather than the target year.
  - The following groups of interventions do not sum to over 100% for target percentage mode: Micronutrient supplementation, Case management of prematurity, and Case management of neonatal sepsis/pneumonia.
  - Fixed issue with scaling by percentage points for most interventions.
  - Resolved issue where user couldn't enter 1's in effectiveness editors
  - Resolved issue where Extract results for Anemia were inconsistent with LiST results for Anemia

Version	Spectrum 5.53
Date	30 March 2017

- Global
  - Fixed problem with Extract and Projection names that were renamed outside of Spectrum.
- LiST
  - Moved three Stunting results out of developer mode and updated their names.
  - Hid causes of death without elevated risk in Impact of breastfeeding on mortality.
  - Resolved issue where effectiveness of Iron supplementation on birth outcomes was not being read in from default data.
  - Resolved issue where Affected fraction of Iron supplementation was being set to 0 when the user entered the Effectiveness of nutrition interventions editor and clicked Ok.
  - Breastfeeding promotion in MO is now showing neonatal lives saved.

- o New default data for Missed opportunities and Equity tools.
- o Fixed problem with complimentary feeding not apportioning correctly.
- o Fixed problem with anemia results.

- Goals
  - o Fixed problem with Goals data not loading correctly.

- GCEA
  - o Improved results for programme costing in GCEA.

Version	Spectrum 5.52
Date	22 March 2017

- LiST
  - o Added '0-60' age cohort for the four new stunting results.
  - o Generated new MO and EQ default data.
  - o Generated new default country database.
  - o Updated calculation of the baseline coverage for "appropriate complementary feeding" in MO.
  - o All non-zero additional deaths prevented results will now be automatically displayed. Previously it was linked to a change in coverage.
  - o Early initiation of breastfeeding now shows lives saved in the neonatal period in MO.
  - o Affected fraction of ITN/IRS for effect on maternal mortality is now the same as affected fraction of IPTp.

- AIM
  - o Added EPP5 file output.
  - o Added EPP 2017_R3
- Extract:
  - o Removed internal variables from list of extractable inputs.

- GCEA:
  - o Resolved issue where Current coverage packages could not be calculated.
  - o Resolved issue where user could not display a new result if all packages' calculations were up to date.

- RAPID transfer
  - o Added the ability to support SDG model transfer

- GOALS

- o New countries data base

- Resource Needs
  - o New countries data base

Version	Spectrum 5.51
Date	14 March 2017

- General
  - o Fixed problem with checking for Spectrum updates.

- Demproj
  - o Fixed problem with reading sub national UPD files to account for data after 2020. Spectrum will now flat-line data as needed.
  - o Updated 18 current and new UPD files with change in life expectancy.

- AIM
  - o Added EPP 2017_R1_RC7
  - o Added custom option to select AEM jar file.

- Extract
  - o Fixed bug with Number of women with anemia and Number of anemia cases prevented showing zeros.
  - o Fixed issue where data list file was created alongside regular Extract file.
  - o Fixed issue where inputs were not being written out to data list file.

- Resource Needs
  - o Fixed problem when creating a projection with another currently loaded.

- LiST
  - o Declining breast feeding promotion is not allowed in the editor.
  - o Subnational wizard input control form now has a scrollbar so items are always accessible on it.
  - o LiST Costing
    - ▪ Adjusted functionality of Pentavalent vaccine and its constituent interventions.
    - ▪ Adjusted PINs for Curative Neonatal interventions.
    - ▪ Added Help screens.
  - o Added three new Stunting related outputs in developer mode in LiST: Number of children stunted, Number of stunting cases averted, and Number of stunting cases averted by intervention.

- All 5 causes of death show up in the Effectiveness menu and are applied in calculations even outside of developer mode.
- Updated default data.
- Default data by country extends to 2016 now.
- Fixed bug in LiST Subnational Wizard where FP was not active in projection after it had been imported in the wizard but not modified there by the user.
- Added Severe anemia editor.
- Fixed bugs with opening files and scaling by percentage points in LiST Scenario Generator.
- - Updated calculations having to do with anemia impact on mortality and stunting/stunting averted.
-

- OHT
  - Fixed problem where IRS coverage was transferring over to LiST instead of the Malaria module even when Malaria was turned on.
  - Made target populations carry over from one programme area to another rather than being reset to Total population.
  - GCEA is now available outside of developer mode
    - Changes and updates to currency application
    - Fixed French Translations
  - Fixed problem with The number of services for short-term family planning methods apparently needed to be multiplied by CPR / 100, so I did that in the attached. Please take it whole.
  - Added ability to change default intervention names.
  - Added searching capabilities to Budget Mapping's Map budget categories editor.
  - Adjusted functionality of Pentavalent vaccine and its constituent interventions.
  - Fixed Women receiving breast cancer treatment and Women with breast cancer target populations. (Intervention Costing)
  -

- Choice Tools
  - Fixed problem with Breastfeeding promotion always showing values.

- GCEA
  - New results for GCEA - total cost by year, and total health life years saved by year
  - Currency label issue resolved in results.
  - Added user editable target coverages for packages.
  - User may run both Null and Current coverage comparisons.
  - Modified GCEA calculations.

- Reorganization of currency layout in GC Configuration editor.
- Label changes in GC Configuration editor.
- Added new tab in GC Configuration editor with logistics costs.
- Programme costs input editor now displaying base year only.
- ICER column removed from Cost-effectiveness result.
- Added ICER for expansion path as new result.
- New labels added for ranking and comparison result tables
- User must select at least one package before displaying a result.
- Added the ability to apply discounted costs and benefits
- Added new cost effectiveness result when in the Current coverage comparison
- Added new ICER for Expansion path result
- Adjusted the way CPR appears in GCEA input editors
- Improved progress bar messages during calculations
- Made it possible to view results of packages for projections in which calculations still need to take place
- Fix: currency is no longer being applied to Healthy life years gained
- ICER column for Cost effectiveness (Current coverage scenario) calculation updated
- CPR calculations updated.
- LiST Healthy life years calculations updated
- Added log of successful/failed packages to results configuration form (button on the bottom right of the form)
- Service delivery costs calculations updated
- Discount rate calculations updated
- Removed the suppression of dialogue boxes during calculations
- Added calculation log file (accessible in developer mode only for now)
- Added functionality to choose which packages the user wishes to calculate rather than forcing them to recalculate all of them
- Updated calculations for Logistics markup
- Updated calculations for ART for Men and ART for Women
- Fixed bug where GCEA was not forced to recalculate even when user changed input values in impact and costing modules other than GCEA itself.
- Added Number of services output to debug sheet (accessible in developer mode)
- Fixed problem with inconsistent incremental cost.
- Fixed issue where projections could not be created for certain countries.

- MBB to LiST Transfer:
  - Updated ability of tool to load MBB sheets for processing

Version   Spectrum 5.5

- General
  - Portuguese strings modified for General, Extract and LiST.
  - Fixed general problem with importing of external projection data.

- AIM
  - Included EPP 2017 Beta 3
  - Implementation of AIM 2017 changes
    - Extract now has an option to select the years to extract. There is also a new checkbox to produce a file that has the date of the UA file of a projection. The progress bar was also fixed.
    - The .DP file has been fixed up to eliminate blank lines and properly label rows (ages, male/female, etc).
    - Urban/Rural has been removed except for when RAPID or DemProj only are being used.
    - The prompt for JAVA to be downloaded if it does not exist on the computer, has been put in where ever a command line for EPP is used.
    - A new year drop-down has been added to DemProj projection parameters for the custom population so that the user can determine when to stop using the uploaded file.
    - Added JAVA prompt in all places a command line is used for EPP
    - Made sure all indicators for Extract, AIM UA, Aggregate and Aggregate UA are the same.
    - Default Data Checker tool was updated to include checks for NUMBERS in the ART editor, made other changes to make sure other checks were working properly.
    - Removed restriction in results so that receiving PMTCT can go above the number needing PMTCT.
    - Added a new toggle to the Fit to Program Data tool for Deaths to HIV-positive.
    - Added new results under Young people (15-24): Perinatally infected 15-19 and Perinatally infected 20-24.
    - Fixed the restore values for the TFR reduction editor. Added a new sheet to AMModData.xlsx for DHS sexually active 15-19 year old females.
    - Added flag to UA to make sure the previous validity of Demproj is maintained after the user exits UA.
    - Changed Comparison to Read-only. More than one Read-only projection can be opened at a time and the only projection open can be Read-only.
    - Migration was added to the Aggregate tool. The tool was revamped to have the updated look.

- The population pyramid graphs in the results were changed from 3d to 2d.
- New results were added for Adolescents (10-19) and Adults 50+, these include HIV population, New HIV infections and AIDS deaths.
- EasyAIMData was redone so that the incidence is taken from the results rather than the inputs.
- Fixed problem when HIV Deaths were not being calculate correctly for projections when "Program Statistics" editor was not visited at least once.
- Program Statistics > Adult ART > CD4 by percent and by number are now stored independently and hold values for each option
- Fit to program data tool:
  - Reorganized charts.
  - Limited data entry to 2016 and before.
  - Changed default years from infection to diagnosis to 1970-85: 11 years, 1986-97: 6 years, 1998-04: 5 years, 2005-10: 4 years, 2011-2016: 3 years.
  - Changed default tolerance from 1E-6 to 1E-8.
  - Sped up projections for IRR and CSAVR Fitting by about 10%.
- Fixed display of Total number receiving ART(15+) in ART - Dec31 Summary table.
- Fixed issue with UA being 'out of date' directly after process
- Several label and comment changes.
- Added radio group to Direct incidence for 15+ or 15-48 age groups

- Demproj
  - Internal changes to first year population data to improve accuracy.

- GOALS
  - Adjustments to Calcstate to improve accuracy of projections starting after the epidemic start year.
  - In Extract, Total cost by intervention result, added more descriptive labels.

- LiST
  - Fixed problem with coverage values not saving correctly in subnational wizard.
  - Added link: ITN/IRS to birth outcomes (SGA)
  - Changed wasting distributions due to SAM/MAM treatment
  - Added link from anemia to maternal hemorrhage mortality
  - Added link for ITN/IRS to birth outcomes (SGA).
  - Added in new curves for TFR and CPR for subnational wizard.

- New nutrition results for global stunting, global wasting, percent exclusive breastfeeding and prevalence of early initiation of breast feeding.
- Added the ability to change user's stunting choices (single/detailed toggle) in Health status and the Subnational Wizard.
- Fixed problem with Subnational Wizard import of custom projection during creation.
- Added separate checkboxes for Skilled birth attendance and Health facility delivery, as well as breastfeeding prevalence and prevalence of early initiation of breastfeeding.
- Breastfeeding prevalence is no longer editable when the breastfeeding promotion option is selected.
- Added 'Relative Risk of Anemia' to default country data.
- Fixed problem with CPR calculation for high prevalence countries in subnational wizard.

Version	Spectrum 5.47
Date	17 November 2016

- **General**
  - Fixed problem with internal help freezing when modal windows were active.
  - Modified projection source summary.

- **Demproj**
  - Fixed problem with Urban percent not saving correctly.

- **Extract**
  - Fixed various problems with
    - NUTRITION: Percent of women with anaemia.
    - OneHealth / Intervention costing: Resource requirements and Personnel time.
    - NCD mortality by age. (to compute the difference in preventable mortality
  - Added the ability to filter output by years.

- **LiST**
  - Fixed KMC impact on early initiation of breastfeeding.
  - Fixed early initiation of breastfeeding impact when direct entry for breastfeeding prevalence is on.
  - Fixed range check error in Scenario generator.
  - The link between the affected fraction for calcium supplementation and women who are food insecure has been removed.

- Fixed problem with label for LiST > Nutrition > Birth Outcomes > Low Birth Weight not displaying correctly.
- Fixed birth outcomes result and added the ability to switch between projections when viewing the following results as line charts:
  - Percent of children in different height for age statuses (Stunting)
  - Percent of children in different weight for height statuses (Wasting)
  - Breastfeeding prevalence
  - Birth outcomes
- Fixed the display configurations for Incidence rates and Number of under-five cases by cause.
- Added complementary feeding effect on wasting.
- Add impact of 5 WASH interventions on neonatal diarrhea (mortality and morbidity).
- Now displaying the full intervention names in the Effectiveness of nutrition interventions, Impacts on birth outcomes, Maternal nutrition table.
- Changed the default availability of childbirth interventions across the delivery levels.
- Fixed the charts for the Nutrition, Breastfeeding Prevalence result.
- Link calcium supplementation to preterm.
- Link KMC to exclusive breast feeding.
- Create a new output for "low birthweight" based on SGA and preterm values.

- MBB Transfer
  - Fixed problem with spread sheet incompatibilities.

- NCD
  - Fixed various problems

- OHT
  - Fixed problem with programme costing files not loading correctly.
  - Fixed problem with regional settings causing a file read error.
  - Added stratified adolescent health interventions.
  - Added Neglected Tropical Diseases programme area.
  - Updated interface for adding custom interventions.
  - Updated links for cancer interventions.
  - Added new malaria interventions.
  - Adjusted AH programme area PINs.

- Fixed an issue where you could no longer disaggregate by delivery channel in Extract.
    - Fixed an issue where user values were getting pulled in place of default values in the second table of Projection Review.
    - Fixed problem with Programme cost results.

- RAPID Transfer
    - Fixed problem with Spectrum's Excel routines not saving Macro information in workbook.

- TIME
    - Fixed read problem with older projections.

Version	Spectrum 5.46
Date	27 September 2016

- General
    - Added projection source summary result.

- Extract
    - Fixed problem with range check error when writing XLSx format.

- FamPlan
    - Fixed problem with Modern method not calculating.

- LiST
    - Access violation fixed when changing the first year of intervention

Version	Spectrum 5.45
Date	20 September 2016

- General
    - Freshened user interface
    - Added key board short cuts for all types of interpolation.
    - Reduced installation time for install file.
    - Upgraded development platform to Delphi 10.1
    - Added Indonesian language support.

- AIM

- o Fixed the bug that allows some children to get on ART when their CD4 count is above the threshold.
  - o Fixed problem with Extract not working for incidence per 1000 by age and sex.
  - o Fixed problem with Uncertainty Aggregate file not working correctly.
  - o Added UNAIDS 2016 country data.

- Demproj
  - o Removed internal include files.

- Extract
  - o New UI.

- Goals
  - o The following indicators are only available in Goals when in developer mode. They can be viewed in AIM at all times.
  - o New infections, HIV+ population, Adult prevalence, Number of adults receiving ART, Distribution by CD4 count - HIV+ on ART, ART coverage and AIDS deaths.
  - o Fixed issue with changing the final year to less than the current year. The range check error no longer occurs and the configuration and coverage editors in Goals and RN respond to the change appropriately by displaying the base year as the final year of the projection.

- LiST
  - o Fixed help link in coverage editor.
  - o Changed the first year restriction to allow subnational projections to be created one year past the current year.
  - o Health status and nutrition displays first year of projection.
  - o Sub-national wizard now allows a first year of current year plus 1.
  - o Added new user interface for Missed Opportunities.
  - o Fixed problem with reloading of default data causing file load problems.
  - o Results now show Case management of premature babies and Case management of neonatal sepsis/pneumonia. Thermal care, KMC, Full supportive care for prematurity, Oral antibiotics for neonatal sepsis/pneumonia, Injectable antibiotics for neonatal sepsis/pneumonia and Full supportive care for neonatal sepsis/pneumonia have been hidden from the results.
  - o Added Maternal Anemia editor and results.
  - o Added the option to extract Uncertainly Results from Extract.

- LiST Costing
  - o Added inflation options to configuration and results.
  - o Updated text in Program costs editor.

- o Added direct entry option for Target population editor.
- o Forced all costing editors to start at the first costing year.

- Resource Needs
  - o Fixed problem with user added populations in Coverage and unit cost editors.
  - o Fixed problem with results for user populations not saving properly.
  - o Fixed problem with year change causing errors with projection save to file.

- OHT
  - o Added in default country coverage database for Scenario generator.
  - o Fixed problem where projections with custom drugs and supplies would break during loading.
  - o Added Adolescent health programme area and new interventions.
  - o Allowed Intervention coverages editor to fully resize.
  - o Combined Target population, Population in need, and Coverages editor for quicker access to interventions.

- RAPID Transfer
  - o Fixed problem with Year offset.

- TIME
  - o Fixed Pin/Number needed to test result.
  - o Fixed a visual bug in the care and ctrl editor.

Version	Spectrum 5.44
Date	10 June 2016

- General
  - o Added CalcState for Goals. This works similar to CalcState for AIM which allows the creation of projections starting in the year of choice (e.g. current year) to incorporate Goals data and predetermined fit as if the projection was created prior to the start of the epidemic. In this case, Spectrum will calculate as needed from 1970 to establish a Goals "CalcState" which primes the Goals calculations for subsequent runs starting with the selected first year. This will drastically reduce calculation time. CalcState will be regenerated as needed depending on changes to inputs prior to first year.

- AIM
  - o Fixed problem with EPP values not being read correctly.
  - o Aggregate Uncertainly

- Fixed problem with processing 200+ projection files.
- Fixed issue with values aggregating incorrectly when more than one region is in a file and using regions mode.
- Fixed the progress bar to work correctly when in regions mode.

- FamPlan
  - Updated default country data.

- Goals
  - Uncertainty Analysis
    - added option to select/unselect all parameters
    - Importance sampling only uses triangular distribution, other options now disabled.
  - Replace Workplace Peer education with Cash Transfers.
  - New Goals default country database

- LiST
  - Modification to Perfect Correlation and Not Correlated in Uncertainty.
  - Removed Base year in the configuration editor
  - New CHERG message with different options for reloading default data.
  - Updated help files
  - Updated default data.
  - Internal changes to Uncertainty.
  - Changed the way that the 3 interventions for "case management of premature babies" have their coverage levels determined by proxy, such that:
    - Set "thermal care" to equal the % of facility delivery births, minus any coverage values for KMC or Full Supportive Care.
    - Set Injectable Antibiotics = the % of facility delivery births, minus any coverage values for Oral Antibiotics or Full Supportive Care.
  - There are currently checkboxes at the bottom of the menu for Thermal and FSC to be determined by proxy; we now only need ONE checkbox, for Thermal.

- RAPID Transfer
  - Fixed problem data transfer under specific conditions.

- Resource Needs
  - Replace Workplace Peer education with Cash Transfers
  - New default country database

- OHT
  - Fixed problem with "Brief interventions and follow-up for alcohol" transferring of coverages between NCD and OHT.

Version	Spectrum 5.431
Date	23 May 2016

- General
    - Fixed problem with Icon not showing on the task bar when Start screen is active.

- Resource Needs
    - Fixed problem with Extract not working when selecting Resource Needs' results.

Version	Spectrum 5.43
Date	19 May 2016

- General
    - Each Spectrum projection is assigned a default UPD file (demographic data) when the projection is created. These UPD files are updated as new data becomes available and are needed by Spectrum should default data need to be refreshed. The following condition hold when reading older projections.
        - If the latest UPD file is available, it is attached to the projection being opened. This is for both CalcState and Native projections.
        - If the latest UPD file is not available, but the old UPD file is (and the old UPD file is currently attached to the projection), the old UPD file will remain attached to the projection. This is for both CalcState and Native projections.
        - If neither the old nor latest UPD file is available, the following holds:
            - For CalcState projection: the user will be prompted to download the latest UPD file. If downloaded, it will be attached to the projection and the projection will open. If not downloaded, the projection will not open.
            - For Native projection: the old UPD file will remain attached to the projection. The projection will open.
    - Fixed problem with files not opening with non-English regional setting.
    - Added the ability to select subnational projection data in projection manager. Currently subnational data exits for only a couple of countries. This will be expanded in the future.

- AIM
    - Fixed problem with Extract not running UA when selected.
    - Fixed problem with call to EPP.
    - Fixes an issue with Extract where some of the inputs were not being extracted correctly and it caused a range check error.
    - Fixed problem with incidence fitter showing extraneous data.

- Fixed it so the country name displays properly.
- Fixed issue with inputs causing an error when extracting the Data List csv file.
- Corrected the label for child eligibility for treatment input.
- Fixed the issue with "Upper" being appended to the indicator name when visiting the configuration for a UA indicator.
- Fixes the issue with the Transpose file not being saved.
- Added EPP2016 R3.

- Demproj
  - Fixed problem with Urban population not saving correctly.
  - Fixed problem with default data sources not showing correctly.

- Extract:
  - Added the ability to disaggregated IC indicators by delivery channel.

- FamPlan
  - Changes to default data.

- LiST
  - Removed 'pentavalent' label under coverage when shown in results or extract
  - Added new French translated strings.
  - Copy all chart data now uses longer version of data point labels.
  - Fixed problem with default data for sensitivity analysis not loading correctly.
  - Update default data.
  - Fixed problem with two interventions grayed out in LiST scenario generator due to stunting matrix variable setting.
  - New Default data
  - Added sampling correlation options to uncertainty.
  - Fixed problem with neonatal interventions effectiveness being set to zero when running uncertainty.
  - Changes to deaths and cases of pathogens by birth cohort
  - Added the ability in Extract to show sensitivity bounds even if they were not turned on originally.
  - Fixed problem with vaccine coverage changing with a visit to configuration editor under rare occurrences.
  - Fixed problem with Scenario Generator scaling coverage down when current coverage was set higher than target.
  - Fixed problem with breast feeding prevalence not calculating correctly when switching between prevalence and promotion.
  - Added contraceptive prevalence to missed opportunity tool.
  - Added option to UA to export all result data for each iteration.

- o Fixed problem with aim requiring two calculations in order to properly calculate AIM deaths.
- o Fixed problem with results not showing for UA.
- o Fixed problem with access error when using UA and the FamPlan module.
- o Fixed problem with default numbers for meningitis incidence.
- o Fixed problem with default numbers for Birth intervals.
- o Found the issue with MMN not linking correctly in calculations.
- o Custom MO files created based on subnational projection will now indicate that they are subnational in the title of the MO Tool display.
- o When the user copies chart data from the MO Tool's chart, the baseline coverage of each intervention will be included.
- o Changes to uncertainty analysis.
- o Fix for survey label in Subnational wizard for LiST.

- Resource Needs
  - o Pop up at the end of processing has a list of the interventions changed
  - o Minimum and Maximum projections are not being saved
  - o Label change from Workplace Peer ed to Cash transfer
  - o Removed Workplace STI from the Unit costs and Coverage editors
  - o Hid the ART tab in RN Unit costs editor and put the old Treatment tab with ART editor back in
  - o Saved the Optimize tool values for years, min coverage, max coverage, funding etc, to be part of the projection so they hold when the user reenters the tool.
  - o Added new Optimize tool

- RAPID Transfer tool
  - o Fixed problem with base projection population being selected from the wrong year.
- TIME
  - o Fixed problem with import function.
  - o Fixed an upper bound for "Protection offered by ART% reduction of impact HIV Mortality ART>1Year".

- OHT
  - o OHT now allows the selection of malaria cases as a target population for the child health and malaria programme areas when the malaria module is active.
  - o Fixed issue with delivery channel availability resetting for custom interventions.
  - o Further development with GCEA mode.
  - o Added missing OHT Aggregate tool menu item.
  - o Fixed up target populations for TB interventions.
  - o Fixed problem with NCD target populations not calculating for OneHealth projections.
  - o Fixed problems with staff-related items in Projection review.

o   Fixed problem with Staff capacity utilization results.

Version	Spectrum 5.42
Date	30 March 2016

- TIME
  - o Modification to Help
  - o Modification to calculations

Version	Spectrum 5.41
Date	21 March 2016

- General
  - o Updated help files.
  - o Fixed problem with calculations failing with multiple CalcState projections loaded.
  - o Fixed various internal memory issues.
  - o Revamped MultiProj tool which allows the creation of multiple projections simultaneously.
  - o Fixed problem of older projections not loading correctly with 2015 upd file present and 2012 upd missing.
  - o Fixed problem with selection of sample country.

- AIM
  - o Added EPP 2016 R2
  - o Added in Arabic strings.
  - o Updated the default MTCT rates for Option B.
  - o Fixed issue with creating projections that do not have AIM default data.
  - o Replaced MortalityWithARTByRegion.csv file.
  - o Fixed issue with incorrect regional default values that are passed to EPP and AEM. The value passed now match the values found in the Advanced Options editors
  - o Fixed two issues with opening old projections reading the correct UPD files
  - o Removed the constraint for "Years implemented" in the Adult eligibility editor to allow years to fall outside the projection years.
  - o Fixed validation error in the "Populations eligible for treatment regardless of CD4 count" editor when using projections with a recent start year.

- Demproj
  - o Fixed problem when entering in first year population by 5-year age groups with no country selected.

- o Fixed issue with population going to zero and causing Spectrum to crash for a few countries.
- o Relaxed the constraints for life expectancy when in developer mode. Now they are 0-1000 when in developer mode and 20-100 when in non-developer mode.

- Family Planning
    - o Temporary methods traditional, withdrawal, and abstinence were removed from the cyp calculation.

- Goals
    - o Fixed problem with population loss when reading old files.
    - o Fixed problem with Extract not work for Goals results.

- LiST
    - o Fixed problem with Missed Opportunities' custom files not loading correctly when Windows regional setting are non-English.
    - o Fixed calculation for other-recurrent and capital inpatient day costs in LiST costing.
    - o Fixed problem in LiST costing when reading other-recurrent and capital cost default values.
    - o Fixed a problem with LiST Costing intervention result tables being off by one row.
    - o Set IPTp affected fraction for stillbirths to be uneditable and added a red flag comment to the cell.
    - o Added in IPTP intervention in maternal anemia effectiveness editor and adjusted calculations.
    - o Added in Equity tool.
    - o Fixed various vaccine issues concerning MBB transfer tool.
    - o Added child nutrition options to breastfeeding promotion.
    - o Fixes issue with AIM editors in the creation of subnational projections when the final year of the projection is less than the current year.
    - o Changed the subnational wizard to always turn off direct entry for stunting and wasting.
    - o Fixed the issue with a range check error when creating a subnational projection.
    - o Fixed minor problem in detailed childbirth intervention coverage editor where values may get zeroed depending on how you entered and which tabs were selected.
    - o Fix for LiST Costing problem where Labor costs were not being read properly.

- Resource Needs

- o Fixed issue with calculations for Condom use so that when Goals is active, the value for condom percent is used as part of the formula.
- o Corrected the calculations so that scale-up costs for male circumcision can begin in the base year.
- o Fixed issue with user added support options being displayed correctly in the Resources Required result.
- o Correction to RN calculations for first line ARV cost.

- • Choice Tool
  - o Fixed problem in childbirth intervention to get scaled up for each run of CWF instead of all of them.
- • UA AIM
  - o Added "Annual AIDS deaths children (0-4)" to the indicator display list for UA.

- • OHT
  - o Fixed problem with reading all files.
  - o Added ability to add or delete costed delivery channels.
  - o Fixed currency label in drug and supply management form.
  - o Fixed PIN scroll over text.
  - o Added NCD as a standard module for an OHT projection
  - o Added feature to determine the impact module mapping for any intervention by using the right click menu in an editor.

Version	Spectrum 5.4
Date	2 February 2016

- • General
  - o Reworked the tools menu into a separate dialog form. This allows easier selection of the various tools.
  - o Removed Subnational Projection button from the main menu bar.
  - o Changed the button images on the start screen to contain text rather than using labels. This eliminates the issue with font size or screen resolution changes causing the text to be misaligned with the image.
  - o Fixed problem with data not loading correctly when projection were using start year of 2016.
  - o Fixed issue under "Recent" in the start screen so clicking when no files are listed will not cause an error, also eliminated files that don't exist from the "Recent" list.

- • AIM
  - o New EPP 2016 B1_3

- o Fixed issue in the Program Statistics breastfeeding editor when the projection was setup with a final year less than the current year (2016).
- o Added regional HIV mortality with ART files for UA.
- o Adjustment to ART mortality defaults.
- o Default Data Checker located under Tools/AIM.
- o Fixed issue with EPP being set in Incidence Options when AEM had been previously selected.
- o Determined that the state name for India projections was different than the states in the Spectrum data files so the values being sent to EPP changed each time EPP was being used. To fix this the Spectrum data files were updated to have the state names used in the India projections.
- o Fixed issue with the sum of male + female not being equal to the result for both sexes for "Total non-AIDS deaths to HIV population not on ART". The values for male, female and both sexes is not correct for "Total non-AIDS deaths to HIV population" as well.
- o Replaced text "Total that is estimated undercount (%)" under "New HIV cases (excluding newly reported AIDS cases)" in the Fit incidence to program data tool to "Estimated undercount (%)."
- o The warning message in the Fit incidence to program data tool will now appear after the fitting procedure is complete.
- o In AIM UA Replaced ProgresonRatesAndHIVMortNoART.csv with the updated file that includes initial CD4 distribution.
- o Fixed calculation problems with occurred infrequently but did affect Cambodia using default data.
- o Added definition for early infant diagnosis on the Child treatment tab of the Program statistics editor.
- o Fixed issue with Incidence Option being set to direct incidence input when restoring default data in advanced options.
- o Changed the warning message for Fit incidence to program data to be more descriptive.
- o Fixed Cancel fit and Accept fit for the Fit incidence tool so they finish processing quickly and do appear to be unresponsive.
- o Changed the Rescale graphs button on the Fit incidence tool to be disabled until processing is complete.
- o Fixed problem with region specific files not loading because of invalid date string.
- o Fixed problem with Spectrum not importing incidence correctly from another projection.
- o After default values are restored in the Advanced Options for children and adults, a prompt will ask to save the projection before closing.

- Made a change so that values passed to EPP are proportion for HIV 50 and HIV 15 with and without ART, and proportion on ART for 50+ if the values are read from the csv files or if they are calculated.
- Corrected the calculations for the results Incidence per 1000 and AIDS mortality per 100,000.
- Corrected calculations for results Incidence per 1000 by age by sex and AIDS mortality per 100,000 by age by sex.
- Fixed the total to be accurate for the display of Number of people on ART by age
- Changed default PMTCT rates.
- Fixed calculation for both sexes for Non AIDS Deaths HIV population on ART and Non AIDS Deaths HIV population not on ART.
- Added notes editors: Child treatment, Adult ART and Child eligibility.
- Updated the Child ART distribution by region to use probability of starting ART rather than the proportion of new patients by age.
- Changed AIM UA to read and use values for the distribution of new infections by CD4 count.
- Various changes to the "Fit to Program Data Tool" including implementation of the Maximum Likelihood Estimator, Minimum Khi Squared distance and modification of Uncertainty Analysis approach.
- Added new editor for child ART distribution added, called "Age at ART initiation" under advanced options/Pediatric transmission parameters.
- Updated the default values for mother to child transmission based on a new analysis from the Reference Group.
- Changed calculation to exclude the first six weeks after birth from breastfeeding transmission. The reason for doing this is that the perinatal transmission rates reported in the literature are usually measured at 6 week so they already include the first 6 weeks of breastfeeding transmission.
- Implemented a new pattern of distributing children starting ART by CD4 count. Previously we just distributed them according to need. Now we have some actual patterns from the IeDEA consortium.
- UA, Made it so the indicator column in Aggregate UA and Extract (for UA) are the same and have the following format:
  - indicator name; sex - Lower
  - indicator name; sex - Upper
  - indicator name; sex - Median
  - Removed ":" from the strings since they were causing issues with UNAIDS' database.
- Subpopulation table can now be displayed by all years for all regions.

- Demproj
  - Added new WPP 2015 demographic data.
  - Fixed problem with UPD files not reading correctly.

- o Fixed problem with calculations extending past 52 years which showed an abnormal increase in population.
- o Added new indicator to the the 'ART Dec 31' menu: 'HIV+ adults - Dec 31'
- o Add new indicator to the the 'ART Dec 31' menu: 'HIV+ children (0-14) - Dec 31'
- o Read ART 50+ from CSV files and write to ep4 rather than calculating
- o Added a Copy function to the pyramid displays like we have for charts
- o Added Central Africa as a region in Advanced Options -> Adult Transition Parameters and Pediatric Transition Parameters
- o Hide sub-population result if EPP not selected in incidence options
- o Modified sub-population table to show values for current year - 5 to current year + 5 in results and Extract.

- Extract:
  - o Corrected the configuration text to have the proper indication when extracting UA, lower, median, upper.
  - o Added a new checkbox called "Update AIM default data", which will update all of the data under Advanced Options when the projection is calculating prior to extracting the selected indicators.

- FamPlan
  - o Added new goal for modern contraception.

- LiST
  - o Updated default data.
  - o Added the ability to create custom MO files with a changeable target coverage.
  - o LiST Costing results now appear in Extract.
  - o Changed "Promotion of Breastfeeding" to "Changes of Breastfeeding" in LiST results and extract.
  - o Fixed the Direct Entry of Fertility Risks checkbox to be disabled when FamPlan is not active.
  - o Fixed problem with stunting and wasting not working correctly for native projections.
  - o Addressed issue with selecting single indicator stunting and wasting in LiST Scenario Generator.
  - o Changed LiST SG so retro values for vaccines get read in from the csv file.
  - o Fixed up labels and buttons on the subnational view to make sure entire string is visible.
  - o Fixed coverage editor in views to eliminate scroll bars in vaccines and breastfeeding.
  - o Added restriction to the year selection slider of the subnational view to make it impossible to create a projection with less than 5 years.

- Added error message when vaccine coverage in detailed view goes above 100 percent.
  - Added two new outputs for vaccinated cohorts by deaths and cases for 1-59 month olds by pathogen by birth cohort.
  - Fixed problem with Scenario Generator not reading CSV input file correctly.
  - Fixed problem with Country name not showing in Subnational projection wizard.
  - Added batch mode to LiST uncertainty analysis.

- TIME
  - Adjustments to calculations.
  - Fixed target population calculation.
  - Various adjustments to calculation.
  - Fix to impact editor to allow great input range.

- Resource Needs
  - Adjustments to calculations.

- OHT
  - Modified the locked projection feature in delivery channel mode so that users can (un)lock interventions by programme area and programme costs by national programme.
  - Updated database with PINs for the COPD interventions.
  - Fixed error message that was showing interventions that should not have been shown.
  - Added the ability to create ad hoc equipment laboratories in programme costing.
  - Fixed problem with incremental selection in results causing values to be displayed incorrectly under various conditions.
  - Fixed problem with costing totals coming from budget mapping not matching those from summary of total costs under results.

- Choice Work Flow
  - Added LiST results template
  - UI improvements.

Version	Spectrum 5.34
Date	30 November 2015

- Choice Work Flow
  - Changed to NCD template.
  - Added new option for NCD target year.

- Demproj
  - Fixed minor problem with CalcState projections incorrectly calculating the population when the first year population was changed from defaults.

- LiST
  - New Missed Opportunities default database generated.
  - Fixed minor problem with vaccine deaths averted being over allocated across interventions.
  - Added in sub national wizard.
  - Missed Opportunities now show all possible interventions regardless of coverage level.
  - New LiST default data.

- MBB Transfer tool
  - Added new/changed LiST interventions to MBB tool

- NCD
  - Changes to calculations

- OHT
  - Added beta version of Stratification of populations for interventions. This is testing only.
  - Fixed problem with file read causing Intervention Costing error.

- Resource needs
  - Fixed issue with Support options editor.
  - Fixed problem with calculation of the number of condoms used.

- Time
  - Updates to calculations

Version	Spectrum 5.33
Date	27 October 2015

- General
  - Added new Start Screen to highlight special functions. This will be expanded in the future.
  - Added survey source to projection manager for LiST country selection.
  - Fixed problem with projections calculating with a country name that contain an accent.

- Adjusted new start screen to accommodate changes in Support Web site.
- Fixed problem with import procedure offsetting data by 1 year.
- Fixed problem of Pie chart displays not being able to include in Favorites using right click menu.
- Added the ability for all impact modules to work with projection extending to 150 years.

- **AIM**
  - Fixed proportion of HIV+ pregnant women calculation.
  - Added 50 year old HIV+s into Epp file.
  - Updated default country database to include UNAIDS 2015 data.

- **Demproj**
  - Fixed minor problem with projection creation using calcstate.

- **Extract**
  - Fixed application error when trying to extract AIM uncertainty indicators.

- **Goals**
  - PrEP editor row headers adjusted correctly.
  - Fixed problem where the Epidemic Start Year was breaking the calculations.
  - Fixed random problem with UA analysis.
  - Fixed issue with Cost-effectiveness analysis tool not opening and displaying editor
  - Fixed issue with values in coverage editor changing after calculating. Removed the Expand/Collapse buttons.
  - Removed Symptomatic stage (with ART) from the Epidemiology editor. Added a new tab in the Epidemiology editor called ART effect to add a new variable, Infectiousness multiplier on ART which allows entry by time.
  - Remove Symptomatic stage (with ART) from Epidemiology editor.

- **LiST**
  - Fixed problem with multiple projections not showing in table result and charts.
  - Fixed problem with retro years not showing with extract coverage results.
  - Various changes to direct entry stunting and waiting editors.
  - Fixed serval formatting problems with Missed Opportunity tool.
  - Missed Opportunity changes along with new MO country database.
  - Adjusted Stunting and Wasting editor in order to better present the data.
  - Added the ability to run a sensitivity analysis around results but adjusting efficacies to a minimum and maximum level.

- Fixed problem with Coverage extract under result to include all coverage related variables.
- Updated default data.
- Fixed problem with pneumococcal effectiveness.
- Corrected the calculations for the results "Number of 1-59 month deaths due to pathogens by year of birth cohort" and "Number of 1-59 month cases by pathogens by year of birth cohort".
- Fixed problem with missed opportunities not calculating correctly.
- When direct entry to wasting is checked, make the effect of therapeutic feeding and treatment of MAM on wasting go to 0.
- Detailed vaccine option for inputs now available by default. Entry by dosage accessible by double clicking on vaccine name in row header of editor.

- Family Planning
  - Fixed visual problems in goals editors when manually being resized.

- NCD
  - Moved out of Beta and now Active

- Resource Needs
  - Fixed internal links with Choice Workflow scenario generator.
  - Added deaths averted to CEA tool.
  - Removed the expand buttons from RN editors since they are no longer being used. Changed some of the old reads so that you can open older projections.
  - Modifications to the Goals/RNM CEA tool.

- TIME
  - Changed various labels
  - Runs the equilibrium calculation for BCG vaccine and child efficacy changes.
  - Fixed flag for equilibrium run and added in MDR rif values.

- OHT
  - Reconfigured HIS target settings menu.
  - Added ability to show budget cost by funding source.
  - Choice Workflow, fixed bug with interactive intervention target setting.
  - In budget mapping added the ability to display results by percentage.
  - Added new result for outpatient visit capacity.
  - Fixed bug with incorrect Personnel time results when viewed as FTEs.
  - Added the ability to disaggregate selected intervention by special populations. This functionality is in Beta and will be expanded.

- o Fixed problem with Services not being calculated correctly when using direct entry of ART for Target population
- o Fixed problem with Scenario Generator not working properly for 100 year projections.
- o Fixed problem with OHT not saving programme costs to file.
- o Linked coverages and target populations of NCD interventions for asthma, COPD, and diabetes to the NCD module.
- o Fixed HPV results.
- o Various changes to OHT Audit tool.
- o Fixed problem with adding medical personal to treatment inputs.
- o Fixed problem with HPV results.
- o Added option to flat line deselected intervention in OHT Scenario Generator.

Version	Spectrum 5.32
Date	10 July 2015

- • Global
  - o Added new Russian help file available for download in Update Manger under Options.

- • AIM
  - o Under certain circumstances it was possible for AIM to calculate a negative number of people newly starting ART at a particular age and CD4 count. The numbers are small but since they are negative they can cause all kinds of problems as they cumulate. The fix is to make sure this does not happen by inserting code that catches when the value is negative and resets it to zero.
  - o Added EPP 2015 R6
  - o Corrected problem with changing HIV population values when reading in a projection and doing a "Save as".
  - o Fixed Results menu to have "Total ART coverage (15-49) - mid year" and "Total ART coverage (15+) - mid year" to be disabled when Adult ART is by CD4 percent and the user is in developer mode.
  - o When "custom" is selected as the epidemic pattern in the Incidence by age tab, the EPP TYP file is read to determine the type of epidemic. This is necessary to ensure that the Sub-population table is displayed properly. When reading an old projection, if "custom" was selected, the EPP TYP file is read at that time to determine the epidemic type so it is not necessary for the user to visit the editor.
  - o When using Fit incidence to program data, the values are rounded to 6 decimal places before being used in the calculations. This eliminates the problem with viewing results and having values change slightly due to double precision.

- o Adding Japan to incidence fitter tool parameter database.

- Demproj
  - o Fixed problem with Demproj interaction with Time
  - o Improved memory management.

- LiST
  - o Removed old data sources from summary output.
  - o Fixed problem with older projections were they were writing out zeros for some diseases for impact of breastfeeding on mortality values. These have been changed to the default of 1 when 0 is encountered.
  - o Made breastfeeding coverage editors expand and contract like other coverage editors.
  - o Fixed cut off message in "Impact of under-nutrition on mortality" editor.
  - o Added more specific error message to indicate when the 0-4 population is zero and causes an error in the calculations.

- Resource Needs
  - o Fixed problem with result summary tables not showing.

- OneHealth
  - o Fixed bug with adding drugs and supplies to treatment inputs.
  - o Fixed problem with entry of custom drugs and supplies using a "/" in the string.
  - o Added weight and volume editors and results to Logistics.
  - o Choice Work Flow
    - ▪ Added cardiovascular disease to the NCD section.
  - o Increased the number of possible custom drugs and supplies by 300 entries.
  - o Increased the number of possible custom interventions by 200.
  - o Added search capabilities to OneHealth results.
  - o Added programme costing defaults for Workers Health area.
  - o Updated workers health Programme area interventions.
  - o Fixed a problem with importing a custom drug and supply list.
  - o Improved Audit summary form interface.

Version	Spectrum 5.31
Date	5 June 2015

- Global,
  - o Fixed problem with error occurring when a projection is closed with multiple projection loaded.
  - o Right Click on input editors now changes focus to clicked Cell unless click takes please inside a currently selected range.

- AIM
  - Relaxed restriction for Orphan calculations from 1970 to <= 1985 to include all native projections.
  - Changed default rates for Comoros' incidence values.
  - Fixed problem with reloading of AIM default country data resetting Demography inputs to default. These are now treated separately.
  - Adjusted incidence editor to allow direct incidence to be saved as a separate entry from other options. This allows the ability to return to a previously entered direct incidence after using the EPP option as an example.
  - Fixed problem with reading Orphans data.

- Goals
  - Updated the Goals UA historical fit tool to include Condom Use and STI prevalence in the list of parameters that can be varied.

- LiST
  - Label changes on Child birth editor to remove (SBA) and change "institutional delivery" to "Health facility delivery"
  - Made SBA Home subtab on bottom childbirth editor have 100% for clean birth, immediate assessment and labor and delivery management.
  - Changed poverty / food security indicator on the Household status editor to be $1.25
  - New help files in English that contain LiST updates.
  - Unlinked calcium supplementation from antenatal care calculations
  - FGR on the coverage editor, pregnancy tab is no longer calculated as part of antenatal care.
  - NN Diarrhea and NN Pneumonia were added to the editor, Impacts of under nutrition on mortality, Impact of breastfeeding on mortality tab. They were also added to the calculations.
  - The text at the bottom of Baseline Maternal Mortality tab has been removed.
  - Hypertensive diseases has been changed to Hypertensive disorders.
  - Under Coverage - Curative - Case mgmt of premature babies, change "thermal care" to equal the percent of deliveries in essential care facilities, and "full supportive care for prematurity" to equal the percent of deliveries BEmOC and CEmOC facilities. ("KMC" will continue to have a default value of 0%.)
  - Under Coverage - Curative - Case mgmt of severe neonatal infection, changed "oral antibiotics" to a default value of 0%, "injectable antibiotics" to equal the percent of deliveries in essential care facilities, and "full supportive care for sepsis/pneumonia" to equal the percent of deliveries in BEmOC and CEmOC facilities.
  - Under Coverage – Childbirth, changed the default levels of the various childbirth interventions by location of delivery (in the bottom of the three tables on this page).
  - Under the essential care tab, changed 100% of EC births to receive the first four interventions (clean birth practices, immediate assessment, labor and delivery mgmt, neonatal resuscitation); the rest set to 0%.BEmOC and CEmOC, now get 100% of these births to receive ALL of the interventions in the table EXCEPT for

"antenatal corticosteroids for preterm labor." This means that 0% of any births will receive antenatal corticosteroids.
- o Under Coverage - Pregnancy: Set "FGR detection and mgmt" to a default coverage value of 0%.
- o Under Coverage – Pregnancy, renamed "Iron folate supplementation" to simply be "Iron supplementation."
- o Under Coverage - Curative - "Oral antibiotics: Case Management of pneumonia" was renamed to "Oral antibiotics for pneumonia" in all relevant places in LiST.
- o Under Health Status - Baseline child mortality, deleted the cell labeled "MDG Goal for Under 5 Mortality."
- o Fixed problem with Vaccine editor not working with older projections.

- NCD
  - o Updated default country data.

- OHT
  - o Fixed error which occurred with multiple projections during calculations.
  - o Changed TB Situation Analysis to link directly to an appropriate website instead of loading a local PDF file.
  - o Updated delivery channel distributions for Worker's health interventions.
  - o Adjustment to the Audit tool.
  - o Adjustments to the Worker's health programme area
  - o Increased the number custom interventions to a maximum of 300.
  - o Fixed problem with Intervention coverage screen.

Version	Spectrum 5.30
Date	18 May 2015

- LiST
  - o Fixed intermittent problem with LiST not calculating because of issue with Aim.
  - o Fixed problem with maternal intervention calculations concerning level distribution.
  - o Modifications to Extract coverage outputs.

- AIM
  - o Fixed problem with incidence editor not working when using CalcState.
  - o Fixed problem with incidence adjustment being applied incorrectly.
  - o Fixed problem with Sex ratio editor when EPP is active.

- NCD
  - o Display by age-structure for cervical cancer- add points from association file in starting year for progression and incidence.
  - o Add summary Results that displays all stages and all age groups.
  - o Add the list of HPV stages for incidence and progression denominators.
  - o Fixed Treatment Activate and deactivate.

Version	Spectrum 5.29
Date	11 May 2015

- General
  - o Added "Read-Only" to the title of comparison projections once loaded for clarity.

- AIM
  - o Fixed problem with the calculation effects of cotrimoxazole.
  - o Added new result, Incidence adjustment factor. Visible only in developer mode.
  - o Made it so Adolescent 10-19 is only visible in developer mode.
  - o Changed max for EPP adjustment from 3 to 10.
  - o Fixed issue with AIDS deaths being too low for 0-9 year olds.
  - o Fixed issue with UA only processing one iteration.
  - o Added in incidence adjustment result.
  - o Changed T0 under incident fit parameters to default to a number between 1970 and 2200.
  - o Added the ability to select 15+ or 15-49 for EPP population in incidence editor.
  - o Change the limit on the EPP Prevalence adjustment factor in the Incidence editor from 3 to 10 along with allowing incidence to be adjusted downwards to zero if necessary when the prevalence adjustment is active.
  - o Reorganized incidence menu option.
  - o Add three new AIM results
    - ▪ HIV population 10-19
    - ▪ New infections 10-19
    - ▪ AIDS deaths 10-19
  - o Moved the MTCT transmission rates from a button on the PMTCT editor to a tab under Advanced Options -> MTCT transmission probabilities
  - o Added a radio button group for the incidence options
  - o Modified the Fit to mortality to have an expanded editor and Fit incidence display
  - o Add a row to the editor for Fit incidence to program data right under New HIV cases -> Total that is Estimated undercount (%).
  - o Split the Fit incidence to program data tool to have two menu items so the editor is separated from the graphs
  - o After running the Incidence fitting tool or the Fit to mortality tool, the projection is invalidated if the user clicks ok so that they will be prompted to save the projection before closing.,
  - o In the Adult Eligibility for Treatment editor added a line under the editor that says 'For Test and Treat, set the CD4 threshold to 999'.
  - o On the PMTCT editor, changed the last three prophylaxis entries as follows:
    - ▪ ART started before current pregnancy -> Option B+: ART started before current pregnancy
    - ▪ ART started during current pregnancy > 4 weeks before delivery -> Option B+: ART started during current pregnancy > 4 weeks before delivery

- ART started during current pregnancy < 4 weeks before delivery -> Option B+: ART started during current pregnancy < 4 weeks before delivery
        - In the Age/Sex ratio editor, made it so the 'Read from EPP' box is only enabled when the population is centralized. If the box is unchecked the user can enter their own data. If the box is checked, then data from EPP will be displayed.
        - Changed 'Source' in horizontal menu to 'Changes'. This opens up a different text file where users can keep a log of questions and changes.
        - Under Validation -> ART -> ART by age: please added a 'Both sexes' option in addition to 'Males' and 'Females'.
        - Uncertainty Analysis results have been reorganized.
        - Fixed problem with Fit Incidence to Program data tool that was causing results to change without processing.

- FamPlan
    - Fixed problem in where TFR was reverting back to default value if changed under Goal and using the survey year for calibration.

- LiST
    - Fixed problem with default data showing -1 instead of zero for vaccine coverages.
    - Fixed problem when expanding years to an existing projection.
    - Updates to default data.
    - Fixed issue with reading in impacts on wasting for older projections.

- NCD
    - Changes to calculation regarding cancer CFR.

- OHT
    - Fixed problem with entering Bottleneck Analysis when there is no tracer intervention.
    - Changed the maximum amount of programme areas to 50.
    - Fixed issue with creating default budgets in delivery channel mode.
    - Fixed issue with values not saving for certain programme areas and national programmes.
    - Updated treatment inputs for Intensive psychosocial treatment and anti-depressant medication of recurrent moderate-severe cases on a maintenance basis.
    - Unlinked the coverage of Identification and assessment of new cases from the NCD module and linked the coverage of Brief interventions and follow-up for alcohol use in its stead.
    - Fixed population in need hover notes for depression interventions.
    - Fixed issue with Programme Costing section of Budget Mapping breaking upon adding programme areas, delivery channel packages, or national programmes.
    - Fixed issue with reading in custom drugs and supplies for older projections.

Version	Spectrum 5.28
Date	26 April 2015

- AIM
    - Fixed problem where some countries were experiencing problems with an incidence bump when eligibility for ART changes significantly.
    - Fixed a couple of small bugs in the child calculations.
    - Remove problems that may produce a bump in incidence in 2014.
    - Fixed problem with PMTCT calculations where the perinatal transmission rate for women who start ART during the current pregnancy.

- LiST
    - Fixed problem with Pie charts and long labels.
    - Fixed problem with LiST import.

- Time
    - Changed the Intervention function which processes prevention interventions.

Version	Spectrum 5.27
Date	20 April 2015

- Global
    - Spectrum can automatically search for updates to the software, configurable in Options.
    - Fixed editor bug where selecting copy all with merged cells.

- AIM
    - Added EPP release 5.
    - Fixed problem with Incidence by Age editor not saving correctly in the last years when using the custom selection.

- DP
    - Size of DP file reduced by improving efficiency of data saved.
    - Removed write Tag for TIME data NewlyOnART. This will reduce the DP file size.

- Extract
    - Uncertainty analysis will now appear correctly in extract.
    - Fixed problems with OHT Summary indicators.

- LiST
    - Fixed loading default effectiveness values for Injectable antibiotics and Kangaroo mother care.
    - Fixed the names of delivery interventions for effectiveness when using extract.
    - Data sources are no longer indicated by green triangles in the editors. The ability to hover over data sources have also been removed.

- All four pregnancy case management interventions are now automatically calculated when the Antenatal care checkbox is checked.
- Added a help button next to the "Update AIDS value" button in LiST explaining what this does.
- Updated maternal causes of death.
- Fixed calculation error dealing with impact of breastfeeding on mortality.
- Added notes to rows for FamPlan and AIM interventions.
- Added results for Number of cases by pathogen and Number of deaths due to pathogens.
- Fixed result for Cause-specific deaths in children under five years of age by birth cohort.
- Adjusted names of incidence and etiology results.
- Updated Extract to reflect changes in incidence and etiology results.

- NCD
    - Fixed problem with reading in old NCD files.
    - Fixed problem with retrieving PIN values from IC. NCD was attempting to get a PIN passed the final year index. Started coming up when we changed IC to use dynamic years.
    - Fix to the stage at diagnosis(NCD) and
    - Fixed problem with reading of cervical cancer file.
    - Removed population index option for NCD health impacts
    - Changed population index calculation for the regular epidemiology results.

- TIME
    - Changed Summary table to display TB population values
    - Set Proportion of u5s that complete ITP to 0
    - added in brackets at the end of the result caption that contains the text for the population index
    - added in two new variables, MDR initial pulse (among new) MDR initial pulse (among prev. treated)
    - Range check error fix.
    - Added a flag to calculate Demproj correctly when needing NewlyOnART values.

- OneHealth
    - Data file size reductions.
    - Updated MNS intervention defaults.
    - Fixed treatment inputs error for locked projections.
    - Fixed calculation error for case when HIV population is zero.
    - Fixed duplicate bug in program manager
    - Fixed HPV calculations.

Version	Spectrum 5.26
Date	16 March 2015

- AIM

- o Added EPP 2015 R3
- o Added ability to transfer consistent number of HIV and ART 15 yo to EPP.

- • LiST
  - o Removed regional values for coverage in country defaults when country data does not exist.

Version	Spectrum 5.25
Date	13 March 2015

- • AIM
  - o Fixes the calculations when the TB/HIV population is included as eligible for ART.
  - o Fixed various editor problems in Fit Incidence Tool.
    - ▪ Entering the editor sometimes would not update the graphs correctly until an editor value changes.
  - o Corrected problem with SPU file was not being save into the correct folder when using PJN projections.
  - o Fixed problem if SPU file failed to write out for an unexpected problem.

Version	Spectrum 5.24
Date	12 March 2015

- • AIM
  - o Changes to progression of children who are infected
  - o Small adjustment to PMTCT default transmission rates.

- • LiST
  - o Adjustments to BF mortality editor.
  - o Rearranged and renamed the incident and etiology result.
  - o Added ability to change the impact of BF on mortality for all causes of death in developer mode.

Version	Spectrum 5.23
Date	8 March 2015

- • AIM
  - o Added further checks to make sure that the EPP adjustment is not applied when it is turned off under specific conditions.
  - o In the incidence fitting tool, code was added to put the best fitting incidence into the incidence array and to turn off the EPP adjustment with OK is selected.
  - o In Uncertainty Analysis, EPP adjustment was turned on automatically, now Spectrum will use whatever was set by the user. Needed because of incidence fitting tool which should not use EPP adjustment.
  - o Added EPP 2015 R3
  - o Added uncertainty to Fit Incidence tool.

- LiST
    - Fixed min and max values assigned to detailed vaccine coverage editor.
    - Fixed bug with child deaths prevented by cause result having larger values in the 1-59 age cohort than the 0-60 age cohort.
    - Fixed issue with LiST Costing interventions showing up in Extract when LiST Costing is inactive.
    - Added calculations for influenza virus and added influenza virus lines into the Percent of deaths and cases by pathogens results.
    - Added in one new indicator under the Child sector and five new indicators under the Incidence and etiology sector of the results for vaccines.
    - Added these indicators to Extract, disaggregated by diarrhea, pneumonia, and meningitis, where appropriate.

- OneHealth changes:
    - Added two new depression interventions and linked them to corresponding interventions in the NCD module.
    - Updated anxiety interventions and linked them to the NCD module.
    - Added new default treatment inputs for various NCD and MNS interventions.
    - Adjusted default treatment inputs for Pentavalent vaccine.

Version	Spectrum 5.22
Date	2 March 2015

- General
    - Added the ability to drag and drop PJNZ projection onto Spectrum's workspace so they may be automatically opened.

- AIM
    - Added EPP 2015 R2
    - Using EPP's AgeRange in SPT file to set the last year for prevalence in HIV calculations.
    - Fixed date format problem with UA files.
    - Added AEM "Load AEM result files" menu item. This should be selected after files are written to Spectrum from AEM excel model.
    - Changes to HIV calculations
    - Fixed problem with scroll bar not showing on Adult ART editor with low resolution.

- LiST
    - Added editor comments for Maternal Nurtrition affected fraction.
    - Coverage output in Results now using same functionality contained in Extract for coverage variables.

- OHT
    - Fixed problem with situation analysis country files for immunization program area.

- o Changed default target population on various interventions.
- o Fixed hover notes for ART and TB interventions.

Version	Spectrum 5.21
Date	20 February 2015

- • General
  - o Improved option for creating multiple projections in Quality Control tool.

- • AIM
  - o Added EPP 2015 R1
  - o Spectrum will now recognize changes in EPP or AEM and offer a save prompt when the projection is closed.
  - o Specific EPP files will now be saved correctly when renaming the projection on a Save As when using a custom path for java.exe.
  - o Fixed problem with date not being recognized correctly on UA file when using various regional formats.
  - o Added advanced option to select path for JAVA.EXE file for use with EPP.

- • LiST
  - o Saying yes to the CHERG message for LiST will now update the correct Health Status items.
  - o Stunting and wasting default values are no longer loaded when CHERG updates are performed with new software versions.
  - o Impacts on maternal anemia will now load default data for affected fraction correctly when resetting effectiveness via the CHERG message.

Version	Spectrum 5.2
Date	17 February 2015

- • General
  - o Fixed problem with calcstate when using a non-AIM projection starting after 1985 where the first year population was modified.
  - o Fixed problem with results not showing when calculation prompt was answered with a no for re-project.

- • AIM
  - o New Inputs AIM 2015
    - ▪ PMTCT
      - • Updated data on current breastfeeding practices from new DHS
      - • The transmission effectiveness figures have been updated to include the PROMISE data. The effect is to reduce the default transmission assumption for Option B perinatal and ART started during pregnancy perinatal to 0.9%

- New input for the number of women starting on ART at less than 4 weeks before delivery. This carries a higher transmission rate (9%).
- Children
- EID. Percent of children tested through early infant diagnosis.
- Co-trimoxazole. Reviewed the ARROW data on the effect of co-trimoxazole. It is not clear than any change in our default inputs is required.
- Inputs for the new CD4 model in the Advanced Options editor
- Distribution of new infections by CD4 percent
- HIV mortality for those not on ART by CD4 category, age and sex
- HIV-related mortality for those on ART by CD4 category, age, sex and duration on ART
  - Adults
    - Regional patterns for progression rates and non-AIDS mortality.
    - We don't have these patterns yet but are expecting them from Jeff Eaton's work to estimate these parameters jointly. In the meantime all the regional patterns will be the same.
    - Include uncertainty in progression and non-AIDS mortality using the 1000 draws from IHME.
    - Updated data on prevalence by age from new DHS and AIS. These data can be accessed in the Validation menu under Prevaence 'Enter/Edit' by clicking the 'DHS Data' button.
    - Median CD4 count at ART initiation. This input may be useful in cases where eligibility criteria change a lot in one year to avoid having too many new patients allocated to the high CD4 categories.
    - The TFR reduction factor for HIV+ women can now be varied over time.
    - ART drop out has been added to the adult ART editor. The effect is to increase mortality of those on ART.
    - New option to input the number starting ART rather than the number on ART.
    - EPP
    - Send new data to EPP on the number of HIV+ people becoming age 15 by CD4 count and ART status.
  - Special features
    - A 'Plot' button has been added to the Program Data input editors. Clicking this button produces a chart showing the inputs. It is intended to simplify review of input data.
    - Aggregate: The Aggregate tool has been updated to include more variables. It also has a feature where you can compare the aggregated results from a collection of sub-national projections with a national projection so see how they differ.
    - Incidence fitting tool. A new tool to estimate the incidence trend by fitting to program estimates of PLHIV, AIDS deaths and new cases.

- New Results AIM 2015
  - PMTCT
    - Coverage of most efficacious regimens (excluding SD NVP)

- Number of HIV+ women breastfeeding at 3 months
- Number of HIV+ women breastfeeding at 12 months
- The calculation of the number of HIV+ pregnant women has been updated based on Peter Johnson's suggestions
- Children
- EID. Number of infants diagnosed through EID
- Working on new pediatric model that will track children by CD4 category and use new IeDEA patterns of mortality on ART

■ Adults
- Number on ART by age
- Non-AIDS deaths among those on ART and those not on ART
- Total population
- Incidence per 100,000 population
- Incidence per 100,000 population by age
- AIDS mortality per 100,000 population
- AIDS mortality per 100,000 population by age
- Total deaths to PLHIV
- Validation
- Number on ART by age
- HIV prevalence among pregnant women compared to ANC prevalence
- Extract
- Added sub-population indicators: PLHIV, prevalence, incidence

o Various calculation changes.
o Added EPP 2015 R1_RC
o Added new Russian strings. Adjusted the interface where needed.to accommodate new strings.
o Updated editor row headers in the fit incidence form.
o The AEM options were added but are not functional.
o Fixed an old read/write problem regarding Adult Transition Parameters.
o Fixed problem with epp.ini error.
o Added "Source" to the end of the AIM horizontal menu so it is readily available.
o Added second stacked bar to the PMTCT editor graph that represents post natal prophylaxis
o Changed the Early Infant Diagnosis editor to be number or percent. Added the ability to covert between number and percent for EID. Also added EID to the graph for children receiving treatment.
o Changed the incidence fitting tool to have an expanded editor that allows percent under count and Number of years from infection to case report to be input. These values are then used to adjust the PLHIV, New HIV cases and AIDS deaths for use in the optimizer.
o Change the label for the Immigration editor to "Migration". Also modified the restrictions on the chart to allow negative numbers.
o Modified the Uncertainty Analysis tool to indicate when an analysis is out of date. Also changed the graph to have all lines the same color with the upper and lower bounds as dashed lines.

- Changed default data for HIV transmission on ART to 0.7.
- Added the Median CD4 count at ART initiation as an indicator in the ART-Dec31 results. This has also been added to the ART-Dec31 summary table.

- This fixes the issue with the Prevalence validation display showing large negative prevalence numbers for 2-4 year olds.
- Restore default data button on the Pediatric and Adult advance parameter editors now reloads global data rather than data from EasyAIMData. Also all default values shown in the editors (ie, black numbers) are always global, they used to start out as EasyAIMData defaults.
- Added EPP Beta 2
- Fixed up the Adult ART editor to allow the user to switch between options and not lose any values entered in the editors.
- Total non-AIDS deaths to HIV population: Added new result indictor to AIM/Results/Total population, also added to HIV/AIDS summary table, Extract and Aggregate.
- CD4 Distribution for children: Added four new indicators to AIM/Results/Children (0-14) to show stacked Charts and tables for CD4 distribution with and without ART for children 0-4 and 5-15. Also added to Extract.
- PMTCT editor: Removed post neonatal results from the plot chart. Also made the plot function begin at the year 2000 or first year of the projection, whichever is greater.
- Swapped the positon of the "Eligibility" tab with "Program Statistics" tab, so the "Eligibility" tab is first. This was done because there are selections on the Eligibility tab that have an effect on one of the coverage editors on the Program Statistics tab.
- Changed the label on the Adult and Child ART editors to include "(do not enter both in the same year)" to help the user understand that all values should be either percent or number in a particular year.
- Early infant diagnosis editor: added the restriction that values must be between 0 and 100.
- Advanced Options tab: fixed the issue with Spectrum crashing if the user selected "Developing Countries" from the regional selections in the Pediatric transition parameters.
- Total non-AIDS deaths to HIV population: Added new result indictor to AIM/Results/Total population, also added to HIV/AIDS summary table, Extract and Aggregate.
- CD4 Distribution for children: Added four new indicators to AIM/Results/Children (0-14) to show stacked Charts and tables for CD4 distribution with and without ART for children 0-4 and 5-15. Also added to Extract.
- PMTCT editor: Removed post neonatal results from the plot chart. Also made the plot function begin at the year 2000 or first year of the projection, whichever is greater.
- Swapped the positon of the "Eligibility" tab with "Program Statistics" tab, so the "Eligibility" tab is first. This was done because there are selections on the

Eligibility tab that have an effect on one of the coverage editors on the Program Statistics tab.
- o Changed the label on the Adult and Child ART editors to include "(do not enter both in the same year)" to help the user understand that all values should be either percent or number in a particular year.
- o Early infant diagnosis editor: added the restriction that values must be between 0 and 100.
- o Advanced Options tab: fixed the issue with Spectrum crashing if the user selected "Developing Countries" from the regional selections in the Pediatric transition parameters.

- Demproj
  - o Fixed problem with calculations caused in Beta 17.
  - o Removed restrictions on values for Female and Male age distribution for migration.

- FamPlan
  - o Postabortion care should be turned OFF when LiST is active. LiST does its own calculations of impact of post abortion care on maternal mortality. It should be turned ON if LiST is not active. These were reversed previously.
  - o Fixed problem with PAC inputs not saving correctly.

- LiST
  - o Added "Number of cases by cause by birth cohort" result under Incidence and etiology menu. Added "Cause-specific deaths in children under five years of age by year of birth cohort" result under Child menu. Added these results to Extract as well.
  - o New default data.
  - o Fixed various editor problem with effectiveness values.
  - o Fixed problem with configuration pop up for stunting and wasting under results - nutrition.
  - o Fixed problem with Extract showing incorrect coverage when using cohort model.
  - o Fixed problem with input variables names not showing in Extract.
  - o Fixed problem with default data and fertility risks.
  - o Fixed problem with default data and fertility risks.

- Time
  - o Various changes to calculations.

- NCD
  - o Various changed to NCD beta module

- UA
  - o Fixed calculation error.

OneHealth

- Added target population in MNRH and Immunization programme areas for "Infants surviving past one month". Changed target populations for all default vaccines except HPV to this new target population.
- Added the ability to map budget categories to user-entered other activities from Programme Costing and various Programme Management editors.
- Fixed bug in locked projection feature where NCD intervention coverages would not transfer over from locked projections to master projections.
- Fixed bug with blank other activities showing up in Programme Management editors.
- Fixed mapping bug with various Programme Costing indicators in Budget Mapping.
- Fixed problem with calculating previously saved projections.
- Added Intervention Costing indicators to Extract.
- Replaced HIV+ pregnancies with women needing PMTCT in the target population editor.
- Adding target population for people with depression.

Version	Spectrum 5.13
Date	23 January 2015

- LiST
  - Fixed problem with default data and fertility risks.

Version	Spectrum 5.12
Date	14 January 2015

- LiST
  - Fixed problem when changing base year of coverage concerning coverage values.

Version	Spectrum 5.11
Date	13 January 2015

- LiST
  - Fixed problem with coverage changing after multiple file saves.
  - When creating a projection or reloading default data, vaccine data are no longer padded backward from future known year values in default data.
  - Fixed problem with LiST scenario generator using csv upload.
  - Fixed problem with Kiribati default data.
  - Fixed problem with vaccines efficacy editors.
  - Fixed problem with prior 4 years to baseline year's vaccine coverage being incorrect when you creating new projections.
  - Fixed problem with reading default country data incorrectly for 2013.
  - Fixed problem with creating LiST projections ending before the current year.
  - Added updates to default country data.
  - Fixed bug in vaccine calculation.
  - Fixed problem with LiST costing's results not being saved correctly.

- o Fixed small problem with EasyLiST results.

- OHT
  - o Fixed problem when calculating coverage in intervention editor.
  - o Added new MNS and NCD interventions.
  - o Added in Beta version of OHT scenario generator.

Version	Spectrum 5.1
Date	1 December 2014

- Global
  - o Spectrum development environment moved to Delphi XE6
  - o Calcstate revised in incorporate the following:
    - The use of the AIM module with a first year of the projection starting in 1970 or latter.
    - Efficiency of calculations increased when using a first year later than 1970.
    - All projection stating in 1985 and earlier are considered native projections and will not use the CalcState feature.
    - Older projection will be converted if possible to use new Calcstate mode.
  - o Added new translation for French and Portuguese.
  - o Fixed problem with standard charts where the 15th line will have the color white (Hence not appearing). The color is now set to gold.
  - o Additional work on reading in projections created prior to 5.1 which also affected Spectrum tools.
  - o New Spectrum projections now default to 2014, not 2015, in projection manager.
  - o Additional work on reading in projections created prior to 5.1 which also affected Spectrum tools.
  - o Additional work on reading in projections created prior to 5.1 which also affected Spectrum tools.
- Aggregate
  - o Fixed problem with calculation.

- AIM
  - o Adjusted incidence editor.
  - o Added 2013 EasyAIM data.
  - o Orphan calculations currently only work with projections starting in 1970.
  - o Changed 'Total 45q15' indicator to show as per 1000 (390.8).
  - o Fixed problem with incidence not setting correctly when creating projections after 1990.
  - o Added EPP R24 to install file.
  - o Added indicator Total HIV deaths for 15+ to both results in AIM and Extract.
  - o Allow EPP to be used for any projection that has a first year of 1986 or less.

- Demproj

- o Removed requirement of UPD when opening an existing projection.
- o Fixed error with multiply feature in first year population editor.
- o Fixed bug when reading in files that use a Model table other than UN_POP Life Table.

- Extract
  - o Added in new extract indicator for family planning metrics.

- FamPlan
  - o Fixed bug which caused Demproj population ages 0 to 4 to change between calculations (it would stabilize on the second calculation). Error was caused by family planning TFR.
  - o Fixed problem when calculating a projection where Survey year was less than First Year.
  - o Worked on LAM implementation.

- LiST
  - o Various changes to breastfeeding editor.
    - Use the 1-5 months exclusive breastfeeding figures as the default promotion figures for all countries
    - Completely hide the breastfeeding promotion section when the prevalence toggle is on
    - Fix problem with whole-table duplication of 1-5 months exclusive breastfeeding not affecting promotion
    - Fix such that, when the promotion figures are changed, the greyed-out prevalence figures update immediately
  - o Harmonized breastfeeding results tables with categories in "Coverage-->Breastfeeding" editor.
  - o Added the ability to cost custom interventions in LiST costing.
  - o More work on negative mortality rates.
  - o Fixed problem with coverage editor not showing correctly.
  - o Fixed problem with BF editors not responding not activating correctly depending on BF type selected (promotion or direct).
  - o Added calculation links for postnatal curative interventions.
  - o Adjusted breastfeeding promotion editor to use exclusive breastfeeding of children 1-5 months of age.
  - o Improved memory management.
  - o Added changes to CSV upload for Scenario Generator.
  - o Added the ability for neonatal interventions to have an effect on post neonatal causes of death. The idea here is to add effectiveness around the post neonatal cause of death "Other" for the selected intervention. You will want to use the "Show All" option in this editor in order to see the neonatal interventions.
  - o Added custom cause of death option.
  - o Fix for coverage extracted problem.
  - o Fixed problem with cause of death results not saving correctly.
  - o Fixed problem with negative mortality rates improper allocation of deaths averted by cause.
  - o

- Adjusted read file procedure to properly set variables with zeroes if specified by the user input. Previously zeroes input was ignored in favor of default values.
- Further work on Missed Opportunity tool.

- NCD
  - Fixed NCD Prevalence result bug. Prevalence would change between calculations.
  - Fixed the perinatal depression calculation correction. The correction takes the regular depression epidemiology values and multiplies it by a small percentage based on female population.
  - Fixed problem with default data not loading correctly if NCD was added in the projection manager after the country selection.
  - Fixed problem with OHT not correctly reading coverage from the NCD module.
  - NCD Fix for healthy years lived. The problem was no impact were being set when an equilibrium state could not be reached.
  - Removed initial perinatal depression correction from start of new projection.
  - Added in feature to reload all default NCD Data.
  - Reordered disease list and made changes to postnatal string
  - Updated calculations to perinatal depression.

- RAPID
  - Fixed problem with loading in old RAPID projections.
  - Fixed various editor issues.

- RAPID Transfer tool
  - Now, if the first year population in the excel file contains a single blank or zero, then all of those values are ignored and Spectrum will use the UPD population instead.

- TIME
  - Fixed problem with fit data curves procedure.
  - Modified TIME to work correctly with CalcState and projections starting after 1970.
  - Fixed bug where TIME was not turning on for old projections with older TB module activated.
  - Fixed calculation problem with older projections.

- OHT
  - Fixed small problem with reading of the Logistics' data file.
  - Fixed problem when adding new programme area.
  - Intervention coverage results now displays the inpatient days indicator.
  - Added ability to include custom staff types in treatment inputs.
  - Removed restriction for adjusting LiST's configuration years when OHT is active.
  - Adjusted programme area results to display proper programme areas and ART interventions.
  - Fixed Family planning metrics cost issue, medical supplies were being double counted
  - Added new Chinese string translations.

- o Modifications made to locked projection function.
- o
- o Changed exchange rate to be the same at all years by default.
- o Added "Total cost per service" result to OneHealth in disease specific costing mode.
- o Fixes for disease specific costing.
- o Added costs per service in disease specific costing mode.
- o Fixed problem with projection being created when user clicked Back in OHT wizard.
- o OHT coverage connections for Bipolar, alcoholism and Conduct disorder from NCD module
- o IC
  - Fixed calculation where inpatient days results would show zero under certain circumstances.

  - o Logistic
    - Fixed problem with incorrect database coding.
    - Fixed the show only activated ingredients drugs and supplies in LG (Bills email)
    - Added search function to the Quantity sheet.

  - o Programe Costing
    - Fixed TB equipment list along with NCD file error.

- • OHT Extract
  - o Fixed problem with costs of FP commodities and supplies from OHT which was extracting only zeros.

Version	Spectrum 5.07
Date	15 August 2014

- • Aggregate uncertainty
  - o Fixed calculation when using projections with varying start years.

- • GOALS
  - o Fixed problem with uncertainty analysis not reading PJNZ files.

- • LiST
  - o New update for Missed Opportunity tool.
  - o Various changes to Missed Opportunity tool.
  - o Added 25% cap for Thermal Care and KMC in EasyLiST.
  - o Fixed problem with EasyLiST reducing coverage when baseline was greater than target covered. Now coverage is flat lined.
  - o Eliminated the ability to select the header case management of premature babies in EasyLiST editor.
  - o Fixed problem with projections that had calculated cohort vaccine data that were not being saved correctly.

- o Fixed problem with delivery interventions in LiST Scenario Generator.
  - o

- Time
  - o Fixed issues with reading of old projections.
  - o Added DST coverage to data file.
  - o Fixed problem with coverage values not being saved at any year other than the first one.

- OHT
  - o PDF viewer changed to internal browser.
  - o Fixed a problem when trying to download TB situation analysis for Sierra Leone.
  - o Update TB population in need default values.
  - o Logistics
    - ▪ Removed costing combo boxes from non-costing results.
    - ▪ Fixed small UI bug for small laptop screens.
  - o Financial Space
    - ▪ Modification to editors.

  - o Intervention costing
    - ▪ Fixed calculation for target population of Number of HIV patients in ART care.
    - ▪ Fixed coverage transfer for malaria interventions.
    - ▪ Added two new TB interventions.
    - ▪ Fixed incorrect target population calculations.
  - o Budget
    - ▪ Added ability to view Budget Mapping funding source results by budget category.
  - o Financial Space
    - ▪ Modification to editors.

Version	Spectrum 5.06
Date	5 June 2014

- Demproj
  - o Fixed problem with older projections not be read in correctly.

- OHT
  - o Added new Global Fund Intervention Framework default budget.

Version	Spectrum 5.05
Date	4 June 2014

- LiST
  - o Fixed problem with reading effectiveness for age 1-59.

Version	Spectrum 5.04
Date	3 June 2014

- General
  - o Added digital signature to install file.
  - o Added version number to module status form for last compile.
  - o Fixed problem with import not working correctly when importing projections with differing years from main projection.
  - o Added more appropriate message when saving and opening projections where user permissions are an issue.
  - o Added check for corrupted projection files when opening projections.
  - o Added integrity check for saved PJNZ files to ensure proper validity of file.
  - o Calcstate adjusted to work with projections starting in 1990 and latter. Thus all projection starting before 1990 which include AIM will not use calcstate.
  - o Fixed problem with importing LiST module data that contains custom LiST interventions.
  - o When deleting a module within a projection, deleted module's data file is now removed from PJNZ or file folder for PJN file.
  - o Fixed various small memory leaks.
  - o When extending years in a projection, exchange rate is now duplicated from old final year.
  - o Relaxed requirement requiring all active modules having default data when creating projections.
  - o Fixed problem with Time's optimizer relaxing floating point error checking, which in turn would cause erroneous calculations to produce NAN's unchecked.
  - o Fixed issue with reading the country code of older projections.

- Aggregate uncertainty:
  - o Fixed issue with reading the UAC file when using new .pjnz format.

- AIM
  - o Fixed problem when opening pjnz projections which contain EPP, and have had the name of the pjnz file manually changed outside of Spectrum.
  - o Added EPP R22
  - o EPP TYP file no longer read so the epidemics type set by the user will not be changed if the SPT file is re-read.
  - o Fixed problem with Spectrum not recognizing projection changes when visiting EPP only.
  - o Removed children from the sub-populations table for generalized epidemics.
  - o Fixed problem when evoking EPP with long file path names.

- AIM Uncertainty
  - o Fixed issue with saving UA and UAC files when PJNZ is being used.

- Demproj

- o Fixed problem with PMTCT option not being read correctly with old projection and AIM inactive.
  - o Fixed calculation error when using non-UNPOP country specific life table.
  - o Fixed problem with WPP 2012 default source not being saved to file.

- Extract
  - o Improved efficiency when selecting multiple projections for processing.
  - o Fixed intermittent UI problems.
  - o Fixed issue with creating transposed file.
  - o Save button is now available in extract redesign.

- FamPlan
  - o Fixed problem with FamPlan changing ASFR table to UN Arab when reading a projection.
  - o Adjust default country data.
  - o Updated default data.
  - o Fixed problem with relative risk chart.

- Goals/RNM
  - o Added new custom tool, Impact Express, available in developer mode.
  - o Updated Scenario Generator to include more coverages and to allow the possibility to extract a pre-selected set of indicators.
  - o Changed default value, Reduction in male infectiousness when circumcised from 30 to 0 percent.

- LiST
  - o Fixed problem with Missed Opportunity dialog not loading the correct user selected file.
  - o Fixed problem with display of percent of cases by pathogen not showing all pathogens.
  - o Fixed problem with vaccine coverage not crossing correctly between standard and cohort approach.
  - o Updated Missed Opportunity default country data.
  - o Adjusted result menu for cases averted to match the structure of other interventions.
  - o Added button to recalculate AIM as needed to update cause of death due to AIDS in Health Status editor.
  - o Rearranged Tools menu in Results.
  - o Updates to default data.
  - o Revived previous version of Missed Opportunities that let users create csv files for use in the Excel-based Missed Opportunities.
  - o "Iron folate supplementation" and "Multiple micronutrient supplementation" now appear in both the Excel- and Spectrum-based versions of Missed Opportunities.
  - o Included missing default data for "Iron folate supplementation" and "Multiple micronutrient supplementation" in Spectrum-based Missed Opportunities.
  - o Fixed problem with delivery intervention calculations not being calculated correctly.

- Added the ability to sort miss opportunities tool's results by number of lives saved or Intervention type.
- Improved summary of sources result by including better labeling.
- Improved alignment of editor columns when displaying multiple editors by year on a single form.
- In EasyLiST added checkbox to show all Interventions.
- Optimized data file to reduce file size of CS file.
- Created Missed Opportunities Tool inside of Spectrum.
- Fixed 'Out of system resources' and 'Invalid handle' errors in Extract. Fixed problem with Spectrum interrupting others programs while Extract was run.
- Fixed problem with results not being saved.
- Fixed memory leak with new source feature.
- Moved thermal care to curative and created a new intervention in curative (full supportive care for prematurity). Linked three interventions, thermal care, KMC and a new full supportive care.
- Modified output file for Missed Opportunities tool to include new intervention, full supportive care for prematurity.
- Restructured internal variables into object instances containing all values and parameters in a single location. This architecture allows greater flexibility for internal data manipulation.
- Added the ability to display summary of LiST sources.
    - Note, due to changes in the internal representation of source data, it was not possible to fully map previously entered sources from Spectrum 4.x. You can however find these sources listed in the summary of LiST sources under results.
- Added coverages as result, produces a csv file with all intervention coverage inputs. The CSV file will use the following format: filepath_LiST_Coverages.csv and be located in the projection folder.

- LiST Scenario generator:
    - Fixed issue with reading in CSV file.

- LiST Costing
    - Added the ability to cost custom interventions.
    - Added support to cost detailed vaccines.

- Malaria
    - Added Beta Malaria Module/

- NCD
    - Updates to beta NCD Module.

- RAPID Transfer tool
    - Fixed problem with Zimbabwe not showing with country list.

- Resource Needs
    - Made corrections to the scenario generator/extract tool.

- TIME
  - Updated calculations.
  - Added Logistic curves for care and ctrl
  - Fixed various calculation problems when creating a new projection.
  - Further updated indicators and fits as well as links to OHT.

- OHT
  - General
    - Additional work on locked projections and program costs.
    - Fixed problem with locked projections allowing editing of shared data. This also fixed the problem of data mismatch as the locked projection where merged back with the master.
    - Fixed problem with OHT menus not showing when adding OHT to an existing Spectrum projection.
    - Fixed intermittent issue with copying treatment inputs to other delivery channels.
    - Fixed bug in display configuration forms for various OneHealth modules that occurred when closing a projection with the forms open.
    - Updated PINs and population in need hints for several TB interventions.

  - Intervention Costing
    - Fixed problem when loading treatment inputs from a locked projection.
    - Fixed PIN calculation for "Treatment of severe diarrhea".

  - Financial Services
    - Small changes to calculations.

  - Logistics/Intervention costing
    - Fixed problem with importing commodity quantity values from external file. Also now allow the ability to import commodity files in XLS form.

  - Logistics
    - Added new message for when commodities file failed to load
    - Fixed bug in LO when commodities fails to load.

  - Programme Costing
    - Increased maximum allowable cost for all editors.
    - Increased the cap on programme costs during editor entry.
    - Add retooling process tab to 5.1 situation analysis (see retooling process tab in workbook).
    - PPM/ISTC: National level costs (PPM tab in workbook).
      - Drill down for PPM/IST situation analysis.
      - Drill down for meeting costs.
    - Section 9.4: Programme coordination meetings: Revise to match new specs.
    - Add quality control calculations to section 4.5 Quality Control/Quality assurance.

- Updated treatment Inputs for TB interventions.
- Fixed problem with overall plan metrics display in the UH Summary Results.

Version	**Spectrum 5.03**
Date	**10 February 2014**

- AIM
  - Added the indicator Quality Adjusted Life Years (QALYs).
  - Fixed EPP bug occurring on Save As.

- DemProj
  - Issue with first year population not adjusting correctly when a multiplier is applied has been corrected. Adjusted first year population now calculates and displays properly.

- LiST
  - Fixed issue with Coverage editor not working with FamPlan active.

- TIME
  - Updated indicators and fits as well as links to OHT.

- OHT
  - Intervention Costing
    - Updated TB treatment inputs and added new malaria interventions.
  - Intervention Costing
    - Updated TB interventions.
    - Fixed bugs with loading custom drug and supply list.
  - Programme Costing
    - Fixed bug with extending year.
    - Updated drill downs for TB-related costs.

Version	**Spectrum 5.02**
Date	**31 January 2014**

- AIM
  - Added EPP 2014 R20b
  - Corrections in calculations to keep the number of HIV+ people not on ART from going negative.
  - Added HIV Mortality fitting tool.

- DemProj
  - Fixed result for single age output.

- Goals:

- o Population currently vaccinated now shows results for males and females as well as both sexes. This change is also applicable in Extract.

- LiST
  - Added the 999.99 value for all countries into DBC for NN prematurity for Preterm SGA and AGA for Impact of birth outcomes on mortality, added note to the editor explaining the values.
  - Fixed issue with recalculating in child birth editor when "allow LiST to calculate intervention coverages" is not selected and configuration editor is saved. Also fixed the same issue when using SG, UA, EasyLiST, Missed opportunities, and SG csv file tools.
  - Corrected etiology names in editors, results and extract.
  - Fixed delivery care cut point from 90 to 95% in child birth editor.

  - LiST Costing
  - Changed calculation for other-recurrent and capital costs for outpatient visits.
  - Updated treatment inputs for ectopic pregnancy case management and post abortion case management.
  - Added in inpatient day portion of the other-recurrent and capital costs to editors and calculations.
  - Fixed population in need for balanced energy supplementation.
  - When adding LiST costing to a projection, first year of costing now defaults to LiST base year.
  - Changed default delivery channel distributions for management of obstructed labor intervention.
  - Removed delivery channel restrictions on labor and delivery management sub-interventions.

- RNM
  - o Added Child ART costs the ARV Therapy row in the Resources Required summary table.

- OHT
  - o Added new TB non-impact interventions.
  - o Programme Costing
    - Updated TB lab Equipment list.
    - Updated TB default training staff.
    - Added new TB equipment drill down for microscopy, culture, DST, and molecular labs.
    - Add new tab/editor in 5.3 "called Maintenance of existing labs".
    - Add default unit costs for TB infection control (10.3).
    - Add drilldown to meeting costs in PC row 9.4.
    - Add drill down to Pal Consultative meetings and situation analyses.

- o Add Community involvement drill downs for meeting costs, field visits, and situation analysis.
- o Add drill down for Advocacy and communications.
- o Added Chlorhexidine intervention and linked to LiST.
- o Removed duplicate folic acid supplementation for menstruating women intervention (non-impact duplicate).

Version	Spectrum 5.01
Date	20 January 2014

- Global
  - o All data files for a single projection are now contained in a single data file with a PJNZ extension.
    - Spectrum will still allow you to read PJN files to maintain backward compatibility. "SAVE AS" can also be used to write out a projection using the previous PJN multiple file format. Exported 4.x projections in the zip format can be loaded in the "File Open "window by changing the type in the lower right hand corner.
  - o Single source for both the Help Screen and the Manual. The install file contains the Spectrum manual in English, switching between languages will generate a prompt to download the appropriate language specific manual if needed.
  - o Reduced install file size by almost 40mb.
    - This was done by removing the Demographic data from the install file. Spectrum will prompt the user to download (Internet connection required) data as needed when creating a projection. Alternatively, a demographic data package will be available for download which will contain all the country data in a single install. Since the Demographic data does not normally change, installation of data will only need to occur once and will work with subsequent installed versions of Spectrum.

- AIM

  - o Added UNAIDS 2012 data.
  - o Added EPP 2014 R20a
    - EPP's SPT file now read in UTF-8 format.
    - EPP prevalence adjustment; added a new input, Maximum adjustment factor' to the Direct Incidence Input screen with a range between 1 and 3 and default of 1.2.
    - New "ep4" file is now created when EPP configuration is clicked
    - EPP options in the Incidence dropdown menu now enabled after the EPP .xml file is created by EPP.
  - o Adjusted calculation for excess non-AIDS mortality of IDU.

- o Added the new child indicator, "Number of HIV+ children not on ART by time of infection" (which is available in Extract as well).
- o Fixed problem with TB default number.
- o Issue that occurred when all pregnant women were eligible for ART Spectrum was not allocating some of them to CD4 counts > 350 has been corrected.
- o Changed the name of the indicator "Total ART coverage (15+)" and "Total ART coverage (0-14)" to "ART coverage of eligible population (15+)" and "ART coverage of eligible population (0-14)".
- o Added the indicators "ART coverage of all HIV+ adults (15+)" and "ART coverage of all HIV+ children (0-14)".
- o Removed Drop-out rates from Adult ART editor.
- o Corrected Adult ART editor spacing to make sure labels for linear projection is visible.
- o The Incidence by age epidemic pattern selection does not change if the user clicks cancel.
- o The regions used by countries to determine ART mortality have been updated.
- o The values for receiving ART in the sub-populations table now match those for Dec31 in the results.
- o Incidence in the summary table for 15-24 and 15+ now matches the incidence output of the regular indicators.
- o Changed results to display only "ART Dec 31". When in developer mode "ART mid-year" will also be available.
- o Removed ART drop-out rate from Adult ART editor. Fixed Adult ART editor so the lable for "Liner projection of past 3 years" shows properly.
- o Fixed problem with incorrect message showing files being overwritten when using SaveAs with EPP files.
- o Fixed problem where Spectrum was producing incorrect ART50+ values for EPP.
- o Prevalence validation now has a button that allows the user to retrieved DHS survey data for the country, if it exists.

- • AIM Scenario generator
  - o Now creates a scenario projection when the "Set base year coverage at 2012" checkbox is selected.

- • Demproj
  - o Added UNPOP World Population Prospects 2012 data.
  - o Corrected results configuration and Extract to display "female" for all of the fertility indicators.
  - o Corrected the display of the number of children (0-14) receiving cotrimoxazole.
  - o Reworded the labels on Model life table tab so it is clearer that there is an option to select a regional life table.

- Extract
  - Fixed issue with proper display of indicators as column headers.
  - Fixed code so values for both sexes for the AIM indicator HIV+ Children by single age (0-18) will have values.
  - Added LiST UA calculation option to Extract in order to facilitate batch processing.

- FamPlan
  - Default effectiveness for Traditional changed from 100 to 50.

- LiST
  - Country specific values added to DataByCountry for syphilis effectiveness and Impact of PCV on meningitis incidence.
  - Calculations corrected for meningitis incidence.
  - Fixed problem with meningitis outputs under the incidence and etiology not showing up correctly when Extracted.
  - Added Diarrhea, pneumonia and meningitis incidence to the items that are read in when the user says yes to CHERG.
  - Fixed problem with the Pneumococcal effectiveness of vaccine (cohort approach)' not being set properly for Three doses.
  - Fixed problem with Default data not being read correctly on new projections.
  - When LiST is active, LiST's base year is used when calculating deaths averted under AIM Impacts regardless of where the user selects the indicator.
  - Fixed read of old projections so default values for Sepsis and Prematurity as they relate to impact of breastfeeding on mortality will not be overwritten.

- LiST Costing
  - Added sub interventions for Labor and delivery management in LiST costing.

- TIME
  - The current TB module was split into two unique functional areas. TB estimates and TB Impact which now comprise the TIME module.
  - Further corrections to the TB calculations which were causing incorrect calculation faults.
  - Fixed problem with calculation not working after projection was saved.
  - Fixed problem with default data showing incorrectly for some countries.

- OHT

  - Built a function for changing the order of interventions.
  - Added ability to move multiple interventions at the same time.
  - Added ability to change the availability of interventions for delivery channels.
  - Added groupings to the Nutrition programme area and reordered nutrition interventions.
  - Fixed bug in HIS in functional domain drill downs with consultancy values zeroing out.

- o Fixed bug in facility mapping editor.
- o Adjust treatment inputs for vaginal tablets, vaginal barrier method, and malaria treatment interventions.
- o Made intervention costing results default to selected programme area in programme area mode and selected delivery channel in delivery channel mode.
- o Fixed bug where delivery channel names would not update in results after being edited.
- o Fixed coverage link between "Pregnant women sleeping under ITN" and "IPT (pregnant women)".
- o Made coverage of "ITN/IRS - Ownership of insecticide treated nets (ITN/LLIN) or household protected with indoor residual spraying" in LiST the greater of the coverages for "Insecticide treated materials" and "Indoor residual spraying" in Intervention Coverages.
- o Adjusted hover note for "Treatment for new adult cases which are drug-sensitive" in Intervention Coverages
- o Added ability to edit delivery channel names.
- o Linked national programmes to programme areas in delivery channel mode and allowed for editing of programme areas and subgroups as well as reorganization of interventions under programme areas.

Version	4.71
Date	3 December 2013

- • AIM
  - o Changed editor to allow a maximum of 180 months for children's Eligibility for treatment.

- • AIM Scenario Generator
  - o Adjusted eligibility for children >= 5 years to 500 beginning in 2013, this is for the WHO 2013 checkbox.

- • Demproj
  - o Fixed problem with First Year population not being saved correctly when using the editor in Single Age mode.

- • Goals
  - o Added default data for Kenya.

- • LiST
  - o Fixed problem with double counting the affected fraction for the impact of vaccines on diarrhea cases.
  - o Added a formal link between pneumococcal vaccine and the post neonatal other cause of death.
  - o Breastfeeding and a total line was added to the Diarrhea Cases Prevented by Intervention result.
  - o Added Rotavirus to cases (diarrhea) averted by intervention.

- o Added the ability to show Coverage input as a result.
- o Added result looking at the cases (diarrhea, severe pneumonia, meningitis) averted by intervention.
- o Fixed problem with deaths averted not immediately calculating correctly when changing base year of coverage.
- o Therapeutic feeding calculation is changed so all successes are placed into the -2to-1 category. In the past they were going into each of three categories, moving from <-3 to -3to-2, -2to-1 and >-1.
- o Management of moderate malnutrition change, we currently allow people to move from -3to-2 into <-3 as they progress, this has been changed so people now remain in the -3to-2 category.

- Extract tool:
  - o Added filename of file currently be processed to progress bar.

- RAPID transfer tool
  - o Fixed problem with calculation due to recent changes in Spectrum calculation procedure, namely Calc State.

Version   4.7
Date   11 October 2013

- General
  - o When copying from editors or result tables, Spectrum would normally copy the value as they are formatted in the editors. Spectrum now has the ability to copy the values unformatted or with full precision. By default this is turned on for the editors and off for the results. This can be changed under options.

- AIM
  - o Added an option to AIM Scenario Generator that allows the "EPP prevalence adjustment" to be set as an option.
  - o Added new tool, HIV positive Tracker. This tools allows the selection of multiple projections and during processing tracks the number of people infected by HIV at birth by age.

- Demproj
  - o Renamed UPD file to use actual country name along with country code.
  - o Newly created projections will use single age for First Year population input. This can be configured under Demproj's projection parameters. Any projection created new with FamPlan active which will continue to use 5 year age groups by default.
  - o Fixed mistake in the calculation of 45q15 in DemProj. This indicator should be calculated over ages 15 to 59 not 15 to 49.

- FamPlan
  - o Fixed problem with CPR being set to zero with LiST costing activated.

- LiST

- o Fixed problem with Easylist not working with multiple projections.
- o Added summary of incidence for diarrhea, pneumonia and meningitis 0-59 month category. Formerly we had the incidence for the individual age groups only
- o Fixed problem with a change in base year of coverage not updating the default values for all loaded projections when multiple projections were in use.
- o Default base year 2012
- o Fixed problem with display not showing impact of breastfeeding for 1-59 months.
- o Fixed problem with stillbirth data and affected fractions not loading correctly.
- o Fixed problem with Vitamin A not being allocated correctly in the deaths averted results
- o Fixed problem with Breast Feeding promotion not being displayed without using "show all Intervention" during a scale up.
- o Fixed problem with the CSV option in Scenario Generator not setting vaccine coverage data correctly.
- o IFA-MMS effect on mortality issue has been resolved. Values calculated for deaths prevented by cause now equal values for deaths prevented by interventions.
- o Fixed error message that occurred when clicking on the antenatal care checkbox on the pregnancy tab of the coverage editor.
- o The dialog that appears when opening a newer projection in an older version of Spectrum now offers an option to apply the user's decision to all subsequent projections.
- o "Etiology" changed to "Incidence and etiology" in results.
- o Values for maternal effect size now turn red when they are changed from the default values.
- o Corrected read issue with projections that had custom interventions. The custom intervention coverage values now display properly.
- o Corrected calculations so results for deaths averted for MMS values are displayed.
- o Added highlights and directional arrows to main edit menu.
- o Modified stunting and wasting calculation to accommodate zero entries in distributions.
- o Fixed issue with stunting, wasting and pathogens being read in properly for CHERG data update and when data is reset in Projection Manager.
- o Added stunting and wasting to the optional default data updates when opening older files with new versions of LiST.

- • LiST Scenario Generator
  - o Fixed spacing error in Window.

- • Scenario Generator
  - o Fixed default values for estimated percent of HIV+ for TB and Discordant couples.

Version	4.69
Date	12 August 2013

- • General
  - o Added beta version of sub national projection wizard. This wizard will assist the user in creating sub national projections based on an existing country projection.

- o Fixed problem with comparison file load causing Open Projection and Save Projection to be greyed out if error occurred during load.
  - o Removed Safe Motherhood and Allocate modules. The LiST module is a more current and robust alternative to the Safe Motherhood module.

- AIM
  - o Fixed problem with CTX calculation.
  - o Fixed problem with breastfeeding not being copied should the final year of the projection is extended.
  - o Added checks to ensure EPP numbers for incidence stay between 0 and 100.
  - o Fixed problem with paternal orphans' calculation.

- Demproj
  - o Fixed incidence editor to show EPP adjustment checkbox.

- Famplan
  - o Fixed problem with Method mismatch error when loading two projections while switching languages.
  - o Fixed problem with incorrect source information for default data.
  - o Fixed problem with default data loading incorrectly for some countries, including South Sudan.
  - o Fixed access violation when using "Reducing unmet need for contraception goal."

- LiST
  - o Fixed problem with default data not loading for those countries where regional averages are used.
  - o Removed the < 1 month column from the top editors in each tab of the Effectiveness of interventions on incidence editor.
  - o Corrected a saving problem with the Impacts on pneumonia incidence tab.
  - o Fixed problem with opening LiST projections without Famplan active
  - o Fixed problem when using a First Year that was < 2000. Default data was not being loaded correctly.

- Scenario Generator
  - o Added a new check box 'Use WHO 2013 treatment eligibility criteria'.
  - o If the WHO 2013 box is checked AIM will do the following in AIM -> Eligibility for treatment, starting in the base year:
    - ▪ For adults
      - Sets 'CD4 count threshold for eligibility' to 500.
      - Check 'Pregnant women', 'TB/HIV co-infected', and 'Discordant couples'
      - Sets the 'Year implemented' for the three special populations to the Base Year of the scenario.
    - ▪ For children
      - Sets 'Age below which all HIV+ should be on treatment (months)' to 60.
      - Sets 'CD count threshold for eligibility' for Age>=5 years to 350.

Version	4.68
Date	16 July 2013

- Demproj
    - Fixed problem with population varying during successive calculations.

- LiST
    - Fixed problem with custom intervention not saving correctly.
    - Fixed problem with U5MR result not matching input for base year.

- FamPlan
    - Fixed problem with incorrect default data loading for various countries.
    - Label changes

- Scenario Generator
    - Updated scenario generator to allow many new indicators in the csv file. Added code to force all scenarios created to recalculate before displaying results.

Version	4.67
Date	2 July 2013

- General
    - Default data folder is now updated as projection are being created.
    - Fixed problem with "copy chart" menu selection not showing when right click menu is displayed for charts.

- AIM
    - The values for total HIV population and HIV population by risk group (when added) now match in the results. The same is true for New HIV infections and New HIV infections by risk group.
    - When the user selects "custom" for the epidemic type in the "Incidence by age" editor, the EPP type of epidemic is now checked when the user displays the results for sub-populations. The results displayed will now be determined by the EPP type of epidemic, when "custom" is selected. In the past, the results displayed were automatically set to "concentrated" whenever the user selected "custom" in the editor regardless of EPP type of epidemic.
    - Correct problem in calculations when ART among females is 0 but the need among males is not zero.

- Aggregate
    - There was an issue in Aggregate where the values for Need for ART Dec31 were not being added correctly. That has been fixed and now the aggregate results tables for Adults 15+ and Children 0-14 display the proper values for Need for ART (Dec 31).

- FamPlan
  - Fixed problem when loading two projections simultaneously, Spectrum was reporting a method mismatched incorrectly.

- Goals
  - Fixed issue with the duplicate and interpolate in the Number of partners editor.

Version	4.66
Date	10 June 2013

- General
  - Fixed problem with loading projection with different years.
  - Fixed File history problem when saving a new projection.
  - Fixed Demographic status label in projection manager.

Version	**4.65**
Date	**10 June 2013**

- General
  - Fixed problem with CalcState not working correctly when using the multiply feature in the editors where changes in the data for historical years were not being recorded.

- Demproj
  - Corrected file path issue when using a Custom model life table.

- FamPlan
  - Reformatted source information display.
  - Added link to online family planning unit cost database.

- Goals
  - Corrected calculations to run from 1970 whenever Goals is active.

Version	**4.64**
Date	**31 May 2013**

- General
  - Fixed problems with adding modules to an existing projection containing only Demproj.
  - Module icons in the main menu, will now stay highlighted after selection until another module icon is selected. This allows for better visual identification for the active module.
  - Added multiply feature on right click of editor options.
  - CalcState: This allows the creation of projections starting in the year of choice (e.g. current year) to incorporate AIM data as if the projection was created prior to the

start of the epidemic. In this case, Spectrum will calculate as needed from 1970 to establish a "CalcState" which primes the AIM calculations for subsequent runs starting with the selected first year. This will drastically reduce calculation time. CalcState will be regenerated as needed depending on changes to inputs prior to first year.

- o Fixed problem with default country data being loaded on new projection even though option to load default data was unchecked in projection manager.

- AIM
  - o Fixed problem with "No prophylaxis" not getting set by the convert values routine in the editor resulting in error message when exiting the dialog window.
  - o Fixed issue with Sub-population table when SPT file has multiple sub group populations for a concentrated epidemic
  - o Corrected the child treatment editor, Extract, UA and DP results to have the proper December 31 values for children needing ART and Cotrim.
  - o Reformatted the CSV file produced by UA for AIDS deaths and HIV population.
  - o Added EPP R15
  - o Labels on Orphans editor corrected, so percent married and percent of AIDs deaths now represent proper values
  - o If applicable, user entered survey values for prevalence are reapplied after EPP curves are refit so that the Sex ratio editor displays correct adjusted values when sex ratio values from EPP are used
  - o Corrected issue with epidemic custom pattern being reset after running EPP. The pattern is now maintained properly.
  - o Duplicate and interpolate buttons and right click now work correctly in the Program Statistics editors.

- FamPlan
  - o Fix calculation for percent of Unmet need disaggregated across ages. Abortion will impact TFR when multiple age groups is selected.
  - o Disallow aggregation(total) for percent of unmet need if multiple age groups option is selected

- Extract
  - o Progress bar fixed.

Version	4.633
Date	7 June 2013

- LiST
  - o Added the ability to use a properly formatted CSV file as for LiST Scenario Generator.

Version	4.632
Date	24 May 2013

- AIM Uncertainty
    - o Fixed problem with UA data file being incorrectly read when using alternative regional settings.

Version	4.631
Date	22 May 2013

- LiST
    - o Modification to default values for measles herd effect.

Version	4.63
Date	16 May 2013

- AIM
    - o Added EPP R14

Version	4.62
Date	10 May 2013

- General
    - o Now using Setup Builder 8.x for installation file.

- AIM
    - o Fixed problem with AIM and AIM Uncertainty not being able to read in EPP's sub population table correctly.
    - o Adjusted Russian translations.

- LiST
    - o Fixed problem with LiST Scenario generator not working correctly.
    - o Correct the range check error so we can see the effectiveness of nutrition interventions.
    - o Correct the zinc effect size on diarrhea incidence.
    - o Added vitamin A impact on diarrhea incidence.
    - o Zinc affected fraction now linked to health status value.
    - o Moved the affected fraction to the last column in the delivery effectiveness editors.

Version	4.61
Date	26 April 2013

- AIM
  - Added current version of EPP (R12g) to installer.

- Goals
  - In Result total cost by intervention, added the option to select currency.

- TB
  - Adjusted Strings.

- Extract
  - Adjusted configuration format for table output for TB and other results.

Version	**4.60**
Date	**22 April 2013**

- General
  - Fixed problem with Normalize not working correctly with locked cells in selection.

- Demproj
  - Future adjustments to country specific life tables.
  - Fixed problem of LE being inadvertently set to zero when loading older projections.
  - Updated custom UN POP UPD data files. This fixed problem with Deaths being incorrectly calculated.

- LiST
  - Added the output "number of diarrhea cases by pathogen."
  - Modified input screens for Maternal delivery effectiveness, Stillbirth delivery effectiveness, and <1 delivery effectiveness. Now, there is only 1 affected fraction value amongst the delivery levels.
  - Added new output, "Distribution of pathogens in diarrhea incidence" (developer mode only) when the vaccine cohort mode is on.

- FamPlan
  - We fixed problem with percent of births with any risk.
  - Child survival inputs now entered and calibrated to the survey year. (Note: LiST must me inactive for this input)

- OHT
  - New default interventions are now deactivated by default for older projections.
  - Split sex workers' intervention into Male and Female and linked them with Goals.
  - Fixed staff capacity utilization chart to update correctly with multiple projections loaded.
  - Added French strings.

Version   4.59

Date   12 April 2013

- Limited release to UNAIDS Training

- General
  - Removed sample projection file from installation.
  - Reorganized folders in installation directory.

- AIM
  - Corrected error received on older Spectrum files looking for custom life tables
  - Corrected error for reading current default LE, IMR and U5M data when opening old projections

- LiST
  - Added malaria vaccine and vaccine D into cohort vaccines but requires testing.
  - Changed precision to 2 decimal places for the mortality rates output in Extract.
  - Fixed bug in LiST costing year display.

- Goals
  - Fixed floating point error received when viewing results after looking at those that require two projections
  - Fixed issue with changing date range when viewing different results in Goals. The date range now remains set for all results.
  - Changes the interpolation for coverage from s-shaped to linear.
  - Fixed problem in the calculation for workplace programs.

- OHT
  - Fixed range check error when we trying to open Population in Need (PIN) for HIV/AIDS and malaria sections in health services.
- TB
  - Updated default country database.
  - Fixed problem in CD4 percent editor.
  - Added other row into notifications editor.
  - Changed notification result with new values.
  - Hide N/A data points in results for line charts.
  - Fixed some historical results so NA is displayed after current year.
  - Fixed incidence table.
  - Updated TB to OHT metrics notification result.
  - Various label changes.

Version   4.58
Date   5 April 2013

- Limited release to UNAIDS Training

- AIM

- o Validation for all cause deaths and aids deaths have been added and include the ability to read mortality by age values from database.
- o Validation for mortality by age for all ages can now be read in from database.
- o Adjusted breastfeeding pattern.

- FamPlan
  - o Updated default country data for Rwanda.
  - o Fixed problem where text can be entered in a number only cell.
  - o Fixed problem where the fertility rate for ages 45-50 were negative.
  - o Adjusted goal editor to display inputs for all ages rather than one at a time.
  - o Fixed various editor problems.
  - o General revision to FamPlan
    - Expanded contraceptive methods selection.
    - Added custom Methods.
    - Added risky birth outcomes for LiST module.

- List
  - o Fixed problem with user source data not saving correctly.
  - o Small editor changes.
  - o Fix for measles herd effect and other measles issues.
  - o Adjustment to post abortion care calculation.
  - o Direct entry of fertility risks
  - o Programmed in new risk factors (prematurity and gestational age), and birth outcomes associated with them.
  - o Eliminated IUGR.

- MBB Transfer
  - o Updated stunting and wasting section for transfer from MBB to LiST.

Version	4.57
Date	1 April 2013

- General
  - o Added keyboard shortcuts to right-click editor menu.
  - o Automatically readjust editor column widths as decimal precision is changed.
  - o Fixed problem with Spectrum becoming unreliable when projections fail to load.

- AIM
  - o Fixed problem with sub-population table.
  - o Adjusted calculation for display mortality by age in the validation menu. We were showing mortality over the five year period. Most data sets for comparison will show annual mortality rates. Spectrum now calculates to show annual mortality (deaths / population). This also fixes the problem with the display of the 80+ category.

- o   Default year for sub population tables is now set to 2012.
- o   Added R12 of EPP.
- o   When displaying results in a comparison mode, Uncertainty bounds will be shown when available.

- **AIM Uncertainly**
  - o   Fixed problem with busy cursor sticking after uncertainty analysis finishes run.
  - o   TB is disabled during Uncertainty processing to increase efficiency and accurately display the curves.

- **Demproj**
  - o   Adjusted life tables.
  - o   Corrected problem when reading in LE in existing projections.
  - o   Fixed calculation error when entering custom Life Expectancy in specific countries.

- **FamPlan**
  - o   Adjusted FamPlan country defaults.
  - o   Adjusted unwanted pregnancies calculations.
  - o   Fixed problem of ASFR being set to 0 after failed calculations when using disaggregated age groups.
  - o   Fixed problem with TFR being calculated incorrectly with respect to the survey year in low prevalence countries.

- **LiST**
  - o   Fixed problem with abortions being incorrectly calculated during initial projection.

- **OHT**
  - o   Increases the number of user defined customer Interventions from 100 to 200.

- **TB**
  - o   Fixed problem with -1 showing in tables rather than N/A.

- **Resource needs**
  - o   Added the disaggregation by Male and Female to ART input.

Version	4.56
Date	8 March 2013

- **General**
  - o   Disabled UA for comparison projections

- **AIM**
  - o   Multiple changes to support new UNAIDS 2013 estimates.
    - ▪   Changed default values for Annual probability of HIV-related mortality without ART.
    - ▪   Added PMTCT coverage to results.
    - ▪   Added EPP 2013 R11 to install file.

- Note: although AIM is adjusted to support 2013 estimates, current default country data remains at 2011 until new estimates are complete and verified.
- Change patterns of incidence by age to use incidence rate ratios rather than the distribution of new infections.
- Update patterns of incidence by age using ALPHA Network data.
- Update definitions of adult eligibility for ART to include special populations regardless of CD4 count (pregnant women, HIV+/TB+ co-infecteds, sero-discordant couples, sex workers, MSM and PWID)
- Update orphan calculations to use full time history of fertility, mortality, ART and mother-to-child transmission.
- Re-named the 'Regional Table' menu selection to 'Sub-populations Table' and fixed problems with the sex distribution.
- Moved the PMTCT indicators from the Children 0-14 menu to a new 'PMTCT' menu.
- Updated the adult ART editor to require the number or percent of adults on ART by sex.
- Updated the patterns of ART mortality by region using the latest data from IeDEA and ensuring that mortality on ART at high CD4 counts would not exceed mortality without ART
- Updated the progression and mortality parameters for the adult CD4 model by re-fitting the models for 15-24, 25-34, 35-44, 45+.
- Added default drop-out rates for postnatal prophylaxis for mothers and children using data from Malawi.
- Added a Validation menu to allow comparisons of Spectrum output with program data.
- Integrated AIM with the new TB module in Spectrum
- Added a tool to calculate the number of countries with significant declines in incidence.

- Demproj
  - Update EasyProj to use country-specific life tables from the United Nations Population Division and the UNPD estimates of base population, mortality, fertility ad migration by singe year and single age. Note: awaiting 2013 data from UNPOP.

- Extract
  - Added PMTCT coverage to Extract.
  - Fixed problem with extract showing the wrong configuration window.

- FamPlan
  - Fixed problem with default data showing incorrectly.

- Goals
  - Added PMTCT to the Goals output result tables.
  - Fixed problem with calculation of support costs in Goals. It now calculates as a percentage of the non-support costs as it does in Resource Needs Module.

- MBB Transfer Tool
  - Adjusted transfer of Child delivery interventions.
  - Fixed problem with PMTCT scale-up not preventing deaths correctly.
  -

- Resource Needs Module
  - Added the ability to enter number or percent to Program Support editor.
  - Added the ability to expand the Program Support editor to entry for all years in the projection.
  - Added user entered support programs to RNM, Cost effectiveness analysis and Extract.

- OHT
  - Various fixes to OHT modules to handle total number of interventions greater than 255.
  - Fixed Ranch check error in Intervention coverage editor.
- TB
  - Fixed problem with default data not reading correctly with certain countries.
  - Fixed problem with calculations.

Version	4.55
Date	21 February 2013

- General
  - Added the additional ability to change the active projection by selecting the file name from the status bar.

- Aggregate
  - Fixed problem with AIM 15+ Summary Table and the aggregation for 'Annual AIDS deaths among those on ART' and 'Annual deaths among those not on ART'.

- AIM
  - The ability to create AIM-State projections has been disabled. Projections currently using AIM-State will continue to work. A new calculation optimizer is currently planned as an improved replacement to AIM-State and will be released shortly.

- Demproj
  - Fixed problem with calculation of Orphans caused by rapidly reducing the size of the population.

- LiST
  - Fixed problem with child birth intervention not being calculated correctly before the coverage editor was visited. This resulted in incorrect values shown before 2010 in the results.
  - Fixed problem with AIDS deaths prevented by cause being calculated incorrectly.
  - Fixed problem with result: "Percent of stunting reduction accounted by each intervention relative to intervention year." They were not summing to 100.
  - Fixed problem with Interpolate and Duplicate not working in Child Birth editors.
  - Further updates to percentage of deaths due to aids being calculated incorrectly for new projections.
  - Fixed problem with percentage of deaths due to aids being calculated incorrectly for new projections.
  - Adjusted user interface for child birth coverage editor.
  - Fixed problem with reading in older files.
  - Fixed problem with vaccines not show up in the non-cohort mode.
  - Modification to Breast Feeding promotion.
  - Changes to herd effect calculations.

- MBB Transfer Tool
  - Adjusted tool to incorporate new LiST interventions.
  - Adjusted tool so Spectrum will not attempt to close excel when using the command line version.

Version	4.54
Date	10 January 2013

- General
  - Added special /MBB switch to command line for automatic procession of LiST for MBB application.
    - Spectrum.exe /MBB MBBFName Code1 Code2 Code3
      - MBBFName should be full path
      - Code1, Code2, Code 3 are standard numeric UN country codes.

- FamPlan
  - Fixed problem with various results showing zeroed data.

Version	4.53
Date	1/7/2013

- General
  - Fixed problem with FamPlan default data not being loaded when Goals module active.
  - Added Sample Country to country data list. This is useful for training workshops if a specific country is not used.
  - Fixed problem with intervention file not saving correctly.

- o Added the ability to save projection manager defaults. This option is off by default and can be found in the option dialog. The purpose of this feature is to give you the ability to create a new projection with one click.
- o Added the ability to import module data from an existing projection into a loaded projection. You can find this feature under the application menu (Spectrum Icon top left corner).
- o When extending the final year of a loaded projection, Spectrum will now pad the newly extended years with the prior final year value. Previously these years would be set to zero.
- o Fixed problem with normalize not working correctly in the editors.
- o Fixed problem with Export not saving current data, when the user tries to export a projection to a single compressed file, a message will alert the user to the save the projection if needed.

- Aggregate
  - o Fixed problem with aggregate not working with projections containing only the Demproj module.
  - o Population by age and sex has been added as an output.

- AIM
  - o Added 2011 UNAIDS country projection data.
  - o Added AIM-State. AIM-State allows the creation of projections starting in the current year to incorporate AIM data as if the projection was created prior to the start of the epidemic. AIM-State primes the AIM calculations with pre-calculated data for the selected country. AIM-State should not be used when creating sub national projections.
  - o Fixed a problem with children not progressing to adults correctly in the calculations.

- Demproj
  - o Fixed calculation error when excess migration would cause a resulting population of zero.
  - o Fixed problem with option for displaying deaths by single age.
  - o Added in the ability to enter a regional adjustment file for Population and HIV inputs. This option is currently in Alpha testing and is not recommended for general use.
  - o Added Deaths by Single Age and Births by single age to "/UNPOP" specific generated output.
  - o Fixed problem with reading in AIDS Deaths by single age from DP file.

- Extract
  - o Added additional Goals' indicators to Extract's selections.

- FamPlan
  - o Updated default country data based on latest surveys.
  - o Fixed problem with summary table showing zeroes for certain indicators.

- LiST

- Removed inputs for affected fraction of interventions where not appropriate.
- Changes to default Data (Sudan and South Sudan)
- New CHERG default data.
- Pathogen input tab is now saving properly.
- Pathogen data is now reset by CHERG data reset when opening older projections.
- Calculations work correctly when Vaccine B is set to 0 in the pathogens tab.
- The following outputs are now saving properly to the projection file:
    - Percent of diarrhea deaths due to specific pathogens
    - Percent of pneumonia cases by pathogen
    - Percent of pneumonia deaths due to specific pathogens
- Fixed problem with Number of pneumonia cases result.
- Added etiology impact for pneumonia, for both morbidity and mortality.
- Added results for number of pneumonia and diarrhea cases.
- Fixed problem with check box filters not working in various LiST editors.
- Fixed problem with default data loading incorrectly when lbase year of coverage was changed.
- Hib and Pneumococcal vaccine now dynamically affect the affected fractions of pneumonia mortality.
- Updates to default data designations.
- Fixed problem when reading in old LiST data files.
- Fixed Databycountry so the rotavirus pathogen information is set to 0.25.
- Shifted some health status tabs around.
    - Moved pathogen to be the second tab and renamed it "Pathogens".
    - Combined "economic status" and "household size" into one tab.
- Renamed "all else" to "all other pathogens" in the diarrhea pathogen outputs
- Added maternal mortality rate.
- Renamed mortality rates to include more detail.
- Has fixes to the proportioning of affected fractions for diarrhea changes.
- Fixes an issue with the "Percent of stunting accounted by each intervention" output having negative results.
- Contains new country specific data and notes.
- Minor revision to percent stunted in Extract.
- Rotavirus, Vaccine B and Vaccine C have impact on nutrition and diarrhea incidence.
- Two new outputs to reflect the different etiologies of diarrhea incidence and diarrhea mortality.
- New input has been added for rotavirus incidence in health status.
- Herd effect input includes Vaccine B and Vaccine C.
- Diarrheal incidence input (underneath effectiveness of nutrition) now includes Vaccine B and Vaccine C.
- Fixes an issue where the detailed vaccine efficacies were not getting reset when the user selected "yes" to the CHERG message.
- Added support for "-"in editors to indicate missing default data. This was previously indicated by 99.9%.
- Further work on data source indication for data input. Right clicking in the editor will offer two choices for source display, "Data Source" (Editable comment for individual data elements) and "All Sources" (Read only version of all sources currently assigned to active editor).
- Added AIM interventions to Missed Opportunity

- o Data in Health status tab is reset by default data when base year of coverage is changed in configuration.
  - o Added missed opportunity fix that notifies the user if AIM interventions were not set to percent and allows them to skip the projection in that case.
  - o Fixed problem with transfer of vaccine coverage to/from standard and annual cohort version of coverage data.
  - o Added user editable source text to input variables. This is done a row or column level depending on editor layout. Access the source text by right clicking on row or column and selecting Source.
  - o Added framework to include default level country data for multiple start years when creating a projection.
  - o Corrections to Missed Opportunity Tool.

- LiST Costing
  - o Added default staff salaries
  - o Added indicators to Extract.
  - o Added Target population editor to Costing menu.
  - o Adjusted default treatment inputs.
  - o All interventions' default delivery distributions now sum to 100.
  - o Based population in need for balanced energy supplementation and complementary feeding interventions upon percent living in poverty.
  - o Treatment inputs editor now viewable as either average commodity costs or medical personnel minutes per case.

- TB
  - o Various calculation fixes.

- RAPID
  - o Fixed problem with incorrect indicators being called under Education sector results.

- RAPID Transfer tool
  - o Change population output from Spectrum to RAPID tool, from All population to 15+ for both sexes.
  - o Fixed problem with access violate when adjusting display configuration.

Version	4.51
Date	8/13/2012

- FamPlan
  - o Added new default data.
  - o Corrected problem with reading in projection containing older FamPlan data.

- LiST
  - o Corrected problem with wasting calculation

- TB
  - o Corrected problem with default data.

Version	4.50
Date	8/1/2012

- General
    - Spectrum now used SetupBuilder for installation.
    - Fixed problem with removing OHT modules from projection manager.
    - Added command line option "/UNPOP" for specific generated output for UNPOP.
    - Fixed problem when copying data from Excel to Spectrum with non-English regional settings in windows.
    - Users can now enter a sub national projection name in projection manger. This allows greater identification of projections beyond the file and country name.
    - Fixed problem with printing result tables with right click menu.

- AIM
    - Updated calculation of the percent getting prophylaxis during Breastfeeding.
    - Adjusted calculation for the number of pregnant women in need of treatment.
    - Fixed problem when entering MTCT values by percentage in program statistic editor to ensure percentage is multiplied by correct populating in need.

- Demproj:
    - Removed first year output from results where rates are shown (such as births, deaths, TFR) for the first year of the projection when we cannot actually calculate them considering inputs are mid-year to mid-year.
        - Change the title inside the TFR editor from 'Total fertility rate' to 'Total fertility rate (for the year ending at mid-year).'
        - Change the title from 'Summary Demographic Indicators' to 'Summary Demographic Indicators (rates and flows for the year ending at mid-year, population at mid-year).'

- Extract
    - Fixed problem disaggregation by age not working with certain indicators.

- FamPlan,
    - Fixed problem with reading FamPlan data from older 3.x files.

- Goals
    - Update Impact Matrix values.
    - Fixed problem when reading old Goals file created in 3.x of Spectrum
    - Fixed integration with AIM calculation so common results are now in sync.
    - Fixed an access violation issue when there is an error in the calculations due to an improperly instantiated data object.

- LiST
    - Breastfeeding promotion has been changed to use a relative risk.
    - Default data update

- o Fixed problem with detailed vaccine editor not showing correctly on devices with reduced screen height such as Netbooks.
- o Adjusted Missed Opportunities coverage changes in delivery levels and added validity checks in for breastfeeding as well as other minor changes.
- o Fix problems with transfer of coverage to LiST from OHT module.
- o Partial fix for Uncertainty analysis memory problem. Spectrum will attempt to check memory before running calculations and prompt to lower number of iterations if necessary.
- o Fix for the OHT to LiST coverage transfer. The delivery interventions are now being transferred correctly.
- o Default country data contains a fix to the maternal causes of death, and has new Abortion Incidence Ratio data as well as new Abortion coverage data.
- o Fixed problem with maternal deaths allocated to abortions.
- o Fixed issue where Abortions caused a mismatch in maternal deaths prevented by cause and maternal deaths prevented by intervention.
- o Fix for "Reduction in mortality by intervention" output table.
- o Mortality rates should display correctly now with Spanish translation.
- o Added new indicator "Deaths averted by cause by year that the first vaccine was received by a child."
- o "Reduction in mortality by intervention" now has a combo box in the configuration for toggling between projections.
- o Fixed problem with Cause of Death pie chart presenting the wrong data.
- o Added Missed Opportunity tool.

- • LiST EzLiST
  - o Reduced the amount of time it takes to start EZLiST.

- • LiST Uncertainty Analysis
  - o LiST Uncertainty issue wherein the death proportions are improperly applied has been fixed.
  - o Fix for Uncertainty analysis memory problem.

Version	4.49
Date	5/12/2012

- • General
  - o Added sum feature to all editors. Selecting a group of cells will display the sum in a hint.
  - o Changed format of PJN file to support Unicode file names.
  - o Increased the recent file history count to total of 8.

- • AIM
  - o Added new version of EPP R-24
    - ▪ Fixes a bug introduced by Java 1.7 in reading EPP XML files created with earlier versions of Java.

- Note: Anyone using Java 7.0 (also known as 1.7) will need to use this newer version to avoid potential data loss in data files.

    - Fixes a downscaling bug in national uncertainty when "Adjust to prevalence of xx in year yy" calibration is used.
  - Fixed error introduced on calculations of HIV transmission during breastfeeding, such that the number on Option A or B for perinatal prophylaxis were also being counted for postnatal prophylaxis regardless of what was in the editor for postnatal prophylaxis.
  - New display indicators in AIM: Distribution by CD4 count: HIV+ not on ART (15-49), Distribution by CD4 count: HIV+ not ART (15-49).
  - Update to age pattern of incidence to correct a problem where the patterns were not adding up to 100 percent.

- AIM Scenario Generator
  - Fixed problem with projection file naming under CSV approach.

- Extract
  - Fixed issue regarding the Impact indicators in AIM.

- FamPlan:
  - Fixed problem with TFR being incorrectly calculated in the years before the survey year with calibration turned on.
  - Added Proximate Determinants interactive policy screen.
  - Added addition information on the survey data used in the configuration screen.

- Goals
  - Restructure of Goals menu bar.
    - Costing implementation for goals has been repositioned into the Resource Needs module.
    - All Intervention Coverage editors moved from Goals to Resource Needs module.
    - The Coverage and Unit Costs editors from Resource Needs Module remain accessible from Goals when RNM is active.
  - New display indicators: Distribution by CD4 count: Newly on ART and Distribution by CD4 count: Newly eligible for ART.

- LiST
  - Added French translated help files.
  - Child, Maternal and Stillbirth deaths prevented by intervention by cause have been added to results.
  - Added in the ability to link Interventions into all causes of death. This function can be found under LiST configuration in the manage interventions section.
    - Added export functionality for linked interventions.
    - Therapeutic feeding to be linked in for all diseases and age cohorts.

- Resource Needs Module:

- o Vaccines and PrEP are in the Coverage and Unit Costs editors but are only visible when Goals is active.
- o Restructure of Population sizes, Coverage and Unit cost editors in RNM.
- o User defined populations can be added in both General and Most at-risk population groups.
- o When Goals is active, RNM retrieves population values from Goals.
- o When Goals is active, RNM sets first year of estimates to the Goals base year of coverage, and the last year of estimates to the final year of the projection (to keep Goals and RNM in sync). The first year and last year of estimates can be viewed but not changed in the configuration editor when Goals is active.
- o There is now a default data file for RNM which is loaded when a projection is created.

Version	4.48
Date	4/11/2012

- AIM
  - o Fixed result under Total population – Need for ART, ages were not summing correctly.
  - o Fixed error in the calculation of ART coverage in the summary display for adults 15+.
  - o Fixed a display issue with the New HIV Infections by Risk Group and HIV Population by Risk Group tables.
  - o Fixed problem with the calculation of HIV+ children under the age of two.
  - o ARV Regimen and Breastfeeding editor values put into Extract.
  - o The MTCT, Adult ART and Child treatment editors now have an option to convert values to and from Percents and numbers based on last calculated need.

- AIM Scenario Generator
  - o More flexibility added to CSV approach for adjusting multiple data inputs for multiple projections.

- Extract
  - o Adult and Child ART inputs from AIM have been added to the selection.

- FamPlan
  - o Corrected unmet need calculation issues.
  - o Fixed problem with births calculation due to slight variations in Total Fecundity when proximate determinants are calibrated to the survey year.

- Goals:
  - o Fixed problem with reading in older goals data before we removed microbicide data.

- LiST
  - o Added Spanish help screens.
  - o Fixed problem with default values not being set for Herd immunity.

- o Added new help to coverage editors.
- o "Calculate Abortion from FamPlan" is now set to true if FamPlan is added to an existing projection and false if it's removed.
- o Fixed problem with direct entry of wasting causing odd cause of death structure in results.
- o Changes to default country data.
- o This fixes a detailed vaccine calculation issue where affected fraction was multiplied into the impact twice.
- o Fixed a bug in cohort vaccine wherein the projection bombs when calculating.
- o Added direct entry of wasting data to the coverage editor. In order to access the editor you first need to activate wasting in LiST configuration.
- o Fixed problem when loading FP to an existing LiST projection.

- LiST EzLiST
  - o Pentavalent is now disabled if it is unchecked in the Vaccine coverage tab inside of EzLiST.
  - o Fixed problem with delivery levels and coverages being scaled up in the base projection.
  - o Fixed problem with delivery levels and coverages being flatlined before the impact base year.
  - o In EZLiST, delivery level coverages and intervention coverages were increasing from 0 to calculated values in the Impact year. EZLiST now flat lines the data from the coverage base year to the impact base year so the jump is not extreme.
  - o Fixed problem with EzLiST where checked interventions were changing numbers in baseline projection upon reentrance into EzList.

- LiST Scenario Generator
  - o Fixed interaction with checkboxes in detailed delivery input.
  - o Delivery editor will now show all interventions for all delivery levels.

- LiST Uncertainty Analysis
  - o Changes to List Uncertainty calculations.
  - o Fixed an error that caused older projections to drop LiST when opening.
  - o Fixed floating point error in the coverage editor when cohort vaccines are active.

Version	4.47
Date	2/22/12

- General
  - o Various Internal changes to Spectrum related to the efficiency of reading and writing of data files.
  - o Added link to online Spectrum support to Welcome page and Help Menu.
  - o Fixed problem with country selection changing with multiple projections loaded.

- AIM
  - o Added EPP2011 R22.
  - o New patterns for mortality on ART (including LAC).

- o New patterns for incidence by age.
- o New output for Children under 2.
- o PMCT editor retains numbers and percent's unless you over-write until you click OK.
- o Modified fertility reduction factor for 'TFR reduction' editor.
- o Updated data for distribution of new infections by age and sex.
- o Modified 'HIV mortality with ART' editor. Added ability to select regional pattern.
- o Added 'Children under 2' result menu and 'HIV+ children under 2' indicator.
- o Added ability to enter ART coverage using CD4 categories.
- o Fixed problem with 15+ summary displays where ART coverage percent for the final year was not being calculated correctly when the first year of the display was something other than the first year of the projection.
- o Corrected issue with MTCT editor where row headings were not displaying properly when changing from percent or number to numbers and percent.
- o Corrected a few dropdown boxes to not allow manually entered data. Manually entered data would cause range check and access violation errors.

- AIM Uncertainty analysis
  - o Added the following intervention; New HIV Infections – male 15-24, New HIV Infections – female 15-24, Annual AIDS Deaths (15-24).

- FamPlan
  - o Fixed problem with pregnancies display and the summary output table.

- Goals:
  - o Added ability to enter ART coverage using CD4 categories.
  - o Modified the indicators used for display in UA
  - o Added help text to editor screens.
  - o Added Total Cost and Distribution by CD4 count HIV + on ART and not on ART to the Summary table.
  - o Added option to select Impact Matrix from list of 3 tables, along with default data for each variation of the table.

- Goals Uncertainty
  - o Uncertainty for Goals added as a beta version. In UA for Goals there are two tabs on the editor. The first tab is the "traditional" UA and creates a historical fit file along with a HVUAC file. On the second tab, the user selects a historical fit file which is used to determine the epidemiology values for each of the UA runs.

- LiST
  - o Fixed problem with detailed vaccines, detailed measles and delivery coverages not being transferred properly in Scenario Generator.
  - o Abortions are now being written out to the costing file.
  - o Fixed problem with child birth coverage data not saving correctly.
  - o Updated output for Costing Spread Sheet.
  - o Fixed research version issue where intervention note maps to incorrect custom intervention if an intervention is deleted.

- o Made calculation changes to fix weighting of 'Percent of stunting reduction accounted by each intervention relative to intervention year.' Previously, this indicator did not always sum to 100 in a given year.
- o Made changes to delivery calculations (maternal, stillbirth, child). Previously, deaths were falsely being prevented from changes in delivery level coverages, even if the interventions themselves did not have coverage changes.
- o Added AIDS to Neonatal deaths prevented by cause and Neonatal deaths by cause.
- o Changed format structure of the CS file to CSV to match other modules.
- o In Health Status editor added decimal places to Cause of death totals.
- o When creating a new projection, the Cohort approach in LiST configuration will be unchecked when new projections are created and no projections are already open.
- o The Pie chart tab titles now display the indicator name.
- o In the Coverage editor, fixed up sum of case management of neonatal infection.
- o Detailed measles- greyed out measles coverage when detailed measles is entered.
    - ▪ Coverage will now transfer from Measles to MCV1 when "Enter detailed measles coverage" option is checked.
    - ▪ Coverage will transfer from MCV1 to Measles coverage when "Enter detailed measles coverage" option is unchecked.
    - ▪ Scenario Generator for LiST will now set MCV1 coverage from Measles when "Enter detailed measles coverage" is on for the projection.
- o Fixed problem with custom interventions not saving correctly.
- o Fixed problem with effectiveness editors not holding data correctly.
- o Delivery level coverages were not being set in SGLiST and EZLiST when delivery interventions were checked. This caused a problem with the delivery calculations, and caused different results than Expert mode LiST. This bug has been fixed in both SGLiST and EZLiST.
- o Fixed the "show all items" checkbox in EZLiST
- o Corrected default country data.
- o Percent stunted' and 'Percent of stunting reduction accounted for by intervention relative to intervention year' have been updated and have the 0-60 month summary.
- o Breastfeeding prevalence problem with data not being saved on tab change has been fixed.
- o Floating point error for projections with zero deaths for all causes except measles has been fixed.
- o Detailed measles inputs have been added to coverage and effectiveness editors.
- o Herd effect is now covering detailed vaccines.
- o Added new indicator, Percent of stunting reduction accounted by each intervention relative to intervention year
- o Moved the declining coverage checkbox for EZLiST into the configuration form.

- LiST Scenario Generator
    - o Vitamin A, Zinc, IPT can now be entered.
    - o Fixed issues with the data file, it will now save the declining coverage checkbox state as well as the state of the childbirth interventions.
    - o Fixed an issue where projections with IPTp checked block all interventions from being saved.

- o Scenario Generator for LiST will now adjust detailed vaccines if detailed vaccines are active.

- Resource Needs
  - o Revised PMTCT Costing calculations.
  - o In configuration editor corrected dropdown boxes for first and final years so that a number cannot be added manually.
  - o The value range warning for Program Support and Mitigation has been corrected to include the editor name.
  - o Corrected calculations for unit costs for IDU categories. Resources required summary now correctly displays values for the IDU categories.

Version	4.46
Date	11/11/11

- General
  - o Restructured and streamlined module calculation management in Spectrum. This will allow for more advanced integration of modules in the future.
  - o Added Undo/Redo to right click of Spectrum editors.

- AIM
  - o Fixed problem with prevalence not being calculated correctly when using direct entry for prevalence without visiting the sex ratio editor.
  - o Fixed regional summary table to display values for appropriate sex based on sex ratio from EPP. For example, table will show zero for females when the region is MSM.

- Cost Effectiveness Analysis Tool for Goals
  - o Corrected calculation so that values are calculated in the proper sequence to produce expected numbers.
  - o Refresh "recently opened projections" so that the listed projections correspond correctly to actual projection history. Eliminated temporary files from this list.

- Demproj
  - o Fixed problem with displaying population disaggregated by single age with multiply projections loaded.
  - o Added help to each input editor and detailed help to the "help" button.
  - o Added the year to the editor title of First Year Population.
  - o Calculations were corrected to save treatment percent for infants.

- FamPlan
  - o Added help to each editor and detailed help to the "help button.
  - o Updated strings using "unwanted pregnancy" to "unintended pregnancy."

- When a method is now added to an existing projection (for new projections going forward), the Source mix defaults to 100 rather than 0.
- When LiST is active, the Child Survival Tab and Post-Abortion Care button are not shown.
- Emergency Contraceptive was eliminated.
- The language "EasyProj" was changed to "Country" in the Configuration editor.
- The editor tabs under Family Planning button have been rearranged for easier input.
- Standard Days (SDM) method was added to the method selections.
- The Goal editors were updated to have a more pleasing layout.
- The Display configuration was updated to only include relevant options for the indicator being displayed.

- Goals
  - Uncertainty was updated to produce a CSV file with all Epidemiology values generated along with a goodness of fit for the run. This will presently be used for internal analysis.
  - Addition of greater than 500 CD4 count to Goals inputs.

- LiST
  - Update to Spanish Strings
  - Added new delivery relationships into EZLiSt and Scenario Generator LiST.
  - Scenario Generator LiST now has delivery/childbirth.
  - New default data.
  - Fixed the checkbox on the postnatal coverage page.
  - Fixed problem with data in coverage of delivery care editor not saving correctly when base year of coverage is changed.
  - Fixed problem with result labels for intervention over extending rather than using hover text.
  - Breastfeeding promotion calculation has been adjusted.
  - EZLiST has a checkbox by which the user can allow declining coverages.
  - EZLiST has a cancel button for when the user accidentally clicks "OK."
  - Childbirth editors have been enlarged.
  - The bottom childbirth editor now selects row 1, col 1 as the active cell.
  - In Coverage, case management of severe neonatal infections (in coverage) are slightly restructured.
  - Childbirth relationships have been moved into a csv.
  - Enlarged the mortality rate boxes in health status to accommodate Spanish text.
  - Added malaria to the detailed vaccines input.

- Resource Needs

- Calculations were corrected to include costs for infant treatment and triple ART treatment for women.
- Added PMTCT and Care and Treatment services to Resources required summary and Number of People reached summary.
- Added calculations for ARV therapy, Non-ART care and prophylaxis and PMTCT to the Required Resources output.

Version	4.451
Date	10/24/11

- RAPID
  - Fixed problem when reading in previously created RAPID files.

Version	4.45
Date	10/7/11

- General
  - Added searchable Help feature although content is currently limited.

- AIM
  - Default data for PMTCT for Zimbabwe was added.

  - Fixed problem with calculations failing when called by Uncertainty.

- Aggregate
  - Calculations for the Mean Age of Childbearing values were corrected.

- Cost Effectiveness Analysis Tool for Goals

  - If blank or non-entry is left for Microbicies or PrEP in the target year, then those interventions are not calculated.

- Demproj
  - Fixed problem with life table being selected incorrectly when loading default country data. This affected small number of countries.

- Goals
  - Sex acts per partner editor updated to have one set of values for both males and females.
  - Condom use graph changed to show values up to and including base year, after that values are flat-lined. Interpolated values for condom use now reflect values generated by logistics curves.
  - STI prevalence interpolated values editor reflects values generated by logistics curves for STI prevalence.

- o Cost effectiveness analysis tool: updated to allow a blank to be left for a target value. In this case the tool will not calculate for that intervention. If the base year and target year for an intervention are the same, the projection will not calculate for that intervention.
- o The table display for Distribution by CD4 count – HIV+ not on ART has been corrected to include the final category < 50.
- o The Cost by intervention table has been updated to include PMTCT. The row labels and table label have also been corrected.
- o In the GOALS editor, the logistic curve values are now placed them in the interpolated data which allows yearly numbers to be viewed. This is done for both Condom use and STI Prevalence.

- LiST
  - o Fixed an issue where complementary feeding showing impact when not scaled up.
  - o Fixed issue with results changing dependent on a visit to the coverage editor rather than calculation.
  - o Breastfeeding promotion is selected by default when used with OneHealth tool.
  - o Further changes to vaccination outputs.
  - o Fixed deaths averted by year of vaccination where it was incorrectly showing the impact across year output.
  - o Added 3 new custom vaccines to the coverage editor (in vaccine cohort mode) and to "effectiveness of vaccines(cohort approach)"
  - o Removed disaggregation by age for deaths averted at age of first dose.
  - o Fixed scenario generator so that it does not scale down target if current value is higher than default target setting for intervention. a box.
  - o Changes to breastfeeding impact on diarrhea incidence.

- Resource Need Module
  - o Fixed problem where Resource Need's was not being recalculated when displaying results in GOALS.

Version	4.44
Date	9/20/11

- General
  - o Incorporated welcome screen into main display tool bar
  - o Added zoom feature to group displays on right click menu.

- AIM
  - o Added Release 16 of EPP

- AIM Uncertainty Analysis
  - o Corrected issue with reading existing Uncertainty Analysis

- Goals
  - Reconfigured risks groups to use direct entry for MSM in impact matrix.

- LIST
  - Added new output "deaths prevented by vaccine by cohort year."
  - Fixed maternal sepsis problem
  - Enabled AMTSL for unassisted delivery

Version	**4.43**
Date	**9/12/11**

- General
  - Added the ability to group active results into a single form in order to create a dashboard of indicators.
  - Added the ability to save active results to a favorites menu for easy retrieval in the future.

- Aggregate
  - Fixed problem with Aggregate and Resource Needs (RN) model integration. Since Treatment and PMTCT costs were moved from AIM to RN, Aggregate was generating an error when trying to access these cost. Aggregate will now only look at these cost if RN is active.

- AIM
  - Corrected the spike that occurred in the display of HIV+ Pregnant women in need of treatment when values in the MTCT editor were numbers one year and then percent's the next.
  - Added in EPP R15 to install file.
  - In Scenario Generator (When WHO eligibility is set) Spectrum now sets the eligibility to 200 up to and including 2009 and to 350 for 2010 forward. If the eligibility was set to 350 in a year prior to and including 2009, that value remains at 350.

- AIM Uncertainty Analysis
  - 'HIV+ pregnant women needing treatment' has been added to the display results.

- Demproj
  - Fixed problem with saving Urban regional data.
  - Fixed problem when disaggregating by age in Defined Population indicator.

- Extract
  - Fixed problem when selecting all indicators in the 'AIDS Impacts' category. Spectrum was only selecting the 'TB Cases'.

- Goals
  - A logistics curve option including graphs has been added to the STI prevalence and Condom Use editors.
  - Distribution by CD4 count has been added to the calculations and displays.
  - Epidemiology editor has been reorganized.
  - Population by risk group can now be displayed as numbers or percent.
  - Update to Impact Matrix.

- LiST
  - Locked down EzList when detailed vaccines coverage option is selected.
  - Fixed problem with negative deaths being allocated to Measles vaccine.
  - Additional deaths prevented by children under 5 years of age is now aggregated by <1 and 1-59 age groups.
  - Fix for discrepancy between maternal deaths prevented by cause and maternal deaths prevented by intervention.
  - Fix for bug in Measles tab in vaccine tab of Coverage editor.
  - Fix for bug wherein the checkboxes in Coverage were not being saved properly.
  - Fixed Various EasyList problems.
  - DPT has been reworked across the cohorts.
  - Hib vaccine impact has been corrected for multiple doses of vaccine.
  - Pneumococcal vaccine impact has been corrected for of multiple doses.
  - Measles has been adjusted to not allow impact for under 6 months.
  - Rotavirus has the regional effects now, and Measles supplemental coverage is limited to ages 6 months and older.
  - Fixed issue for vaccine coverage discrepancy with 48 to 59 year olds.
  - Added detailed vaccine coverage output.
  - Further changes to detailed vaccine options.
  - Further changes to detailed vaccine options.
  - Updated default values.
  - Added geographic coverages for vaccines.
  - Added default data for detailed vaccine information.
  - Modified configuration so that we can only use detailed vaccine option when custom intervention are not used.
  - Changed the screen in coverage editor, so that we either see regular coverage or detailed coverage.
  - Fixed Easy LiST issue with closing displays.

- TB
  - Updated TB database.

Version   **4.42   Final version for UNAIDS AIM 2011**
Date   8/1/11

- General
  - Fixed problem when reading all Spectrum 3 files which used EPP in AIM.

- AIM
  - Fixed the problem with new infections not being added to the correct CD4 categories when using prevalence input
  - Added review mode for EPP

- AIM Uncertainty Analysis
  - Fixed regional problem when specifying bounds with local decimal indicator, such as "," rather than ".".
  - Increased precision on result table bounds e.g. 97.5% instead of 98%
  - Fixed summary table where upper bound was not showing.

- FamPlan
  - Updated user interface to match existing modules

- LiST
  - Fixed problem with EZlist displays
  - Fixed problem with safe abortion not impacting deaths averted.
  - Fixed problem with Impact of any breastfeeding among children 6-11 months of age
  - Fixed column label problem with table displays
  - Added in vaccine coverages by cohort (Beta only)
  - Fixed problem when reading in older files before cause of death structure change where neonatal causes of death from sepsis/pneumonia were changed to sepsis and pneumonia separately. Spectrum will now update the cause the death when reading in older files.
  - Added chart for child deaths 0-60
  - Modified calculations pertaining to the deaths proportioned by cohorts
  - Further modifications mortality calculations

- Resource Need Module
  - Additional changes to editors

- Goals Scenario Generator
  - Added in additional effectiveness parameter for vaccine

- RAPID
  - Added custom tool to facilitate data exchange between the RAPID women Excel program and Demproj

Version	**4.41**
Date	**7/6/11**

- AIM
  - Added, R14a for EPP which adds in the Reassign table

Version	4.4
Date	7/5/11

- General
  - o Spectrum is now Unicode compliant. This allows the selection of Russian, Chinese or Arabic language without the need to change Windows' regional settings to accommodate non-Unicode programs.
  - o UN population tables for 2010 were added.

- AIM
  - o Added, R12 for EPP which adds in the Reassign table
  - o Fixed problem with default data being loaded incorrectly for Sex Ratio when not in English
  - o There was a problem in the AIM calculation with breastfeeding transmission. Spectrum has two breastfeeding patterns, one for those in the program and one for those not in the program. AIM has been using the proportion of women receiving postnatal prophylaxis to determine the proportion of women in the program. That causes a problem when there is not postnatal prophylaxis but the program encourages replacement feeding instead. Spectrum now uses the proportion receiving perinatal prophylaxis to determine the percentage of women in the program
  - o Prevalence data is not zeroes out when default AIM country data is reloaded in the Projection Manager. EPP prevalence adjustment is set to false whenever default AIM country data is reloaded
  - o Fixed problem with Uncertainty Analysis not working correctly for different regional settings

- FamPlan
  - o Fixed problem with FamPlan incorrectly saving the active method selection.
  - o Fixed problem with FamPlan allowing multiple projections to load with varying active method selections.

- LiST
  - o Continued work on mortality problem. Additional changed to calculation of 1-5 and 6-11 month deaths
  - o String changes (Portuguese and Spanish)
  - o Additional changes to calculation of 1-5 and 6-11 month deaths
  - o Updated country data defaults

- Resource Need Module
  - o Beta version release

Version	4.392
Date	5/27/11

- AIM
  - Fixed problem with reading female/male sex ratio incorrectly from the EPP SPT file

- LiST
  - Modified Breast Feeding prevalence editors

Version	**4.391**
Date	**5/13/11**

- AIM
  - Fixed problem when reading in old regional data with Spectrum 3 files.

Version	**4.39**
Date	**5/12/11**

- AIM
  - Fixed problem when writing EPP files with users using non-English regional settings.
  - Fixed problem when reading AIM files created with Spectrum version 3.x

Version	**4.38**
Date	**5/9/11**

- AIM
  - New EPP added to installer

- LiST
  - Fixed problem with writing out costing file under tools menu

Version	**4.37**
Date	**5/6 /11**

- Uncertainly
  - Fixed problem with uncertainly failing on initial SPU file read

Version	**4.36**
Date	**5/5 /11**

- General

- o Added simplified version for selecting active projection through drop down box
  - o Fixed problem when closing all projections and immediately opening a projection with dissimilar modules. Spectrum would recognize previously active modules as active even if they were not contained in current projection.
  - o Added option to Export to either include or exclude EPP's bm2 files

- **AIM**
  - o Add new version of EPP; EPP now supplies Spectrum with sub-region (or risk group) population values that are used to calculate HIV pop by risk group and New HIV infections by risk group
  - o Added update to transmission rates and default button
  - o The years to display on the Regional Table have been extended to include 2015
  - o Added HIV+ pregnant women 15-24
  - o In PMTCT editor, shade was added to No Prophylaxis and Total rows so that it is obvious that they cannot be edited.
  - o In PMTCT editor, added a radio button to select numbers, percents or both
  - o Adult and child summary table, added the input data numbers or percent on ART at the end of the table. This value is for Dec 31 rather than July 1. If the coverage is not inputted Spectrum will leave the cell blank.
  - o Corrected problem when percent coverage is entered for adult ART in the future rather than numbers on treatment.
  - o Some indicators such as PMTCT require the preselecting of "females" as a display option. This caused subsequent indicators to have "females" selected as default and created confusion in outputs. Spectrum now only remembers those display option specifically selected by the user

- **DP**
  - o Reworked Demproj calculations to require less memory when projecting.

- **FamPlan**
  - o Fixed problem with total row in the Method Mix and Source editors.

- **LiST**
  - o Fixed problem with Diarrhea incidence results
  - o Fixed re-calculation problem with averted deaths
  - o Moved delivery effectiveness editors
  - o Updated delivery relationships
  - o Unchecked Pentavalent by default
  - o Fixed U5MR display error
  - o Reworked Stunting calculations.
  - o Added in custom delivery interventions
  - o Added in translations for Spanish, French and Portuguese.
  - o Reworked calculations to handle new deliver mode editor for child health coverages

- Added additional hints for Interventions
- Added total row to Curative tab for Severe neonatal case management
- Moved Vitamin A and Zinc into same group as Complimentary Feeding.
- Added maternal and stillbirth delivery functionality
- Update data by country, default data, intervention data (as needed)
- Changed names, notes, and organization of interventions
- Re-organized coverage editor including some new calculation relationships
- Fully re-modeled delivery editor
- Added HTML comments. Comments with red flags not currently working
- NOTE: Calculations for delivery changes are not fully functional. Changing delivery coverage may cause calculation errors
- Search feature added to EasyList

- **Uncertainty**
  - Fixed problem with Number of women needing PMTCT being set to zero in the output

Version	4.35
Date	3/14/11

- **AIM**
  - Fixed problem with ART by age group indicator not matching standard 0-14 indicator

- **TB**
  - Various changes.

Version	4.34
Date	3/10/11

- **General**
  - Added new banding look to all editors.
  - Fixed Export function to include EPP files associated with an AIM projection

- **AIM**
  - Fixed problem with calculation of the effects of ARV prophylaxis on HIV transmission during breastfeeding.
  - Corrected some minor errors in the calculation of new child infections.
  - Updated version of EPP
- **TB**
  - Various changes to the TB module.

Version	4.33
Date	3/7/11

- **General**
  - o Fixed problem with installation file not including supporting tag file for GOALS

- **AIM**
  - o The "Median time from infection to AIDS death" is calculated and displayed in the "Years in CD4 count category" tab of the "Transition parameters" editor. The Median time can be recalculated when the values in the "Average number of years in CD4 count category" are changed.

- **Goals**
  - o The Goals impact matrix has been updated to include new columns for MSM, MSM:IDU and IDU.

Version	4.32
Date	3/3/11

- **LiST**
  - o Fixed issue with vaccines displaying herd effect inappropriately.
  - o Fixed issue that causes custom intervention effectivenesses to be reset when CHERG message appears.

Version	4.31
Date	3/3/11

- **General**
  - o Fixed problem with projections starting in 2011 causing an error in the Demproj calculations
- **AIM**
  - o Corrected display issue in the AIM 15+ summary table for adult ART editor values as well as those for children in the AIM Children 0-14 summary table.
  - o Updated the scenario generator editors for AIM and Goals.

Version	4.3
Date	3/2/11

- **General**
  - o Removed MTCT module since functionality is now contained inside of AIM

- The country-specific default values for EasyAIM are now automatically loaded for new projections and when AIM is added to an existing projection, as they are for DemProj.
- We have added an exception log file that will report on any conditions that are trapped by the program but should not be happening. For example, if the number of people in a category is negative, Spectrum will set it to zero and write that action to the log file. By default, the exception file will be turned off, that is, it will not be generated. To turn the exception log on, go to options and select "Generate Exception Log". The exception log file will be saved under (my) Documents --> Spectrum and will be called "ExceptionLog.csv".
- Fixed problem with Demproj data file not reading correctly when regional settings for Thousands and Decimal separator were adjusted differently from US standard.
- Adjusted editors in LiST to support 1024x800 resolution commonly used by net books
- Fixed label problem in Extract output.

- **AIM (Major revisions to AIM in order to meet UNAIDS 2011 specifications)**
    - Enhanced Export function to include EPP files
    - Enhanced Transition Parameters to have a red cell if the user changes a value to be different than the default
    - Fixed UA so that the random generator does not produce negative numbers
    - Added new editor called, Reduction in HIV transmission when on ART, to the HIV mortality with ART tab under Transition Parameters. This value is passed to EPP.
    - Modified the procedure to read the SPT file so sub-group population data can be saved. This data is used to calculate and display values for HIV population by risk group and New infections by risk group
    - Modified Extract to handle the new indicators produced in #5.
    - Fixed bug in Adult ART editor so that the Linear projection button options show properly.
    - On return from EPP, the projection is now always made invalid to force a recalculation prior to displaying data.
    - Updated default values for Years in CD4 count category, proportion of new infections at CD4 count 350-499 and HIV mortality without ART.
    - Added "Restore all transition default values" button so the transition parameters values can be restored to the defaults if changes are made.
    - Added a new "editor" to the "Years in CD4 count category" that shows the median time from infection to AIDS death. Currently, the editor shows the default value of 11. At present this value does not change. We plan to allow the user to update the median values via a "recalc median" button when the user makes a change in the Average number of years in CD4 count category (this is not yet fully implemented).
    - Added arrows that show the progression through the AIM editors.
    - Corrected the issue with Total population for the base year in DemProj.

- Corrected the issue with creating a new projection when using a language that uses numerical punctuation different than English (i.e. 1,000.32 instead of 1.000,32).
- Corrected a small bug in which the sum of the incidence allocation by age might not sum to exactly 100%. The difference was small but with this change the incidence output from Spectrum matches the input exactly
- A link to the JAVA website has been added to the message that appears when the user tries to run EPP but does not have JAVA installed on his/her computer. The user can cancel or click the button "Download JAVA" and the download website appears in the form.
- The child (0-14) summary table now shows number on ART as of July 1 just like adults. New rows have been added at the bottom for "Total receiving cotrimoxazole (Dec 31)" and "Total receiving ART (Dec 31)" to the Child 0-14 Summary table. These new rows show the inputs for ART and cotrimoxzole.
- Added the ability to read regional patterns of ART mortality. At the moment all countries are assigned to the East Africa pattern. As we get new patterns from IeDEA we can modify the assignments appropriately.
- When a projection is copied using "Save as", all files associated with the projection are now copied. This includes the SPU, SPT, ep1, ep3, UA, UAC and all files generated by EPP.
- Added the configuration to the title of the Distribution by CD4 count tables and charts. When the table is copied into excel it will now show the configuration.
- The issue regarding values for Distribution of CD4 count in Extract has been corrected. They are now properly saved according to time, CD4 count and sex.
- A problem in the child model that was not progressing children on ART correctly has been fixed. We now store the duration of infection at the time of starting ART and apply the mortality reduction due to ART to the appropriate non-AIDS mortality.
- HIV+ population by CD4 count can now be displayed by sex. This indicator can be found under AIM Results --> 15+.
- Added new display indicator, "Need for ART by age". This indicator is located under AIM Results --> Total population.
- The Projection Manager form has been rearranged so that module selections are listed before the country selection button.
- Modified the Mx tables display to show up to age 80 and correctly display non-AIDS Mx values
- Modified the calculations of ART for children so they are handled just like adults, inputs refer to Dec 31, outputs are July 1
- Added an adjustment in the PMTCT calculations for situations when the inputs specify more women on Option A and B than there are women with CD4 counts over 350. The correction adjusts the transmission probability of women on Option A or B by including a 1.45% transmission rate for those with CD4 counts under 350.
- Modified the first year survival of children on ART to use $Surv0 / sqrt(Surv1)$ rather than $sqrt(Surv0)$

- o Corrected a problem with double counting the impact of cotrimoxazole in the child calculations
- o The default values in Spectrum have been updated with the latest revision of the table of probability of mother-to-child transmission from Nigel Rollins.
- o Transmission due to incident infections during breastfeeding has now been implemented. Spectrum assumes that incidence among breastfeeding women is the same as among all women 15-49. For any woman who has a new infection during breastfeeding the transmission will occur as a single event. This may happen in year 1, 2 or 3 after the child's birth. Transmission only occurs if the woman is still breastfeeding, as represented by average proportion breastfeeding during the year
- o **Adult ART**. There has been confusion over dates in the output summary tables since most indicators are for July 1 – June 30, but the number on ART indicator is for Dec 31. This has now been re-done. The output for number on ART will be for July 1 – June 30, just like all the other indicators. For the Adult 15+ Summary Table only, there will be a new row at the bottom of the table to show the input numbers on treatment as of Dec 31.
- o **Distribution of new infections.** A total row has been added to editor for "Male distribution of new infections" and "Female distribution of new infections". If the total value is > 1.01 or < .99 a message is displayed. The user has the option of returning to the editor or to continue with the value in question.
- o Adjusted data files to support 5 decimals of accuracy to avoid problems with rounding errors during successive calculations.

- **Extract**
  - o Added Spectrum version number to Extract CSV file.
  - o Reworked calculation code in Extract

- **FamPlan**
  - o Fixed problem with EasyFamPlan and age-specific mode of FamPlan. EasyFamPlan was setting the age-specific fertility to the total fertility. The solution is to skip that calibration when using the age-specific feature since we don't have age-specific data in EasyFamPlan.
- **LiST**
  - o Added Export capability to the Intervention Manager for the research version.
  - o Fixed an issue with herd effect vaccines.
  - o Fixed an invalid floating point error in extract
  - o Added 'Post abortion case management Basic EMOC', 'Post abortion case management comprehensive EMOC level', 'Ectopic case management basic EMOC level', and 'Ectopic case management comprehensive EMOC level' to the calculations in Periconceptual calculation type.
  - o Added in type ordering in calculations for maternal and stillbirths.
  - o Fixed bug that occurs on deletion of custom intervention
  - o Put checks in place to turn off herd effect when coverage is declining

- o Removed Stillbirth capability from Vaccine, Curative and Preventive interventions
- o Removed maternal capability from Vaccine interventions.
- o Add 'Other' cause of death to postnatal effectiveness editor
- o Fixed bug that occurs when two vaccines are scaled up jointly
- o Fixed problem with Measles herd effect. It will now work for detailed and non-detailed measles vaccine.
- o Added in new option for creating custom Interventions (Advanced Users)
- o Fixed problem with export to MBB Spreadsheet in MBB transfer tool.
- o Fixed problem with zinc not impacting stunting.
- o Relaxed LiST validation requirements for Preeclampsia and Hypertension
- o Fixed issue with Coverages getting set to 0 for Delivery care interventions.
- o Fixed the issue with stunting not showing in deaths prevented by intervention.

- **MBB transfer**
  - o An error was discovered during the LiST calculation if baseline year in MBB was greater than current year. This has been fixed with the following rule:
    - ▪ LiST base year and Intervention year is set to earliest of MBB year
    - ▪ Coverage of interventions from intervention year to MBB target year == linear interpolation between MBB baseline coverage and MBB target coverages.

- **Uncertainty Analysis**:
  - o UA has been updated to incorporate the new inputs, including progression rates, ART mortality by CD4 count and duration on ART, and the new PMTCT transmission probabilities. The SPU file from EPP, if it exists, will automatically be used and does not require action by the user. Note that previously generated UA and UAC files are not compatible with the new Uncertainty Analysis tool.
  - o Removed optimizer from Uncertainty Analysis

- **Scenario generator**
- o Number tag indicator extended to children on ART and Cotrimoxazole.
  - o <P> for percent and <N> for number tag has been added to the CSV input file format. The default is percent if no tag is included or there is an error with the tag. At the moment this is only done for Adult ART input. The tag should be entered in column B in the Adult ART row.

Version   4.22
Date   11/10/10

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- **AIM**
  - o Fixed problem with Orphans summary table not displaying correctly.

- o Fixed problem with MTCT default transmission parameters not be set correctly when a new projection is created.

- **LiST**
  - o Added detailed measles information with new editors on the Vaccine tab of the Coverage editor, and inside PNN efficacy- Measles tab.
  - o Added new country default data.
  - o Reduction in mortality change (it now shows the Exclusive breastfeeding coverage change for 1-5 months).
  - o Fixed an issue with the display menu not showing the correct indicators**.**
  - o Fixed intermittent bug which caused EasyList to fail during setup.

Version	4.2
Date	11/01/10

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- **General**
  - o Fixed problem with language change concerning new menus.
  - o Display options have been moved to the edit bar of each module and are now titled results.
  - o Word wrapping in the editors has been improved.

- **Aggregate Uncertainty**
  - o Aggregate uncertainty in regions mode now has an error log that shows any errors that occur while the aggregate uncertainty analysis is running. The log is saved in the same directory as the regions input file. It is called AggregateUARegionsErrorLog. The file will be overwritten each time the aggregate uncertainty analysis is run.
  - o A new field was added to the aggregate uncertainty form that shows which file (in non-regions mode) or region (in regions mode) is being processed
  - o Fixed various problems with Aggregate Uncertainty not calculating AIM indicators.

- **AIM**
  - o Added in new Chinese translation to new strings.

- **FamPlan**:
  - o An error in FamPlan that caused the CYP for vaginal barriers to be zero was corrected.

- **Goals**
  - o There is a new editor in the Epidemiology Editor called Blood Transfusion which is where new infections caused by contaminated blood can be entered.

- **LiST**

- Partial fix to Percent Reduction in Mortality indicator. Now Breastfeeding will show up if prevalence values are entered. However, when Prevalence values are entered the increase in coverage will be 0.
- Added border functionality to indicate error messages.
- Fix for Reduction in mortality display.
- Changed the results menu so that items are grouped.
- Fixed issue with breastfeeding impact not showing in results table.
- Herd vaccine editor fix.
- Added neonatal mortality indicators.
- Post abortion case management bug fixed.
- Changed the output file so that all indicators with invalid sums are set to 0.
- Added new default data.
- Fixed problem with extract not showing diabetes care, FGR and 41+ week induction.
- Changed defaults for stillbirths.
- Fixed U5MR calculation.
- BF Prevalence display now properly shows the results.
- Coverage editor validation bug fixed.
- Hints have been added to effectiveness editors.
- Reduction in mortality by intervention indicator is sorted by percent reduction.
- EasyLiST display has been revamped and the calculation button has been removed. Calculation now occurs automatically (as needed) when the user tries to view results.
- Country selection is no longer required for LiST.
- Updated the 'Delivery and emergency obstetric care' and 'Abortion services' displays in Stillbirth and Maternal display.
- Added the ability to create a LiST projection with nonexistent country data.
- Added Still birth display option to configuration from.
- Added in new default data for LiST.

- **Uncertainty Analysis**
  - Improved default starting values for the generation of random incidence curves are now used in the optimization routine.

Version   4.1
Date   9/3/10

- **Demproj**
  - Fixed problem with Mx values were being calculated incorrectly for that Mx table output in DemProj.

- **FamPlan**
  - Added the ability to select a starting year in the display

- o Corrected problem with Famplan output tables not showing all years.

- **Goals**
  - o Fixed calculation so that we calculate the costs for all youth not just those not enrolled in school.
  - o Fixed problem with impact matrix values being read incorrectly from file.
  - o Model Fitting (display). Four additional MSM groups added to Male option for display when "four MSM risk groups" is selected in the Goals configuration.
  - o Model Fitting (display). Display configuration now shows correct indicators based on selection in Sex options.
  - o When choosing a Goals display by "single risk group", the proper charts/tables are shown for MSM and IDU (previously they were swapped).
  - o Goals editor: Unit Costs now displays the proper editor (it used to show the vaccine editor).
  - o Editor default values for Impact Matrix editor fixed to make sure accurate values are used for Reduction in Condom Non Use and Reduction in Number of Partners when four MSM risk groups is selected in the Goals configuration.

- **LiST**
  - o Corrected problem with Still birth numbers using Extract.
  - o Correct Vaccine ordering so that the vaccines are applied together and then apportioned with all other preventions.
  - o New vaccine effectiveness layout.
  - o Update to effectivenesses that are reset when the CHERG message appears.
  - o Fix to Scenario Generator warning message about the base year.
  - o Flat line after the target year for checked interventions in Scenario Generator.
  - o Fix to calculation of NMR that was allowing the NMR to be 100 times greater than it was supposed to be.

  - o Fixed stillbirth affected fractions.
  - o Updated stillbirth values.
  - o Scenario Generator LiST now allows scaling down to 0.
  - o New affected fraction values vary by country and are reset when the user chooses to revert to latest CHERG values.

Version	4.0
Date	7/23/10

- **General**
  - o Addition of new ribbon menu interface along with other cosmetic changes. Version 4 includes all internal analytical changes included in version 3.x.
  - o Table and chart displays now offer a print option on right click

- **Aggregate**
    - Adjusted Aggregate function to work with all Demproj and AIM summary tables.

- **Aggregate Uncertainty**
    - Fixed problem with Aggregated mean not being adjusted to deterministic projection.

- **AIM**
    - Fixed various problems with child summary displays
    - Fixed problem with adult need for ART calculation
    - Fixed problem with Russian strings not displaying correctly.
    - Added new PMTCT input variables for costing and treatment. (Temporally disabled awaiting approval)

    - **Extract**
        - Fixed problem with Extract not being able to open SPU file when running uncertainty analysis.

    - **FamPlan**
        - Added new CSV structure to Famplan data file.

    - **Goals**
        - Changed "Summary Table" display to show appropriate rows based on "Number of MSM Groups" selection.

    - **LiST**
        - Added stillbirth calculation including new default values
    - Made the tab/page controls homogenous
    - Put in the LiST notes
    - Changed order of stillbirth calculation
    - Added in a fix to the flickers on efficacy pages
    - Updated "impacts on wasting" editor and changed therapeutic feeding calculations
    - Update to historic Trend Files and default country data.
    - Changes to French strings.

- **Scenario generator**
    - Fixed problem with scenario projection not being saved in selected projection folder.
    - Specifically set Demproj to "Invalid" in scenario projection. This will force a recalculation when scenario projection is run.

- **Uncertainty Analysis**

- o Fixed problem with analysis stopping in 2008 when generating SPU file in Spectrum.
- o Added incidence 15-49 indicator.

Version **3.56**
Date **11/01/10**

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- • **AIM**
  - o Fixed various problems with Aggregate Uncertainty not calculating indicators.

Version **3.55**
Date **8/10/10**

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- • **Goals**
  - o Fixed problem with intervention costs being calculated before HIV population was calculated.
- • **AIM**
  - o Fixed various problems with Aggregate Uncertainty not calculating indicators.
  - o

Version **3.54**
Date **8/6/10**

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- • **AIM**
  - o Fixed problem when the percentage of women receiving triple ART is higher than the proportion still breastfeeding. Spectrum was previously not appropriately categorizing them as not breastfeeding.
- • **LIST**
  - o Fixed buffer overrun error with 3D graphs.

Version **3.53**
Date **7/29/10**

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- • **AIM**
  - o Added a check when the input for number of children on ART exceeds the total number of HIV+ children, in order to avoid negative AIDS deaths
  - o Corrected an error in the calculation of breastfeeding transmission past 12 months of age for mothers on ART. The percentage on ART was incorrectly

divided by 100 producing an under-estimate of the number of new child infections

Version	3.52
Date	7/21/10

- **Uncertainty Analysis**
  - ○ Added AIDS deaths (1-4) indicator

Version	3.51
Date	7/15/10

- **Aggregate Uncertainty**
  - ○ Aggregate Uncertainty analysis does not include summary indicators in the output file while in regions mode.

Version	3.5
Date	6/25/10

- **LiST**
  - ○ Fixed problem with Cause of death structure when reading in older files which did not include Pertussis.

Version	3.49
Date	6/15/10

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- **AIM**
  - ○ Fixed various problems with child summary displays
  - ○ Fixed problem with adult need for ART calculation
  - ○ Fixed problem with Russian strings not displaying correctly.

- **Extract**
  - ○ Fixed problem with Extract not being able to open SPU file when running uncertainty analysis.

- **Uncertainty Analysis**
  - ○ Fixed problem with analysis stopping in 2008 when .spu generated in Spectrum.
  - ○ Added incidence 15-49 indicator

- **Aggregate Uncertainty**
  - ○ Fixed problem with Aggregated mean not being adjusted to deterministic projection.

Version   3.48
Date   5/28/10

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- **General**
    - Fixed problem with scenario generator not saving List module with appropriate name.
    - Added custom Spectrum Scheduler to facilitate automatic processing of Extract and Uncertainty against multiple country data.
    - Uncertainty file is now renamed properly during a "SaveAs" function.

- **Extract**
    - Fixed problem with Young adults 15-24 not saving values.

- **Goals**
    - Fixed problem with Goals not working under Windows 7
    - Added additional MSM risk groups

- **LiST**
    - Update to historic Trend Files and default country data.
    - Fixed problem with LiST scenario generator.
    - Fixed problem with Herd effect data not saving to file.
    - Fixed problem with DPT link with Pertussis
    - Modifications to default effective sizes.
    - Modification to therapeutic feeding apportioning calculation.
    - Modification to intervention apportioning calculations.
    - Fix in herd vaccine calculation for meningitis.
    - Fix for Complimentary feeding aggregation in results.
    - Added direct entry for stunting option.
    - Adjusted output for LiST costing spread sheet.

- **Uncertainty Analysis**
    - Implement an adjustment to the double logistics fit when Spectrum generates curves for uncertainty analysis. This compensates for patterns where the logistic does not fit well. The adjustment value for each year is equal to the actual data point divided by the value of the curve fit and ensures that the curves have the appropriate shape while still maintaining the same amount of uncertainty. Note: these changes were added is 3.46 but were inadvertently removed in 3.47.
    - AIDS Impacts Ratio of fertility of HIV+ women aged 15-19 and 20-24 will now accept values between 0 and 5.

Version   3.47
Date   4/8/10

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- **General**
  - Fixed problem with loading older version of the LiST module requiring the Intervention module.
  - Fixed problem with SaveAs not changing the name of the Intervention module.
  - Indicator output windows now appear as selectable tabs on the main screen. Any tab may be undocked or floated using the right click menu.

- **Aggregate Uncertainty**
  - A new option, Use Regions Mode, if checked the new Regions Mode dialogue window appears. When the open button is clicked, the user is prompted to select a "regions file". The "regions file" is a csv file that has the following fields: Region, Country ID, Country, PJN file (including the path) for the country. This file is prepared outside of Spectrum by the user.

  - Clicking the Process and Export button causes Spectrum to create a separate Aggregate Uncertainty analysis of all the PJN files for each region. The data for each region is saved to the same csv file and contains the following data: Spectrum Version Number, Regions file name, Region, Indicator (Indicator and Configuration combined), Year and Estimate. The file is automatically named " …\RegionsAUA_YYYY-MM-DD_THH-MM-SS" and saved in the same directory as the input Regions file.

  - It is possible to append .AUA files together. If this is done, the original file name remains and the word "modified" is placed next to the number of files. If one or more of the countries are the same in the additional AUA files, a message box indicates which country is duplicated and it is not added to the list.

- **AIM**
  - There is a bug in the way AIM is calculating the transmission of HIV through breastfeeding.

  - A new section, Young Adults (15-24), was added to the AIM Display menu. It has all of the same indicators as the Adults (15-49) and Adults 15+ sections.

  - A new section, Young Adults (15-24), was added to the AIM Display menu. It has all of the same indicators as the Adults (15-49) and Adults 15+ sections. Output will be completed in the next beta release.

- **Extract:**
  - A new report called Data List was added. Data List is a csv file that contains the Projection File Name, Projection Title, Country, Indicator (Indicator and Configuration combined), Year and Estimate.
  - If a saved Extract file (.ex extension) is opened, the file name is now displayed along with the number of projections in the "ex" file.
  - It is now possible to append Extract files together. If this is done, the original file name remains and the word "modified" is placed next to the number of files duplicated country files are skipped.

- o Fixed problem with ART among children 1 to 4 display.
- o Added fixed form data list output.
- o Added the ability to append existing EX file with currently loaded EX file.

- **LiST**
  - o Cause of death inputs are not separated between neonatal and post neonatal.
  - o Pertussis is now an active cause of death.

Version   **3.46**
Date   **2/16/10**

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- **General**
  - o Update to source code compiler.
  - o Added country name output to Extract file.
  - o Fixed problem with transpose selection under Extract.
  - o When creating a new projection, the module selection dialog as been updated to include LiST trend data. This removes the need to have a separate Trend projection option in the "File" menu.
  - o Fixed EasyProj to account for population 85+ from UN population data.
  - o Fixed projection history problem where newly created projections were being saved in history while the projection was discarded.
  - o Moved the position of spectrum.ini file to windows application data folder. LiST Trend data is also saved to this folder.
  - o Fixed problem with Import not loading projection in newly selected folder.

- **AIM**
  - o Fixed default values in AIM for child eligibility for treatment when reading older files.
  - o Revised code for the child eligibility calculations.
  - o Changed default values in AIM for child eligibility for treatment.
  - o Updated AIM to include new progression patterns along with CD4 count guidelines for treatment.
  - o Added new analysis of child cohorts to determine the progression from infection to death in the absence of treatment by those infected perinatally and those infected through breastfeeding.
  - o Added a new section to determine eligibility for ART among children. Spectrum now estimates the distribution of HIV+ children by CD4 count and CD4 percent at each age, based on data from European cohorts. The user can specify the national eligibility criteria in terms of the age below which all HIV+ children should be on ART, the CD4 count and the CD4 percent.

- **FamPlan**
  - o Fixed calculation of abortions when abortion rate is specified directly in proximate determinates editor.
  - o Added feature turn off TFR calibration based on Easyproj survey year.

- Changed the way FamPlan calculates total fecundity (TF) when Easy FamPlan is selected. In the past TF was calculated at the survey year. This has been changed to calculate TF at the bass year of the projection

- **Goals**
  - Fixed small problem with Goals Vaccines editor

- **LiST**
  - Fix for IPT, BES, MMS (IUGR impact) calculation.
  - Updated effectiveness default data.
  - Aggregated 1-59 for the child death indicators.
  - Removed mortality rate summary indicator.
  - Fixed Therapeutic Feeding calculation causing impact an a new baseline projection. Updated therapeutic calculation concerning cohort disaggregation.
  - Further revisions to IPT malaria calculations.
  - Various Label changes.
  - Added Nutrition effectiveness to default refresh of data.
  - Put in check for decreasing coverage relative to the base year.
  - Reordered calculations to follow specific intervention sequencing
  - Added new causes of death
  - Fixed baseline mortality rate editor validity check.

- **Uncertainty Analysis**
  - Implement an adjustment to the double logistics fit when Spectrum generates curves for uncertainty analysis. This compensates for patterns where the logistic does not fit well. The adjustment value for each year is equal to the actual data point divided by the value of the curve fit and ensures that the curves have the appropriate shape while still maintaining the same amount of uncertainty.

Version   3.45
Date   11/30/09

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- **FamPlan**
  - Fixed paste problem in Prevalence editor for CPR Goal

- **General**
  - In Easy FamPlan, adjusted prevalence calculation to accommodate change in abortion index and unmet need with time.

- **Extract**
  - Fixed small bug introduced in version 3.44 which prevented the selection of Uncertainty indicators.

Version   3.44
Date   11/20/09

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- **General**
  - o   Added filename hints to projection selection in various tools.
  - o   Added new welcome screen
  - o   Added projection history to file menu
  - o   Added updated splash screen
  - o   Adjusted single year calculation of 5 year TFR for 2008 UN population data in Easyproj for final year.
  - o   Changed file format of string dictionary to accommodate strings larger than 255 characters and future Unicode support.
  - o   Updated Spectrum to MBB Link.

- **Demproj**
  - o   Fixed problem with rural population being miscalculated when the First Year population editor was not visited.
  - o   Fixed label problem with summary indicators when switching display parameters. Table was not being sufficiently cleared.

- **LiST**
  - o   Update to default country data.
  - o   Fixed problem with IPTp set to 100% exposed in all countries, regardless of changing it.
  - o   Update labels
  - o   Update effectiveness scores for child and maternal
  - o   Herd effect is now active at the start of level (i.e. 90%)
  - o   Updated French, Spanish and Portuguese strings

- **Bottleneck analysis (Beta Module)**
  - o   Various changes

- **FamPlan**
  - o   Now uses the proximate determinants model to calculate the proportion of births that are unwanted and due to unmet need.
  - o   Added an unmet need option to the prevalence goal. This allows unmet need to be reduced as prevalence increases. The initial value is read from Easy Famplan and will remain constant from the first year of the projection to the survey year in the database.
  - o   Fixed column with problem in child survival editor.

Version   3.43
Date   10/9/09

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- **General**
    - Fixed Import procedure to properly work with Uncertainty files. Export now zips prevalence (*.SPU) file.
    - Fixed format problem with CopyAll function in editors where some rows were being displayed with incorrect precision (right decimal) after Excel paste.
    - Added normalize to "Right Click" menu on editors.

- **AIM**
    - Replace the default female/male ratio for non-IDU driven epidemics to the same one that is used for IDU driven epidemics.
    - Fixed problem with Child ART need numbers for single indicator not matching summary table.
    - Fixed problem with HIV summary tables showing incorrect data when using a FirstYear parameter other than the first year of the projection.
    - Changed the display of need to be all those on ART plus those eligible on July 1 but not yet on ART. This is in response to a timing issue where Spectrum was displaying the number on ART as of December 31, but calculating the number in need for July 1.
    - Removed restriction on the number of children on ART to the identified need.

- **Demproj**
    - Fixed problem with infant mortality rate calculation when using single sex parameter.

- **Goals**
    - Fixed MSM labels in behavior editors, they were showing incorrectly.
    - Goals will transfer incidence numbers to AIM during calculation.
    - Now includes the effects of the parameter 'Transmission multiplier for male to female' entered in the epidemiology section of the Goals editor.

- **Extract**
    - Fixed problem with AIM's children under 1 indicators. They were showing all zeroes.

- **LiST**
    - Various calculation modifications.
    - Added the ability to choose a LiST trend file when creating a projection.
    - Corrections to the calculation of the impact of interventions on stunting.
    - Corrections to calculation of diarrhea incidence used in stunting.
    - Added maternal deaths averted indicator.
    - Word Wrapped intervention names in order to create move horizontal room in editors.
    - Updated MBB transfer procedure so MBB model can remain open during Spectrum data transfer.
    - Elapsed time for MBB transfer operation was significantly reduced.

- **Uncertainty Analysis**

- o Initial release of Uncertainty aggregate feature.
- o Uncertainty results are now written out to a binary (*.uac) file in order to lessen space requirements. The complete unsorted results for each indicator is saved in the *.uac file along with the upper, median and lower bound results for sorted iterations.
- o Modified the double logistics fit so that it would reject any curves showing incidence less than or equal to 0 in 2015
- o When generating SPU files, Spectrum now writes out a zero prevalence number. Previously Spectrum was repeating the incidence number in the prevalence column. This was causing incorrect incidence adjustments when AIM was calculating.

Version   **3.4**
Date   **7/22/09**

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- **AIM**
  - o Fix problem introduced in 3.38 where AIM was incorrectly adjusting the incidence for new projections created without using Incidence data from EPP.

- **Extract**
  - o Fixed problem with orphan calculations showing all zero's in CSV file.
  - o All output written with a value of < 1 will use a 4 decimal format.

Version   **3.39**
Date   **7/21/09**

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- **Uncertainty Analysis**
  - o Added new indicator to the uncertainty output, 'Number of new HIV infections among adults and children.
  - o Fix problem introduced in 3.38 where Uncertainty Analysis was incorrectly adjusting the prevalence during calculation.

Version   **3.38**
Date   **7/10/09**

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- **General**
  - o Added print function to right-click menu on all charts.
  - o Title of indicator has been added to table print output.
  - o Spectrum now unzips imported projections in the same folder where the zip file resides.

- **Demproj**
  - Added First Year selection to all displays.

- **LiST**
  - Changed order of delivery coverage indicators in editors.
  - Adjusted delivery related formulas in the coverage editor.
  - Fixed Breastfeeding display issue with <1 cohort.
  - Update to default data database.
  - Update to Costing output tool
  - Update to MBB transfer tool
  - Fixed data problem of various indicators when reading in old data projections.
  - Added checkbox to scenario generator which allow the option to flat line unchecked interventions from the intervention year to the target year.
  - Fixed problem with LiST calculating too many averted deaths for HIV interventions when coverage in the AIM module was scaled up to large percentages.
  - EasyLiST only validates checked interventions which avoids unnecessary calculation warnings.
  - Reworked Intervention links across cohort calculations.
  - Added output folder selection to Scenario Generator
  - Maternal effectiveness editor is now displayed by death cause
  - Fixed bug in EasyLiST related to validate
  - Changed the list of indicators so that they appear in order in EasyLiST
  - Changed the default Base year for LiST to 2003 where possible.
  - Fixed problem with random numbers appearing in EasyLiST output tables
  - IPT Malaria's affected fraction is calculated as the proportion of women in the first or second pregnancy.
  - Modified List Scenario generator to include scale up year.
  - Unhooked EasyLiST from expert mode and added transfer option for EasyLiST coverage values to expert mode.
  - Added 3 inactive wasting editors

- **AIM**
  - Adjusted treatment cost calculations to match summary table.
  - Updated progression patterns**.**
  - When reading in incidence from EPP, Spectrum will calculate the incidence among all adults 15-49 required to match the EPP prevalence for historical years. For future years, Spectrum will adjust EPP's incidence based on an adjustment calculated in the last historical year between the adjusted incidence and EPP's incidence
  - Single indicator for Number of children receiving ART now correctly matches the same output in the summary table.

- **RAPID**
  - Added First Year selection to all displays.
  - Increased accuracy of consumption of major crop input in the Agriculture sector.

- **Uncertainty Analysis**
  - Added Indicators to extract routine

Version **3.37**
Date **6/1/09**

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- **AIM**
  - Fixed problem with language change improperly showing menu indicators until Spectrum was restarted.

- **LiST**
  - Added maternal mortality section to LiST
  - Added new reduction in mortality by intervention indicator

Version **3.36**
Date **5/28/09**

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- **AIM**
  - Fixed problem with CD4 count labels.
  - Fixed problem with Regional Summary Indication not showing the correct year.

- **LiST**
  - Temporarily reversed vaccine herd effect, and prevalence entry for Breastfeeding options.

Version **3.35**
Date **5/21/09**

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- **General**
  - Fixed problem with background color and merged cells in editors and tables.
  - Fixed problem with EasyProj migration numbers in database. Numbers larger than 1 million (small number of countries) were being divided across two years.
- **FamPlan**
  - Fixed problem with TFR calculation when using EasyProj. Repeated calculations were causing a TFR reduction.
- **AIM**
  - Added Russian translations to new screen in AIM

- **LiST**
  - Added an editor in list to extend the vaccine herd effect to allow differential effectivenesses from 50 percent coverage to 100 percent coverage.

- o Added direct prevalence entry for Breastfeeding patterns. An option remains to use to use the breastfeeding promotion intervention.
- o Fixed problem with "percent stunting graph" showing 0-60 months as a graph rather than a summary table**.**

Version   **3.34**
Date   **5/07/09**

- **General**
  - o Fixed problem with Editor "CopyAll" not showing table title after an Excel Paste.

- **Demproj**
  - o Added 2008 UN population database

- **AIM**
  - o Correction made to the calculation of the cost of TB-ARV treatment. The number of people receiving TB treatment and ARZs is estimated as the number newly starting ART times the percentage that are also on TB treatment. The percentage on TB treatment was estimated as total TB cases divided by the adult population. In this correction it is estimated as total TB cases divided by the total need for ART, since most TB cases will be among those HIV+ in late stage.

- **Famplan**
  - o Fixed problem in the "Reducing unmet need for contraception" editor. The interpolate and duplicate functions now work as expected.

- **Goals**
  - o Fix problem concerning Configure for secondary school enrollment rate and the percentage of the adults in formal sector employment inputs. These are in percents but the calculations were treating them as rates.

- **LiST**
  - o Spectrum will only prompt for effectiveness updates once during each Spectrum session and user's choice is applied to each subsequent file loaded.
  - o Affected fractions on (effectiveness of nutritional interventions, IUGR tab) which are locked are now shaded to indicate they are linked to another source.
  - o Added source buttons for the different tabs under the coverage editor. "
  - o 'Complementary feeding education' and 'complementary feeding education and supplementation' interventions now have direct outputs. Previously they were funneled into a single output.
  - o In Deaths prevented by intervention indicator, any intervention showing zero deaths is hidden from the output table.

Version   3.33
Date   4/13/09

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- **General**
    - o Easy Famplan now selects prevalence as the default goal.
    - o Fixed problem with CopyAll function duplicating data after an Excel paste.
    - o Added Duplicate and Interpolate options to Editor's right click menu.
    - o Fixed display problem switching from table to line chart with various indicators.

- **Fiscal Space**
    - o Module opened for testing.

- **LiST**
    - o Fixed problem with LiST not recognizing PMTCT coverages when entered as percents.
- **RAPID**
    - o Fixed protection fault error with Health sector displays.

- **MBB Tool**
    - o Bas year of generated scenarios will start no latter than current year -1. This is needed for proper AIM calculations.

Version   3.32
Date   4/07/09

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- **AIM**
    - o Add Search button to find sexual activity for TFR reduction editor
    - o Added new breastfeeding editor to support DHS survey data.

- **LiST**
    - o Added EZ list Interactive editor.
    - o "Other" category relabeled "Injury/Other".
    - o Took out Pertussis as a cause of death.
    - o Pie charts numbers on cause of death indicator are now round to whole numbers.
    - o User is now asked to update effectiveness with Spectrum version change.
    - o LiST now supports Portuguese.

- **Famplan**
    - o Spacing problem corrected with Summary of Inputs and Risk adjusted mortality rate output tables.

Version   3.31

Date   **3/23/09**

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- **AIM**
  - o The Adult ART editor projection options, now work with both first line and second line data.
  - o The default values for ART survival in the first year are now 0.86. The default value for ART survival in subsequent years is 0.90.
  - o The regional table output is now working with regional data read from EPP.

- **LiST**
  - o Made additional changes to scenario builder tool.

- **Uncertainty analysis**
  - o Summary table's drop down display year is now working correctly.

Version   **3.3**
Date   **3/12/09**

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- **General**
  - o Added the ability to reload EasyProj defaults in an existing projection.
  - o Added Family planning data to EasyProj for specific countries.
  - o Added the ability to increase or decrease decimal accuracy in the editors and tables via the right click menu.
  - o Updated the appearance of Editors and Charts.

- **AIM**
  - o Spectrum now uses incidence as the main input for future projections. It has new patterns to describe the age distribution of new infections calculated from DHS and service statistics.
  - o New patterns of progression from infection to need for treatment and from need for treatment to AIDS deaths have been developed based on cohort data. Different patterns are provided for eligibility for treatment at CD4 counts under 200 and for CD4 counts under 350.
  - o The model can now be used to estimate the effects of switching eligibility criteria from CD4 count under 200 to under 350 in some future year.
  - o Survival in the first year of ART can now vary by year as program coverage improves.
  - o New factors for the effect of HIV infection on fertility have been developed from DHS data sets.
  - o Children with HIV are now tracked separately for those infected perinatally (fast progressors) and those infected through breastfeeding. (slow progressors).
  - o The proportion of children diagnosed with PCR can now be entered by year.
  - o The model now uses the new WHO guidelines for children on eligibility for treatment.

- o The effects of cotrimoxazole on child mortality are now calculated separately for child on ART and not on ART.
  - o The equation for estimating the number of double orphans has been updated from the latest DHS data.
  - o The uncertainty procedure can now generate incidence curves for the uncertainty analysis if an uncertainty file from EPP is not available.
  - o New output indicators have been added including the perinatal transmission rate, ART coverage, and children living with HIV, new infections, AIDS deaths, need for cotrimixazole and need for ART for children under the age of 1 and children 1-4.
  - o Calculation for orphans now uses perinatal transmission rate at the time of the birth rather than the year of calculation.
- **Extract**
  - o Extract is now working for all LiST indicators.

- **Goals**
  - o HIV module has been renamed Goals and behavioral interventions/calculations have been added.
  - o New editors have been added to Goals Module.

- **LiST**
  - o Fixed problem in Extract, the tool will now deliver the correct information for deaths prevented relative to the intervention year.
  - o Added Scenario Generator tool
  - o Added new 3D bar charts.
  - o Added MBB transfer wizard to Tools menu.
  - o Fixed problem with proportioning deaths across cohorts.
  - o Fixed problem with facility birth scale up not interacting correctly with home births' lives saved.
  - o Spilt coverage editors into various grouping tabs.
  - o Added start date for displays.
  - o Added French translation.
  - o Fixed problem with calculation of deaths averted due to AIM interventions. This was achieved by running AIM multiples alternating PMTCT ART and cotrim inputs.
  - o Fixed problem with ART preventing negative deaths.
  - o Calculation for deaths averted by ART is changed so we don't take credit for saving the same child year after year.
  - o Fixed child deaths apportioned to 6-11 month cohort. Previously only AIDS deaths were being placed in the 6-11 month cohort.
  - o Added a display to show neonatal, infant and Under 5 mortality rates on the same page.
  - o LiST was using Child mortality rates from Demproj to split LiST calculated u5mr by sex. CMR was not read in from the Life tables before LiST needed. This has been corrected.
  - o Added the ability to export data to Costing spread sheet.
  - o Deaths were not being apportioned correctly by cohort. Too many were being put into 0-1 Month. This has been corrected.

Version   3.2
Date   10/24/08

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- General/Demproj
    o Child Survival (LiST) module added to Spectrum.
    o Added new editor input routines to Demproj, AIM, and LiST modules.
    o New main menu system.
    o When creating a projection in the projection dialog, warning message will alert user if Easyproj was not selected.
    o Fixed problem with new projection created using Easyproj. Population was not being calculated correctly until the Demproj editors were visited.
    o Upgraded Custom life table to single year layout.
    o Added Custom Russian life Tables.

- AIM
    o In AIM, fixed transmission probabilities for mother to child by type of infant feeding. Previously exclusive and replacement labels were interchanged.
    o Fixed AIM's orphan indicators which were showing incorrect data with language option set to non-English.
    o Corrected the calculation of number of children on cotrimoxazole when coverage was set high.
    o Revised the calculation of births to HIV+ mothers to reflect that fact that the ratio of fertility reduction among HIV+ women should be interpreted as the ratio of fertility among HIV+ to HIV- women rather than HIV+ to all women. This has the effect of estimating somewhat more births to HIV+ women – up to about 10% more when prevalence is as high as 25%. It has no noticeable effect when prevalence is low.
    o Updated Treatment labels to PMTCT.
    o Fixed regional summary calculation in AIM. Prevalence and Incidence were calculated incorrectly in successive calculations. This was also causing an error in Uncertainly Analysis calculations.

- Family Planning
    o Fixed net reproduction rate in FamPlan.

- PMTCT
    o Fixed year adjustment problem in PMTCT module. This was causing errors in output indicators and in saving input data.

- Vaccine
    o Fixed final year discrepancy in Vaccine module's HIV Prevalence editor.
    o Fixed calculation error in Number of people on ART in Vaccine Module.

- Uncertainty Analysis

- o Changed Uncertainty Analysis to use a constant seed in random number generation. This will produce replicable results with repeated runs.
  - o Added HIV Adults 15-49 to Uncertainty Analysis.
  - o Uncertainty Analysis now generates Prevalence files (SPU) to match year settings of loaded projection. Previously it was fixed at 2012.
  - o Increased decimal accuracy of generated prevalence file inside of UA module. This will match accuracy of prevalence inputs in AIM module.
  - o Fixed calculation error with projections starting latter than base year of workbook.

- • Scenario Generator
  - o Modified the Scenario Generator in Spectrum so that you can easily create a 'No ART' scenario.
  - o Added variable selection to Scenario Generator to target specific variables.
  - o Scenario Generator now saves Active Indicator Check Box to saved options data file.

- • Extract
  - o Fixed order of indicators in Extract transpose file to match indicator selection list.
  - o Spectrum will be more responsive during long Extract processing, i.e. not hang.
  - o Added a progress bar in Extract.
  - o Fixed corruption in Extract transpose file with data being misaligned in wrong columns.
  - o Spectrum will no longer skip over Non-UA projections during Extract. Non-UA projections will show blanks under UA indicator columns.
  - o Fixed problem with Extract ignoring Uncertainty Analysis module data when reading in previously saved Extract (EX) data files.
  - o Fixed problem with Extract and projections with UA data. UA data was not being properly read in and causing error messages during processing.
  - o Fixed problem in Extract tool in the generation of the transpose file. Spectrum was omitting data with one indicator selected and multiple projection files.
  - o Transpose selection in Extract is now being saved in EX file.
  - o Fixed AIM (summery of age) indicator in Extract. It was not being included in the transpose CSV file.

Version   3.14
Date   11/02/07

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- • Added total cost for all AIM treatment indicators.
- • Fixed editor error "Class not installed" which would appear after installation of 3.13 on various machines.

Version   3.13
Date   10/30/07

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- • Added Portuguese translation for the Vaccine module in Spectrum

- Fixed problem with CTX users getting counted twice in Demproj.
- A problem was discovered in the MTCT editor. The editor was not correctly picking up the number of women not on treatment.
- Fixed problem with extracting Deaths by Age in Extract tool.
- Fixed problem with U5MR calculation.
- Fixed problem with Defined age display in Demproj. Error would occur with when choosing high age = 80, electing 'table' and 'disaggregate by age'.
- Fixed the calculation of IMR in Demproj.
- Fixed Extract calculation problem with multiple projections chosen.
- Spectrum will now auto re-project data files created from previous versions of Spectrum. This eliminates the need to force a re-project by entering and saving data in an editor.
- In AIM corrected the calculation of new HIV infections needed to achieve the input prevalence so that the output prevalence exactly matches the input prevalence
- In AIM changed the calculation of incidence indicator so that it uses the formula: incidence$_t$ = new infections$_t$ / (adults$_{t-1}$ – HIV+$_{t-1}$) This allows the user to copy incidence from a projection that is based on prevalence and use it to create another projection that is based on incidence and that will produce the same output prevalence.
- In Aim corrected the calculation of incidence by sex when the projection is based on incidence as the input. Female and male incidence are now determined by the input prevalence for both sexes combined and the ratio of female to male prevalence. Note that the ratio of female to male prevalence is usually close to the ratio of female to male incidence but is not exactly the same. For the best results the user should calculate the ratio of female to male incidence from the Adult 15-49 Summary Table and put the result in the input editor for the sex ratio.
- Smooth curve for the sex ratio of prevalence when you create a new projection or press the Generalized Epidemic button in AIM.
- In Vaccine, fix to the MSM spike problem.
- Added the ability to copy table data to the clipboard when viewing Uncertainly output.

Version   3.12
Date   7/02/07

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- Version 3 of Spectrum includes a number of enhancements to the demographic projections (DemProj) and HIV/AIDS module (AIM). The demographic projection routines have been completely re-written to integrate the impact of AIDS more tightly into the demographic calculations and to improve the handling of the timing of demographic events and the estimates of mortality by single age.
- New life tables have been constructed from the UN and Coale-Demeny model life tables that now include survival by single age.
- The HIV/AIDS calculations now track people by stage of infection (uninfected, asymptomatic, in need of treatment, on treatment, dead from AIDS). Options have been expanded to include first and second line ART for adults and distributions of treatment and infant feeding regimens for PMTCT.

- New epidemiological patterns have been implemented, following the recommendations of the UNAIDS Reference Group on Estimates, Models and Projection.
- A new section on uncertainty has been added that allows the estimation of the uncertainty ranges associated with key HIV/AIDS indicators.
- New tools have been added to Spectrum that allow the easy creation of multiple scenarios from a number of country files (Scenario Generator), extraction of selected indicators from a number of different Spectrum files (Extract) and aggregation of indicators across a number of Spectrum files (Aggregate).

Version   2.42
Date   11/14/06

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- Added in LAM method and calculation to FamPlan.

Version   2.41
Date   10/2/06

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- Added new feature to the source button. The user is now able to copy, cut, paste, and print text entered in the Source editor.
- Added new HIV Vaccine model into Spectrum
- Updated string files.

Version   2.40
Date   4/25/06

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- Fixed bug in demographic routine. It affects demographic projections with migration.
- Fixed regional error when reading in .spt files from the EPP program.
- Updated strings in the FamPlan model.

Version   2.39
Date   2/15/06

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- Changed default values for % on cotrimoxazole surviving to the following year, % on ART surviving to the following year, and % on ART and cotrimoxazole surviving to the following year in AIM.
- Increased the maximum AIDS years from 20 to 30 under HIV Progression.
- Updated constants for Adult and Children, fast and slow patterns.

- These new constants will be forced in for old data files.
- Added new Emergency Contraception model in FamPlan.
- Added new Demographic Dividend outputs in Demproj.
- Updated Wanted Pregnancies calculation so that outputs are not negative.
- Added new Safe Motherhood Model.

Version   2.38
Date   10/14/05

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- Fixed bug in Famplan. There was a division by zero error that would happen in Growth rates when certain inputs were entered.
- For Unwanted Pregnancies terminated, changed maximum value to 86.
- Changed the way the pop up warning for PAC model is displayed.
- Update feature added.

Version 2.37
Date   6/1/05

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- Updated strings for new AIM and Demproj changes.
- Added new section in PMTCT.
- Fixed bugs in the EPP routine.
- Numerous bug fixes in the new AIM section.

Version 2.36
Date   4/12/05

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- Found and fixed bug that was causing incorrect outputs for New Infections, New AIDS Cases, and Number Infected.

Version   2.35
Date   4/5//05

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- Fixed bug found in EasyProj routine.

Version   2.34
Date   4/1/05

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- Added new EasyProj Data files that will be read into Demproj. These include ASFR, Sex Ratio, and Migration.

Version   2.33
Date   3/24/05

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- Fixed bug for the calculation of the effect of the PMTCT program in AIM.
- Fixed bug for new EasyProj Sex Ratio inputs.
- Fixed Final Year bug that occurs because of the new Ranges and Regions summary tables.
- Fixed string error in AIM. New infections by age had "Percent" in the title.

Version   2.32
Date   3/21/05

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- Fixed bug with "Number on ART" output in AIM. This was not being calculated.

Version   2.31
Date   3/19/05

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- Fixed bug in Prevalence and Incidence outputs in AIM. It was being displayed as a whole number instead of having two decimal places after it.

Version   2.30
Date   3/9/05

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- Added ability to read new SPT files from EPP as well as the older version.
- Prevalence can now be read in from formatted excel files in AIM.
- Added new DHS inputs in AIM.
- Reworked the "HIV Age Distribution" tab in AIM. Added buttons "Apply Generalized Epidemic Pattern" and "Apply Concentrated Pattern". Updated the patterns.
- Reworked the MTCT tab in AIM. Added three new options the user can choose from. "Medium Duration of Breast Feeding in Population", "Treatment program", and "Infant feeding options". Two new inputs were added, "Base transmission rate (no program)" and "Transmission rate with program". User can specify if they want to enter "Pregnant women receiving PMTCT" as percent or as a number.
- Added new "Child Treatment" tab in AIM. Five new inputs were added here. They include: "Percent of children born to HIV+ mothers receiving cotrimoxazole", "Percent of

children with moderate-to-severe HIV disease receiving ART", "Percent of children on cotrimoxazole surviving to the next year", "Percent of children with moderate-to-severe HIV disease on ART surviving to the next year", and "Percent of children with moderate-to-severe HIV disease on ART and cotrimoxazole surviving to the next year. The user can also decide if "Early diagnosis of HIV-infection is available".

- Reworked the AIM display. It is now split into the submenus "Total populations", "Adults", "Children", "Regional table", "Ranges table", "Orphans", and "Impacts".
- Added new summary table outputs "Regional" and "Ranges"
- Added four new outputs for children. They are "Need for cotrimoxazole", "On cotrimoxazole", "Need for ART", and "On ART".
- Updated the EasyProj data.
- Disable the "HIV/AIDS parameters" tab in AIM.
- Added version number to the splash screen.
- Removed unused AIM impacts inputs and outputs. "TB incidence without HIV", "Percent pop with latent TB", and "TB incidence with HIV" are only needed.
- Changed the name of the install file from "Spectrum.exe" to "SpecInstall.exe". This was done to avoid user confusion from the actual install file name to the run file name.

Version   2.29
Date   12/3/04

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- Added new feature in AIM. For Adult HIV Prevalence, the user can now click on a check box to be able to display 4 decimal places instead of 2. Adult HIV Prevalence is now being written to the output file with 4 decimal places.

Version   2.28
Date   8/20/04

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- Made changes to PAC display menu. Removed "Lives Saved" output.
- Made string changes in the CR model. Changed Population Group names for "Commercial Sex Workers" to "Sex Workers", "Married or In-Union Couples" to "Married or In-Union Couples (for HIV), and "Family Planning Users" to "Family Planning Users (for FP).
- Added a warning popup dialog that comes up when the user is using the PAC model. It basically reminds them to have the abortion option "Calculate from unwanted pregnancies" enabled.

Version   2.27
Date   6/10/04

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- Spectrum can now display the Chinese language.

- Fixed bug in EasyProj. When certain countries were selected an error message would display.
- Changed the way Number newly needing ARV therapy is calculated. It now uses Number on ARV Therapy.
- Fixed bug in Life Expectancy output. A Floating Point Error would occur when the user would display Life Expectancy without a re-calc.
- Added Total Number Needing ARV output.
- Added Adult population 15-49 to the Adult 15-49 summary sheet.
- Added child population 0-14 to the Child 0-14 summary sheet.
- Fixed bug in Sex Birth Ratio calculation.
- Updated the way All AIDS orphans are being calculated. It now takes in account if one parent dies from AIDS it is more likely that the other parent will also die of AIDS than if the parent dies from some other cause.
- Fixed bug in "Total Number Needing ARV" calculation.
- Fixed bug in Sex Ratio. The formula to calculate male and female infections to achieve the desired sex ratio didn't work well over the long term.
- Fix bug in the Life Tables that would occur when Easy Proj was selected with the Japanese country.
- Fixed bug in All AIDS Orphans calculation.
- Made changes to NewGen calculations.
- Added New Orphans section in AIM.
- Reworked the New Orphans section. New outputs are "Total New Orphans" and "Orphans and Vulnerable Children".
- Fixed bug in PAC model, it now handles division by zero error.
- Fixed bug with the new Custom Model Life table. Program will set the Life table back to default if the path is invalid.
- PJN file now writes the version number out.
- Added new Condom Resource Model.

Version   2.26
Date   2/11/04

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- Modified the AIM output file to now write out the new Orphans change from 0 to 14. It now goes from 0 to 17.
- Added to new indicators in the AIM Adult 15-49 Summary output table. Indicators added are: Number newly needing ARV therapy(both sexes), Number newly needing ARV therapy(male), Number newly needing ARV therapy(female), and Number on ARV therapy(both sexes).

Version   2.25
Date   2/09/04

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- Fixed bug in AIM. After the projection was re calculated it produced no children less than 14 with HIV.

Version   **2.24**
Date   **2/02/04**

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- Fixed bug in Pyramid Charts. The max year constant was not changed from 50 to 100 years. If user had projection over 50 years and tried to display a Pyramid Chart they would get a Range Check Error.
- Fixed bug in AIDS death by Age Pyramid Chart. Data wasn't being correctly outputted to the Pyramid Chart.
- Fixed bug in Number On ARV Therapy calculation.
- Changed default values for HIV Sex Ratio.
- New default pattern for sex ratio of female to male prevalence in generalized epidemics, peaking at 1.3.
- New default value for the reduction in TFR among HIV+ women 20-49 of 0.7, to balance the sex ratio change.
- Life table designations in EasyProj are updated according to Ian's report of the meeting at UNPOP.
- In EasyProj, non-AIDS life expectancy at birth has been re-estimated for those countries with changed life table designations in order to maintain the same child mortality.
- Fixed a bug so that the Fast button for the child pattern for progression to AIDS death now gives the new default pattern.
- In DemProj the sex ratio at birth is now a vector instead of a scalar - you can make it change over time.
- You can now have your own custom life table file. In the model life table editor you can select "Custom" and designate a file name. The only thing to remember is that the life table file must be in the Spectrum\DP directory.
- Added a feature to DemProj to allow you to enter the base year population by single age.

Version   **2.23**
Date   **1/09/04**

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- Added 4 new HIV indicators under AIM Epidemiology.
- Fixed Orphan Calculation problem, difference in years before AIDS epidemic.
- Added default values for the AIDS orphans inputs. 71 for both.
- Added new default values for child survival
- Added direct calculations of children born HIV+
- Added new indicator called Number on ARV Therapy under AIM Epidemiology.
- Added new summary of inputs table under AIM Epidemiology
- Copy All feature now displays the Indicator name.

- Added break lines in the display dropdown menu list under AIM Epidemiology
- Updated the life table to match what the UN Pop Division uses.
- Fixed bug in EasyProj that occurred when starting a projection in 1950
- Orphans now show ages 0 to 17 instead of 0 to 14.
- Fixed bugs in the PAC model calculations

2.22 8/7/03

- Added new model in FamPlan called Post-Abortion care.
- Fixed bug in FamPlan. The Duplicate and Interpolate buttons were not working in the Goals section.
- In FamPlan, fixed the calculation of acceptors of IUD and implants to exclude the separate calculation of discontinuation of new acceptors in the year of acceptance.

2.21 7/16/03

- Made change in FamPlan so that there can be no negative Acceptors output.
- Fixed Summary of Inputs bug in FamPlan. Summary Of Inputs should not show Female and Male Ster. Average age when Age Group Option is set to Five year Age Groups.
- Made a calculation change in FamPlan. The calculation was using a discontinuation rate based on the average age to calculate sterilization acceptors. Changed the calculation to remove the discontinuation from the calculation of acceptors for male and female sterilization.
- Fixed bug in FamPlan. When multiple Projections are loaded, the data is lost for Method Mix.
- Added Normalize button on the International Migration tab in Demproj. This button can only be used for Male and Female Age Distribution.
- Resized editors in Demproj and AIM so that more years are displayed without the user having to scroll.
- Now Arabic and Russian strings show up within cells. This is used in certain summary tables.
- Fixed bug in Demproj, on the ASFR tab if user selected "Enter from Keyboard" and tried to display a chart the "Custom" column would not show up.
- Updated Arabic strings.
- Updated Russian strings.
- Fixed Arabic and Russian string bugs.

2.20 5/6/03

- Made a fix in the Family Planning module. The Normalize button was not showing up in the Method Mix and Source Mix tabs.
- Fixed the Disaggregated check boxes in Family Planning Display.
- Added Select Fonts dropdown list in Environment dialog. It is now possible for the user to choose from many different fonts.
- Updated Portuguese strings in AIM and Demproj
- Updated Arabic strings.

2.19 4/25/03

- Updated strings for Russian and Arabic in AIM and Demproj.

2.18 4/18/03

- Made a change in the NewGen module. In the Abortion Rate editor sheet, set the input for two decimal places instead of one.
- Resolved the problem of having the user manually adjust the window size when using large fonts.

2.17 4/17/03

- Updated the data in the Easy Proj section of Spectrum.
- Changed the size of the Easy Proj screen to show counties with long names.
- Made a change in the Demproj editor. In the Demographic Data button, first year population tab. For very large first year population the numbers would not fit in the columns. Also set it up so that if the scalar is set to Units then no decimal place is shown.

2.16 4/8/03

- Fixed bug in EasyProj. When user would try to open an EasyProj file they would get a Range Check error.
- All EasyProj countries were not being read in correctly. Namely China Hong Kong SAR, China Macao SAR and China.

2.15 4/3/03

- All Orphans outputs were not being written to the AIM output file. Thus whenever a user came into the display and didn't force a recalculation data wouldn't show up.

2.14 3/31/03

- Fixed scaling problem in the Orphans Section.
- Made a change in NewGen. Changed calculations for Pregnancies, Births, and Abortions.

2.13 3/24/03

- Changed output files so that NAN and INF are not being outputted.

2.12 3/13/03

- Fixed bug in Orphans section, Maternal AIDS Mortality time loop error.

2.11 3/13/03

- Added Portuguese strings for new AIM Orphans section
- Added Portuguese strings for PMTCT
- Changed Summary by Age output in AIM section so that it now goes from 0 to 14 instead of 0 to 15.

2.1 3/3/03

- Fixed scaling problem in the new AIM Orphans summary section.

2.0 2/28/03

- The new version of Spectrum will not run under Windows 3.1. It will work under Windows 95, 98, ME, 2000, and XP. Anyone who is still using Windows 3.1 should continue to use the last release, version 1.63.
- Long file names, longer than 8, characters are now fully supported.
- There is a new chart type that displays a chart with a table of values at the bottom.
- Projections can now extend up to 100 years.
- The population projection now saves all the single age information. For most purposes this will not make any difference, but in cases where you are looking at special age groups, such as primary school age students, this change will make the projections more precise.
- There is a new section on orphans that calculates maternal, paternal, dual and total orphans due to AIDS and non-AIDS causes and can display all orphans or by single years of age.
- Updated patterns for the age and sex distribution of HIV are included and the interface with EPP has been updated to accommodate the new version of EPP that will be released in about one month.
- The latest changes in NewGen are included.

1.63 6/03/02

Added French and Spanish Strings to PMTCT module.
Adjusted SPT file reader in AIM to handle region specific data from EPP.
Modified Aids deaths calculations for future years.

1.62 4/12/02

Added Portuguese Strings.
Modified limits in PMTCT Module and adjusted equations.

1.61 2/4/02

- Fixed last year calculation in AIDS Deaths display.
- Fixed Child AIDS summary. Female AIDS deaths were not displayed correctly.

1.57 8/6/01

- Fixed integer overflow problem in FamPlan displays.

1.56 6/4/01

- Added button in HIV prevalence editor to read EPP data.

1.55 6/4/01

- Fixed error in creating new MTCT projection.

1.54 5/24/01

- Added abbreviated names to MTCT editor.
- Added Distribution of Cost Pie chart to MTCT.
- Fixed mistake in Coale-Demeny West Male life table.

1.53 3/7/01

- Increased primary school enrollment rate in RAPID education sector.
- Added Male data support to NewGen.

1.52 1/11/01

- In AIM fixed the back casting routine so that it correctly calculates HIV prevalence and the sex ratio of prevalence during the back casting period.
- In DemProj corrected the displays of GRR and NRR to reflect the reduction in fertility due to HIV infection.
- In AIM corrected the calculation of AIDS orphans to reflect the reduction in fertility due to HIV infection.

1.51 1/02/01

- Added Portuguese support.
- Fixed problem with Male and Female AIDS births.

1.50 12/04/00

- Checked the file attribute on the Spectrum.ini file. Spectrum will not write to this file if marked read only.

1.49 11/28/00

- Fixed problem with population with-AIDS projection. AIDS deaths were not being subtracted out in latter years.

1.48 11/02/00

- Added MTCT module
- Fixed regional setting problem in Easyproj

1.47 7/13/00

- Fixed message dialogs with large fonts.
- Fixed Copy/Paste with regional settings.
- Modified NewGen Strings.
- Correction to calculation of proportion progressing to AIDS 20 years after infection.

1.45 7/13/00

- Fixed Commodity cost editor in SupplyPlan module.

1.44 6/15/00

- Fixed Life Expectancy read problem in Demproj.

1.43 5/26/00

- Fixed scaling on horizontal bar charts. Scale is displayed in the right margin.
- Changed input mask on Demproj Migration distribution by age to -999 to 999%.

1.42 2/24/00

- Modified Russian Strings.

1.41 2/17/00

- When using TFR goal, 5-year age groups and selected Model table, FamPlan was not loading the ASFR correctly from the tables.
- Fixed problem with AIDS summary screen with multiple projections loaded AIM.
- Corrected back casting procedure in AIM to use the new definition of HIV prevalence.
- Corrected calculation of HIV incidence in AIM.
- Fixed Negative number of HIV+ problem in AIM.

1.40 1/13/00

- Fixed problem in AIM where the calculation of AIDS Deaths overflowed assigned field. This would cause an Error in Spectrum when re-reading the projection from file.

- Fixed problem with disaggregating Users by source in FamPlan. This problem was introduced in version 1.38 with the "Users Need" fix.
- Added FPLM module (Beta).
- Added "BenCost" short name.

1.39 11/11/99

- Changed Russian strings.

1.38 11/05/99

- Fixed Reducing Unmet Need (Goal1) editor. TFR editor was not being displayed correctly. Number of users were not being displayed properly when disaggregating by need in Family Planning.
- Fixed Growth Rate display when disaggregating by source Family Planning.
- Removed the ability to disaggregate by need in Acceptors and CYP displays Family Planning.
- Changed Benefit-Cost's title caption in editor selection dialog.

1.37 10/27/99

- Changed Benefit-Cost's title caption in Config editor.
- Changed Perinatal Transmission Rate in DP to a time dependant input.
- Changed the conversion of old HIV age distribution to start at the 10-14 age group.

1.36 10/07/99

- Changed the way incidents were calculated based on new definition of prevalence that now includes AIDS.
- Fixed problem with accessing EasyProj.

1.35 9/27/99

- Changed the name of the FOCUS module to YARH.
- Modified French Strings.
- Added ability to convert old HIV age distribution input to new format when reading in file.

1.34 8/31/99

- Modified French Strings.
- Added EasyProj to Spectrum.
- Added Benefit-Cost Module.
- Changed the way HIV age distribution is inputted in AIM editor.

1.33 3/19/99

- Modified Spanish strings.

1.32 3/17/99

- Changed Total Abortion Rate's input range, under 5 year age groups, to 0-1000.
- Changed input range in prevalence editor to 0-100.

1.31 3/11/99

- Fixed default method selection in FamPlan for single indicators.
- Fixed HIV and STD Incidence calculation in Focus Module.

1.27-1.30 3/2/99

- Modified Spanish strings.
- Modified Arabic strings.
- Changed footer caption on Fertility Displays in Demproj to indicate Females.

1.26 1/27/99

- Spectrum will now except 0 for ASRF input in FamPlan.
- Modified FamPlan's read/write to handle large numbers in cost outputs.

1.25 1/20/99

- Added 3 decimals to Total Abortion Rate under 5 year age groups.
- Fixed labeling on Proximate Determinates under 5 year age groups.

1.24 12/3/98

- Added ability to aggregate multiple projections into one (Demproj Only).

1.23 11/18/98

- Removed Leed Courier font.
- Added the ability to disaggregate across single age in Demproj Defined Age Group Population display.
- Fixed duplicate and saving problem in Percent Married editor in Focus module.
- Changed Average Birth Interval to Median Birth Interval in Focus.
- Adjusted ASFR editor in Focus to accept standard ASFT numbers 0-999.

1.22 11/12/98

- Fixed problem with inputting negative numbers. This problem was introduced in version 1.20.

1.21 11/5/98

- Fixed abortions as a percentage of unwanted births in FamPlan.
- Fixed Chart Font selection. If was only working for displays in Demproj.
- Improved fit of Russian Strings in all modules.

1.20 10/20/98

- Fixed problem with thousand separator under regional settings being a space.
- Fixed problem with calendar dates showing up in editors with invalid entries.
- Added Russian text.

1.19 9/25/98

- Changed label of 'HIV Deaths' to 'AIDS Deaths' in Focus.
- Added inputs by marital status in Focus.
- Added ability for Focus to effect TFR and Births in DemProj.
- Modified dependency ratio calculation in DemProj to include last age group.
- Fixed problem in Cost Regression calculation in FamPlan.

1.18 7/27/98

- Fixed problems with five year age group calculations in FamPlan module.

1.17 7/10/98

- Fixed problems with the single age desegregation at the higher ages in DemProj.
- In DemProj migration editor, added ability to specify negative percentages for age distribution.

1.16 6/26/98

- Added a check to prevent user from adding more than 10 sources in FamPlan.
- Fixed problem when displaying FamPlan inputs when number of output lines exceeded 128 in spreadsheet.
- Fixed various translation strings in DemProj.

1.15 5/15/98

- Added Age selection to Graph label on FC displays.

1.14 5/11/98

- Fixed problem in DemProj editor that was causing the rural growth rate to be replaced by the urban growth rate.
- In DemProj, Fixed the urban population projection when using the method of

urban-rural growth rate difference in a single year projection.

- In DemProj Summary Indicators, fixed the growth rate indicators when the urban or rural options are selected.
- Made slight modification to the way AIDS deaths are distributed by year. Previously, no deaths occurred in the year in which AIDS developed. Now some AIDS deaths can occur in that year, depending on the setting for the AIDS life expectancy.
- Added CYP display in FamPlan.
- Removed the Urban and Rural Selection from the AIDS section.
- Fixed problem with Installation. Program Icon was not being created with French and Spanish.
- Fixed source editor in Focus.
- Fixed editor captions in Focus.
- Fixed a problem with Focus calculations when adult HIV prevalence was zero in two sequential years.
- Fixed problem with saving negative numbers in the Focus module.

1.13 3/25/98

- Added spreadsheet clipboard feature to Protrain.
- Added FOCUS module.

1.12 3/3/98

- Saved the RAPID spreadsheet in Office95 format.
- Fixed a memory problem in Protrain when a projection is deleted.
- In DemProj, fixed a problem with switching between the options of "No urban/rural projection" to "Urban/rural projection".

1.11 2/2/98

- Added more statistics to reality check Protrain spreadsheet.
- Dropped the selection of TI in the Protrain spreadsheet.

1.10 1/29/98

- Added Percent of Acceptors/Users served by Cadre to reality check in Protrain spreadsheet.
- Fixed several strings in Protrain.

1.09 1/26/98

- Fixed problem with AIM data file saving and reading very large numbers.
- Added Sample data file.
- Changed installation script to include Sample data file component and backup option.

1.08 1/14/98

- Fixed module labels in projection editor to match module names in menu.
- Fixed problem when creating a new projection on a diskette. Does not require a subdirectory anymore.
- Added Protrain Module.

1.07 10/23/97

- Fixed FP problem in Cost per Users.
- Minor modifications to Urban population projection.

1.06 10/01/97

- Fixed problem with Urban population projections.

1.05 9/26/97

- Added Spanish support.

1.04 9/25/97

- Fixed a problem in DemProj in the calculation of the survival rate of the oldest age group.
- Added the scale multiplier to the display of migration in the DemProj summary output.
- In DemProj added code to sum the male and female urban and rural population by age.
- Fixed problem in RAPID in calculation of new households when more than one projection is active.
- Fixed problem with Pyramids scale label.
- Fixed Menu problem in AIM when language was changed.
- Took out check for 0-100 in ASFR editor. Now user can enter actual ASFR and then use the normalize button.
- Added the input ASFR table to the comparison graph.
- Added total for Males and Females in the HIV distribution editor.
- Changed Efficiency to Efficacy in AIM Measles variable name.
- Put a check for blank lines in the PJN file.
- Added French support.

1.03 9/19/97

- Fixed problem with year labels on pyramid for 5 year and 10 year intervals.
- Fixed problem with year labels on age group table for 5 year DemProj projections.
- Fixed Deaths calculation.

1.02 8/21/97

- In RAPID changed maximum and minimum values for labor force participation rate to 0 to 120.
- Added Arabic support.
- Fixed problem with years on display charts.
- Fixed problem in calculating pregnancies with Calculate Abortion option turned on.
- Fixed problem with urban population total in RAPID, ensuring that sum for both sexes is correct.
- Fixed problem with MWRA calculations in FamPlan.
- Turned on sex option of 15-49 population.
- Fixed problem with message box and Large Fonts.

1.01 6/25/97

- Changed RAPID education editor to allow zero values.
- Changed FamPlan Method Attributes editor to work correctly when no methods required attributes.

1.0 6/24/97 Initial release of Spectrum