USAID
FROM THE AMERICAN PEOPLE

Health Finance & Governance
Expanding Access. Improving Health.

COSTS OF HIV VIRAL LOAD AND EARLY INFANT DIAGNOSIS: FORECASTING TOOL MANUAL FOR APPLICATION

April 2017
This publication was produced for review by the United States Agency for International Development.
It was prepared by Peter Stegman, Rachel Sanders, Chris Cintron, and Carlos Avila for the Health Finance and Governance Project.

The Health Finance and Governance Project
USAID's Health Finance and Governance (HFG) project will help to improve health in developing countries by expanding people's access to health care. Led by Abt Associates, the project team will work with partner countries to increase their domestic resources for health, manage those precious resources more effectively, and make wise purchasing decisions. As a result, this five-year, $209 million global project will increase the use of both primary and priority health services, including HIV/AIDS, tuberculosis, malaria, and reproductive health services. Designed to fundamentally strengthen health systems, HFG will support countries as they navigate the economic transitions needed to achieve universal health care.

April 2017

Cooperative Agreement No: AID-OAA-A-12-00080

Submitted to: Scott Stewart, AOR
Office of Health Systems
Bureau for Global Health

Recommended Citation: Stegman, Peter, Rachel Sanders, Chris Cintron, and Carlos Avila. April 2017. *Costs of HIV Viral Load And Early Infant Diagnosis: Forecasting Tool Manual For Application.* Bethesda, MD: Health Finance & Governance Project, Abt Associates Inc..

For comments or suggestions to improve the tool, please contact:
Chris Cintron Christopher_Cintron@abtassoc.com or Carlos Avila Carlos_Avila@abtassoc.com

Abt Associates Inc. | 4550 Montgomery Avenue, Suite 800 North | Bethesda, Maryland 20814
T: 301.347.5000 | F: 301.652.3916 | www.abtassociates.com

Avenir Health | Broad Branch Associates | Development Alternatives Inc. (DAI) |
| Johns Hopkins Bloomberg School of Public Health (JHSPH) | Results for Development Institute (R4D)
| RTI International | Training Resources Group, Inc. (TRG)

COSTS OF HIV VIRAL LOAD AND EARLY INFANT DIAGNOSIS: FORECASTING TOOL MANUAL FOR APPLICATION

DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development (USAID) or the United States Government.

CONTENTS

1. BACKGROUND

The Excel-based spreadsheet tool, developed by USAID's Health Finance and Governance (HFG) project, can be used to estimate the costs and human resource implications of scaling up HIV viral load monitoring and the use of viral load testing for early infant diagnosis (EID). Users can choose between different testing platforms, target populations, and supporting practices, and view outputs accordingly. Some sections of the tool are pre-populated based on the costing study that guided creation of this tool – these inputs should be viewed only as an example, not as a depiction of what all VL and EID testing arrangements will or should include.

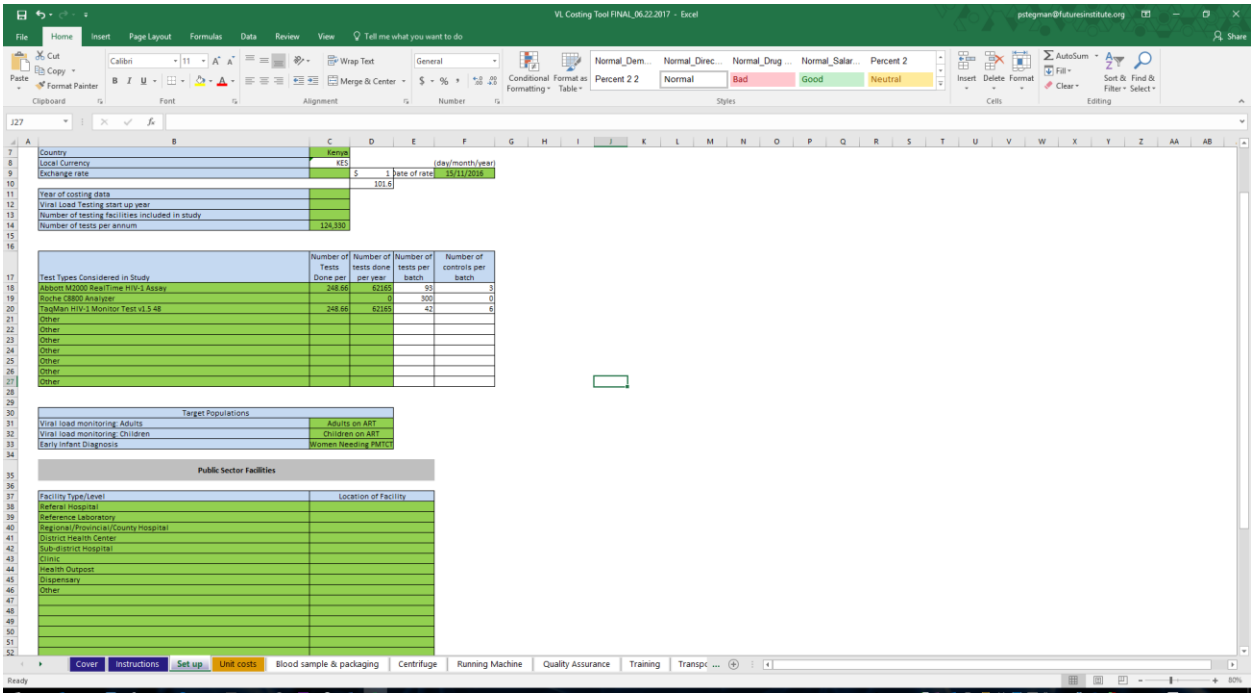
The spreadsheets have a consistent color code – green cells must be filled in in order to generate results; grey cells can be overwritten if needed, and white cells should be left alone, as they contain a formula required to generate results.

2. SETUP

The blue tab labeled "Setup" is used to define the parameters for the estimates of the costs of viral load testing. Users should first select their country from the drop-down list, and then enter the local currency and exchange rate to US dollars. This should also include an entry that shows the year of the exchange rate, for documentation purposes. Users have the option to enter costs in either local currency of in US dollars. Results will be displayed in US dollars.

Test types should be entered in cells B18 to B27. Users can name up to five different test types, or multiples of the same test type, which is used by the country to scale up viral load monitoring and EID testing.

Users should then use the dropdown menus to select the target populations for adult and child viral load monitoring, as well as early infant diagnosis. Pre-populated target populations have been provided by default, described below. Numbers are drawn from the Spectrum modeling that countries complete with UNAIDs, and are drawn from the UNAIDS database of country files. These files are updated every year. If, however, the tool is implemented prior to the latest update being released, the previous year's data will be used.



Pre-populated options for adult viral load costing include:

- Adult HIV+ (15 and over)
- Adults on ART (15 and over)
- Other – if the "other" option is selected, the user will need to enter their own target population on the Drop Down Master List tab.

Pre-populated options for child viral load monitoring include:

- HIV+ children (0-14)
- Children on ART (0-14)
- Other – if the "other" option is selected, the user will need to enter their own target population on the Drop Down Master List tab.

Pre-populated options for early infant diagnosis include:

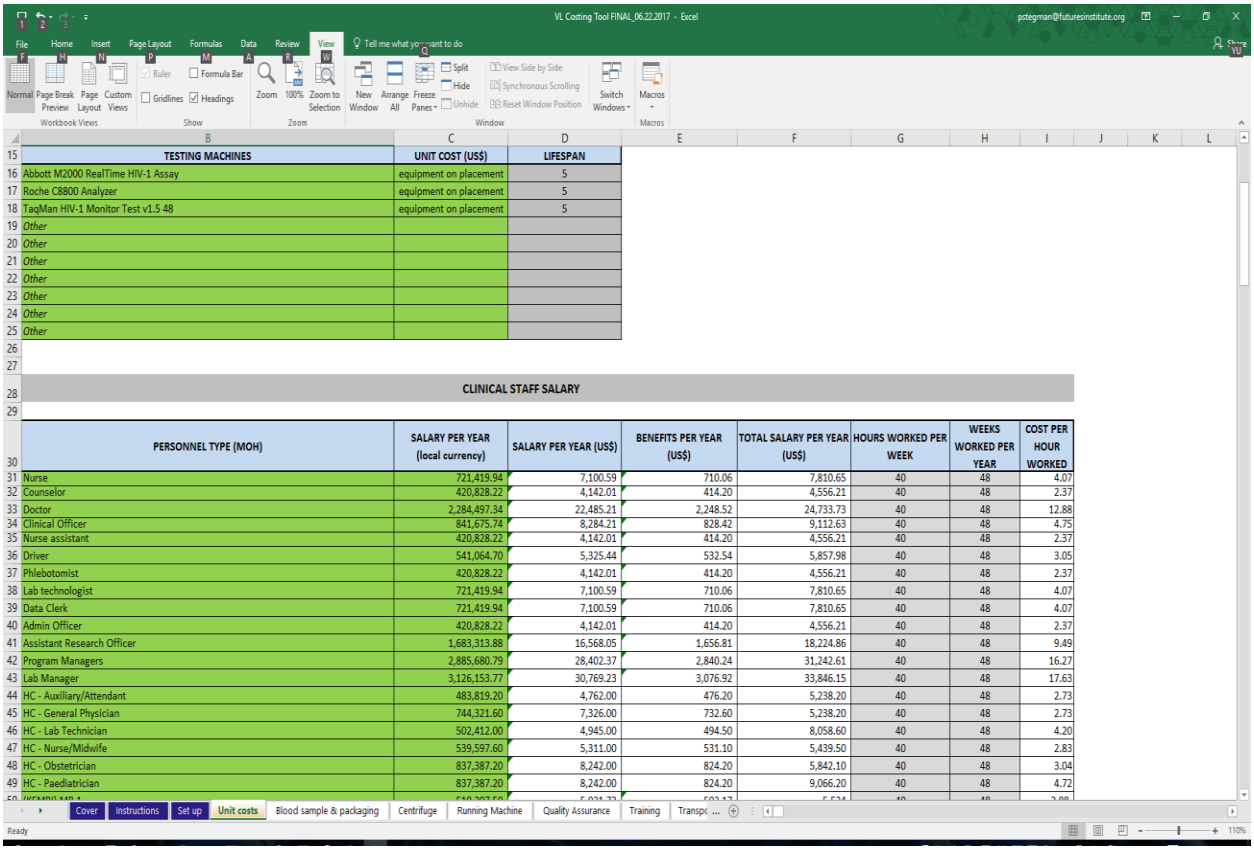
- Women needing PMTCT (HIV+ pregnancies)
- Women receiving PMTCT (known HIV+ pregnancies receiving PMTCT services)
- Other – if the "other" option is selected, the user will need to enter their own target population on the Drop Down Master List tab.

Note that we are using HIV+ pregnancies as a proxy for HIV exposed infants, as this is a number available from Spectrum modeling.

Users can then add the location and level of the facilities that are being included in the implementation of the tool. This data is not essential for the working of the tool, but can be used for comparing costs at different health facility level, or between geographic locations.

3. UNIT COSTS

The first gold tab in the tool is for entering unit costs for all the inputs into VL monitoring and EID testing. This sheet is important in that it contains much of the data for calculating the costs for different testing and monitoring sub-processes, so please check your data and make sure that it is input correctly. The User should input the testing machine in use in the country of study. Either the cost of the particular machine can be entered, if it has been purchased, or the user can specify that the machine is part of a leasing arrangement, or what is called "placement" or "reagent rental". In a leasing arrangement, the costs of the machine are subsumed in the overall costs of reagents.

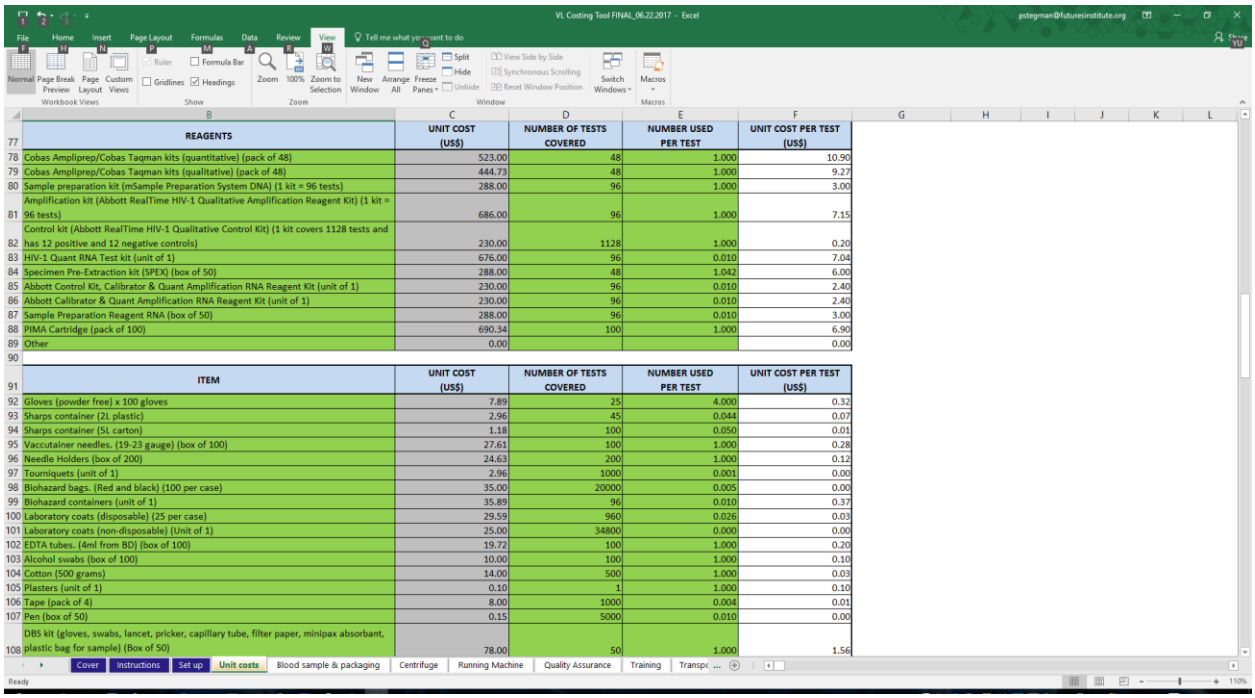


TESTING MACHINES	UNIT COST (US$)	LIFESPAN
Abbott M2000 RealTime HIV-1 Assay	equipment on placement	5
Roche C8800 Analyzer	equipment on placement	5
TaqMan HIV-1 Monitor Test v1.5 48	equipment on placement	5
Other		
Other		
Other		
Other		
Other		
Other		
Other		

CLINICAL STAFF SALARY

PERSONNEL TYPE (MOH)	SALARY PER YEAR (local currency)	SALARY PER YEAR (US$)	BENEFITS PER YEAR (US$)	TOTAL SALARY PER YEAR (US$)	HOURS WORKED PER WEEK	WEEKS WORKED PER YEAR	COST PER HOUR WORKED
Nurse	721,419.94	7,100.59	710.06	7,810.65	40	48	4.07
Counselor	420,828.22	4,142.01	414.20	4,556.21	40	48	2.37
Doctor	2,284,497.34	22,485.21	2,248.52	24,733.73	40	48	12.88
Clinical Officer	841,675.74	8,284.21	828.42	9,112.63	40	48	4.75
Nurse assistant	420,828.22	4,142.01	414.20	4,556.21	40	48	2.37
Driver	541,064.70	5,325.44	532.54	5,857.98	40	48	3.05
Phlebotomist	420,828.22	4,142.01	414.20	4,556.21	40	48	2.37
Lab technologist	721,419.94	7,100.59	710.06	7,810.65	40	48	4.07
Data Clerk	721,419.94	7,100.59	710.06	7,810.65	40	48	4.07
Admin Officer	420,828.22	4,142.01	414.20	4,556.21	40	48	2.37
Assistant Research Officer	1,683,313.88	16,568.05	1,656.81	18,224.86	40	48	9.49
Program Managers	2,885,680.79	28,402.37	2,840.24	31,242.61	40	48	16.27
Lab Manager	3,126,153.77	30,769.23	3,076.92	33,846.15	40	48	17.63
HC - Auxiliary/Attendant	483,819.20	4,762.00	476.20	5,238.20	40	48	2.73
HC - General Physician	744,321.60	7,326.00	732.60	5,238.20	40	48	2.73
HC - Lab Technician	502,412.00	4,945.00	494.50	8,058.60	40	48	4.20
HC - Nurse/Midwife	539,597.60	5,311.00	531.10	5,439.50	40	48	2.83
HC - Obstetrician	837,387.20	8,242.00	824.20	5,842.10	40	48	3.04
HC - Paediatrician	837,387.20	8,242.00	824.20	9,066.20	40	48	4.72

The user must input all the various health and related personnel involved in either VL monitoring or EID testing along with their annual salaries (in local currency). The other columns will be calculated out automatically.



REAGENTS	UNIT COST (US$)	NUMBER OF TESTS COVERED	NUMBER USED PER TEST	UNIT COST PER TEST (US$)
Cobas Amplirep/Cobas Taqman kits (quantitative) (pack of 48)	523.00	48	1.000	10.90
Cobas Amplirep/Cobas Taqman kits (qualitative) (pack of 48)	444.73	48	1.000	9.27
Sample preparation kit (mSample Preparation System DNA) (1 kit = 96 tests)	288.00	96	1.000	3.00
Amplification kit (Abbott RealTime HIV-1 Qualitative Amplification Reagent Kit) (1 kit = 96 tests)	686.00	96	1.000	7.15
Control kit (Abbott RealTime HIV-1 Qualitative Control Kit) (1 kit covers 1128 tests and has 12 positive and 12 negative controls)	230.00	1128	1.000	0.20
HIV-1 Quant RNA Test kit (unit of 1)	676.00	96	0.010	7.04
Specimen Pre-Extraction kit (SPEX) (box of 50)	288.00	48	1.042	6.00
Abbott Control Kit, Calibrator & Quant Amplification RNA Reagent Kit (unit of 1)	230.00	96	0.010	2.40
Abbott Calibrator & Quant Amplification RNA Reagent Kit (unit of 1)	230.00	96	0.010	2.40
Sample Preparation Reagent RNA (box of 50)	288.00	96	0.010	3.00
PIMA Cartridge (pack of 100)	690.34	100	1.000	6.90
Other	0.00			0.00

ITEM	UNIT COST (US$)	NUMBER OF TESTS COVERED	NUMBER USED PER TEST	UNIT COST PER TEST (US$)
Gloves (powder free) x 100 gloves	7.89	25	4.000	0.32
Sharps container (2L plastic)	2.96	45	0.044	0.07
Sharps container (5L carton)	1.18	100	0.050	0.01
Vaccutainer needles. (19-23 gauge) (box of 100)	27.61	100	1.000	0.28
Needle Holders (box of 200)	24.63	200	1.000	0.12
Tourniquets (unit of 1)	2.96	1000	0.001	0.00
Biohazard bags. (Red and black) (100 per case)	35.00	20000	0.005	0.00
Biohazard containers (unit of 1)	35.89	96	0.010	0.37
Laboratory coats (disposable) (25 per case)	29.59	960	0.026	0.03
Laboratory coats (non-disposable) (Unit of 1)	25.00	34800	0.000	0.00
EDTA tubes. (4ml from BD) (box of 100)	19.72	100	1.000	0.20
Alcohol swabs (box of 100)	10.00	100	1.000	0.10
Cotton (500 grams)	14.00	500	1.000	0.03
Plasters (unit of 1)	0.10	1	1.000	0.10
Tape (pack of 4)	8.00	1000	0.004	0.01
Pen (box of 50)	0.15	5000	0.010	0.00
DBS kit (gloves, swabs, lancet, pricker, capillary tube, filter paper, minipax absorbant, plastic bag for sample) (Box of 50)	78.00	50	1.000	1.56

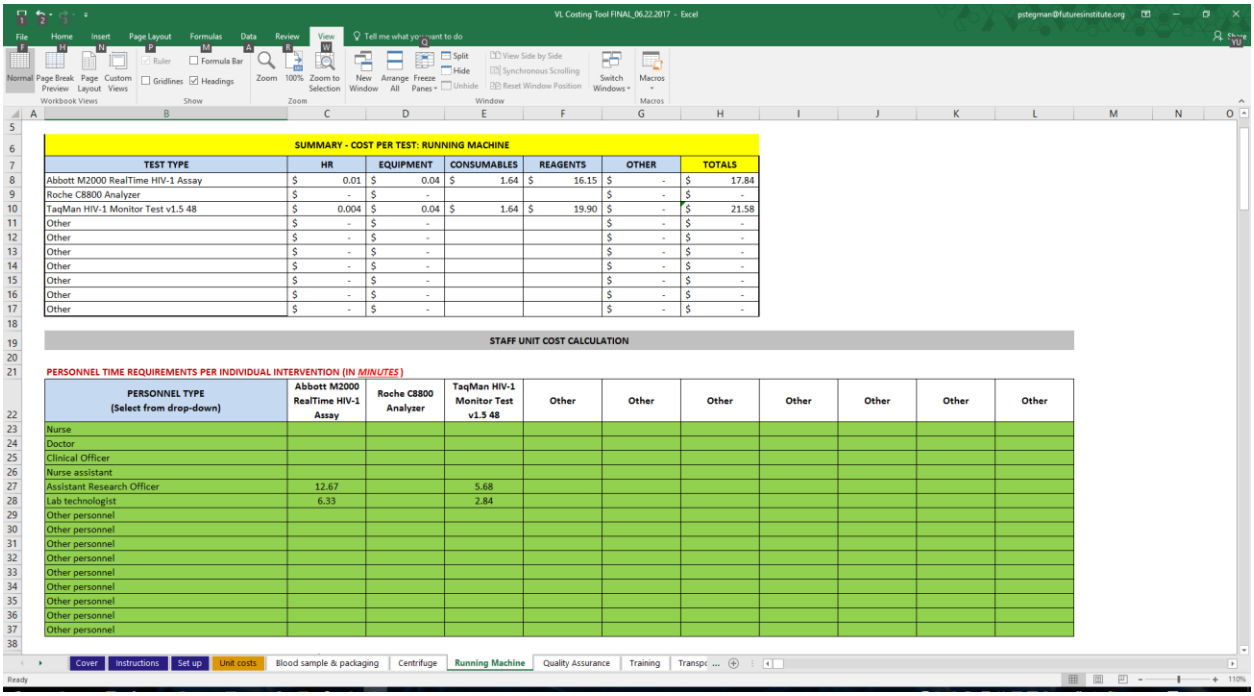
From a drop-down list the user should select all the consumables used in either VL monitoring or EID testing. Selections will be entered along with their unit cost (these can be modified based on circumstances and purchasing variabilities). The user will have to determine how many tests are covered by each consumable given the basic unit of each, and the number used per test. The unit cost per test is calculated out automatically. The user should input the equipment that are used, the proportion of that equipment's operations that are used for testing, and their costs.

4. VL MONITORING AND EID TESTING SUB-PROCESSES

The next four tabs in the tool, labeled "Blood Sample & Packing," "Centrifuge," "Running Machine," and "Quality Assurance," are for inputting the specific costs related to the following:

Human resources: On the sheet for each sub-process, the User should use the first input table under "Staff Unit Cost Calculation" to enter the amount of time each staff cadre spends to complete related tasks for each of the testing platforms being used. These entries are converted to their corresponding cost in the subsequent table.

Equipment and machine costs: In the first table under "Equipment and Machine Unit Cost Calculation", the User should enter the number of tests (both VL monitoring and EID) conducted annually. The User then selects equipment items from the drop-down lists that appear in the cells in column B. This will pull equipment and costs from the Unit Costs page, and transfer the unit cost per test in the table below.



SUMMARY - COST PER TEST: RUNNING MACHINE

TEST TYPE	HR	EQUIPMENT	CONSUMABLES	REAGENTS	OTHER	TOTALS
Abbott M2000 RealTime HIV-1 Assay	$ 0.01	$ 0.04	$ 1.64	$ 16.15	$ -	$ 17.84
Roche C8800 Analyzer	$ -	$ -			$ -	$ -
TaqMan HIV-1 Monitor Test v1.5 48	$ 0.004	$ 0.04	$ 1.64	$ 19.90	$ -	$ 21.58
Other	$ -	$ -			$ -	$ -
Other	$ -	$ -			$ -	$ -
Other	$ -	$ -			$ -	$ -
Other	$ -	$ -			$ -	$ -
Other	$ -	$ -			$ -	$ -
Other	$ -	$ -			$ -	$ -
Other	$ -	$ -			$ -	$ -

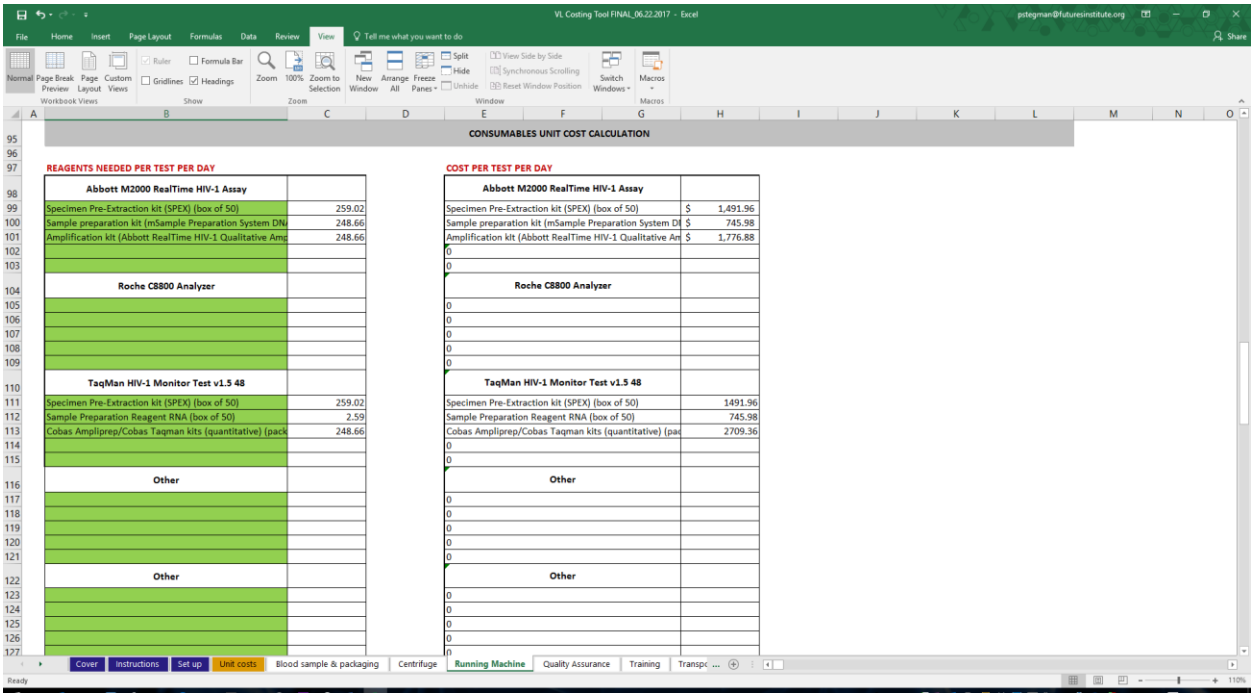
STAFF UNIT COST CALCULATION

PERSONNEL TIME REQUIREMENTS PER INDIVIDUAL INTERVENTION (IN *MINUTES*)

PERSONNEL TYPE (Select from drop-down)	Abbott M2000 RealTime HIV-1 Assay	Roche C8800 Analyzer	TaqMan HIV-1 Monitor Test v1.5 48	Other	Other	Other	Other	Other	Other	Other
Nurse										
Doctor										
Clinical Officer										
Nurse assistant										
Assistant Research Officer	12.67		5.68							
Lab technologist	6.33		2.84							
Other personnel										
Other personnel										
Other personnel										
Other personnel										
Other personnel										
Other personnel										
Other personnel										
Other personnel										
Other personnel										

Consumables: In the first table under "Consumables Unit Cost Calculation", the User should select from the drop-down lists in column B all the consumable items used in the sub-process. For each item selected, the corresponding number consumed per day is automatically entered for each of the testing platforms. The costs for each item, pulled from the Unit Costs page, is entered into the cost table below. Please note that for the "Running Machine" and "Quality Assurance" tabs, there is an additional section where, based on the testing platform selected, the cost of the reagents consumed is automatically input.

Other costs: Users can enter other costs as needed in this section, in order to be able to capture other types of costs that may not have been contemplated by the spreadsheet designers.



CONSUMABLES UNIT COST CALCULATION

REAGENTS NEEDED PER TEST PER DAY

Abbott M2000 RealTime HIV-1 Assay	
Specimen Pre-Extraction kit (SPEX) (box of 50)	259.02
Sample preparation kit (mSample Preparation System DN	248.66
Amplification kit (Abbott RealTime HIV-1 Qualitative Amp	248.66
Roche C8800 Analyzer	
TaqMan HIV-1 Monitor Test v1.5 48	
Specimen Pre-Extraction kit (SPEX) (box of 50)	259.02
Sample Preparation Reagent RNA (box of 50)	2.59
Cobas Ampliprep/Cobas Taqman kits (quantitative) (pack	248.66
Other	
Other	

COST PER TEST PER DAY

Abbott M2000 RealTime HIV-1 Assay	
Specimen Pre-Extraction kit (SPEX) (box of 50)	$ 1,491.96
Sample preparation kit (mSample Preparation System DI	$ 745.98
Amplification kit (Abbott RealTime HIV-1 Qualitative An	$ 1,776.88
0	
0	
Roche C8800 Analyzer	
0	
0	
0	
0	
0	
TaqMan HIV-1 Monitor Test v1.5 48	
Specimen Pre-Extraction kit (SPEX) (box of 50)	1491.96
Sample Preparation Reagent RNA (box of 50)	745.98
Cobas Ampliprep/Cobas Taqman kits (quantitative) (pac	2709.36
0	
0	
Other	
0	
0	
0	
0	
0	
Other	
0	
0	
0	
0	
0	

5. TRAINING

Users must enter details about all training activities that have been conducted over the period under review. Specific entries need to be made for the content or subject of the training; the level where the training took place (international, regional, central); the number of participants; how many of the testing platforms were covered in this training; and the estimated cost per participant for each training event.

In the "Staff Unit Cost Calculation" section, the User should enter all the various staff cadres that were trained in the training events listed in the previous section and the amount of time (in minutes) they were engaged in the training. This will automatically calculate and enter the cost for that time in the subsequent table.

The "Other Costs" table can be used to enter any other costs as needed, in order to be able to capture other types of costs that may not reasonably fit in the data input tables in other sections.

6. TRANSPORTATION

The next tab is for inputting all data related to transportation. This sheet is divided into two main data capture sections. The first section focuses on data collected and entered for the public sector, when the system used for transporting samples is established and maintained by the Ministry of Health or other government apparatus. The second section is to be used when the transportation system is managed privately.

The costing of the transportation system can be set up in one of three ways. The first would reflect the costs of a system run and managed wholly by the public sector. A second configuration would cost inputs only from a privately managed and operated transportation system. A third possibility would be a mix of both public and private costs.

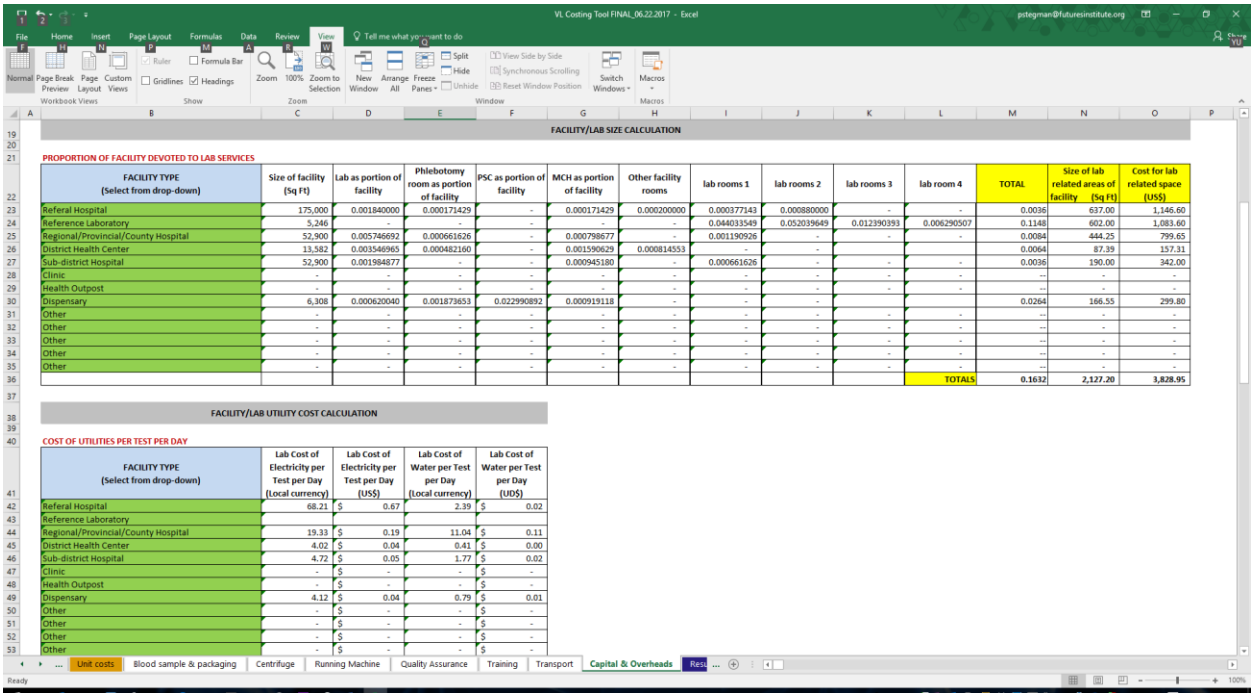
The first section (public sector/MOH) basically follows the same breakdown as data input tables in the sub-process tabs in this tool. The user first enters the personnel involved in the transportation of samples and the time that they devote to this activity. The personnel selections available in the drop-down list are the same as in every drop-down list for the public-sector. "Driver" can be selected (or other person who may partly be responsible for transport). Private sector personnel involved in the transportation of samples was much more specific and restricted, and the drop-down list reflects this. The cost for this time is then automatically calculated and entered in the subsequent table. The user then enters the types of vehicles used in the transportation system, their cost, the number of samples transported and number of platforms served, the estimated useful life, and the time that each vehicle is devoted to transporting lab samples for each of the testing platforms included in the review. The cost of the vehicles in the public sector would be added to the cost of other equipment. Also, any other equipment and consumables used in the transportation process are selected from the drop-down lists in column B of the subsequent tables. The unit cost per test for each of these items is then automatically calculated and entered into their accompanying cost tables.

In the second section (addressing private sector, outsourced involvement), the user starts by entering the various personnel involved in the transportation process and the amount of time, in minutes, that they devote to this activity. The cost of that time is automatically calculated and entered in the subsequent table. If there are any vehicle costs related to this mode of transportation, they are to be entered in the vehicles table, as in the public sector section above. Also, as above, any other equipment and consumables used in the transportation process are selected from the drop-down lists in column B of the subsequent tables. The unit cost per test for each of these items is then automatically calculated and entered into their accompanying cost tables.

If the third, mixed transportation configuration is adopted, then the results sheet should add together the costs for both public and private inputs for HR, equipment and vehicles, and consumables, to present a comprehensive picture of the transport costs.

7. CAPITAL AND OVERHEADS

The last white tab is devoted to capital costs and overheads. The initial table in this sheet calculates capital costs according to the space occupied by labs and lab-related facilities as a proportion of total facility space. The user selects the type of facility from the drop-down list in column B and this generates estimates of space for lab and lab-related spaces and their associated costs.



FACILITY/LAB SIZE CALCULATION

PROPORTION OF FACILITY DEVOTED TO LAB SERVICES

FACILITY TYPE (Select from drop-down)	Size of facility (Sq Ft)	Lab as portion of facility	Phlebotomy room as portion of facility	PSC as portion of facility	MCH as portion of facility	Other facility rooms	lab rooms 1	lab rooms 2	lab rooms 3	lab room 4	TOTAL	Size of lab related areas of facility (Sq Ft)	Cost for lab related space (US$)
Referal Hospital	175,000	0.001840000	0.000171429	-	0.000171429	0.000200000	0.000377143	0.000880000	-	-	0.0036	637.00	1,146.60
Reference Laboratory	5,246	-	-	-	-	-	0.044033549	0.052039649	0.012390393	0.006290507	0.1148	602.00	1,083.60
Regional/Provincial/County Hospital	52,900	0.005746692	0.000661626	-	0.000798677	-	0.001190926	-	-	-	0.0084	444.25	799.65
District Health Center	13,582	0.003546965	0.000482160	-	0.001590629	0.000814553	-	-	-		0.0064	87.39	157.31
Sub-district Hospital	52,900	0.001984877	-	-	0.000945180	-	0.000661626	-	-	-	0.0036	190.00	342.00
Clinic	-	-	-	-	-	-	-	-	-	-	-	-	-
Health Outpost	-	-	-	-	-	-	-	-	-	-	-	-	-
Dispensary	6,308	0.000620040	0.001873653	0.022990892	0.000919118	-	-	-	-		0.0264	166.55	299.80
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
										TOTALS	0.1632	2,127.20	3,828.95

FACILITY/LAB UTILITY COST CALCULATION

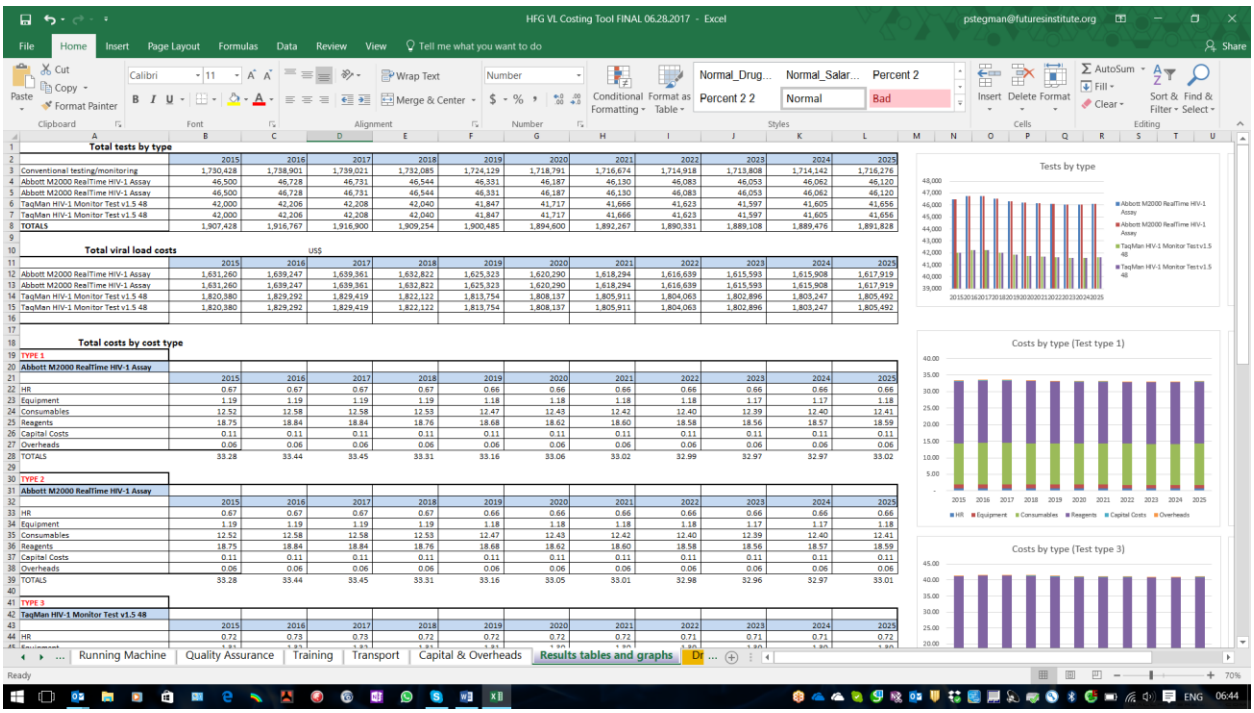
COST OF UTILITIES PER TEST PER DAY

FACILITY TYPE (Select from drop-down)	Lab Cost of Electricity per Test per Day (Local currency)	Lab Cost of Electricity per Test per Day (US$)	Lab Cost of Water per Test per Day (Local currency)	Lab Cost of Water per Test per Day (UD$)
Referal Hospital	68.21	$ 0.67	2.39	$ 0.02
Reference Laboratory				
Regional/Provincial/County Hospital	19.33	$ 0.19	11.04	$ 0.11
District Health Center	4.02	$ 0.04	0.41	$ 0.00
Sub-district Hospital	4.72	$ 0.05	1.77	$ 0.02
Clinic	-	$ -	-	$ -
Health Outpost	-	$ -	-	$ -
Dispensary	4.12	$ 0.04	0.79	$ 0.01
Other	-	$ -	-	$ -
Other	-	$ -	-	$ -
Other	-	$ -	-	$ -
Other	-	$ -	-	$ -

In the next table, the user enters data on the utility costs devoted to lab and lab-related services. Again, the user selects the type of facility in column B. Based on the selection, the tool will automatically enter the estimated costs for electricity and water by dividing the total utility cost for the facility by the same ratio of total facility size to the size of labs and lab-related facilities. The final table adds oversight and supervisory costs to overheads. Here the user selects, in column B, the various personnel cadres that have a supervisory role and enters the time each staff devotes to supervisory activities. The costs for that time will be automatically calculated and entered in the subsequent table. The final table for "Other Costs" can be used to enter any other costs as needed, in order to be able to capture other types of costs that may not reasonably fit in the data input tables in other sections.

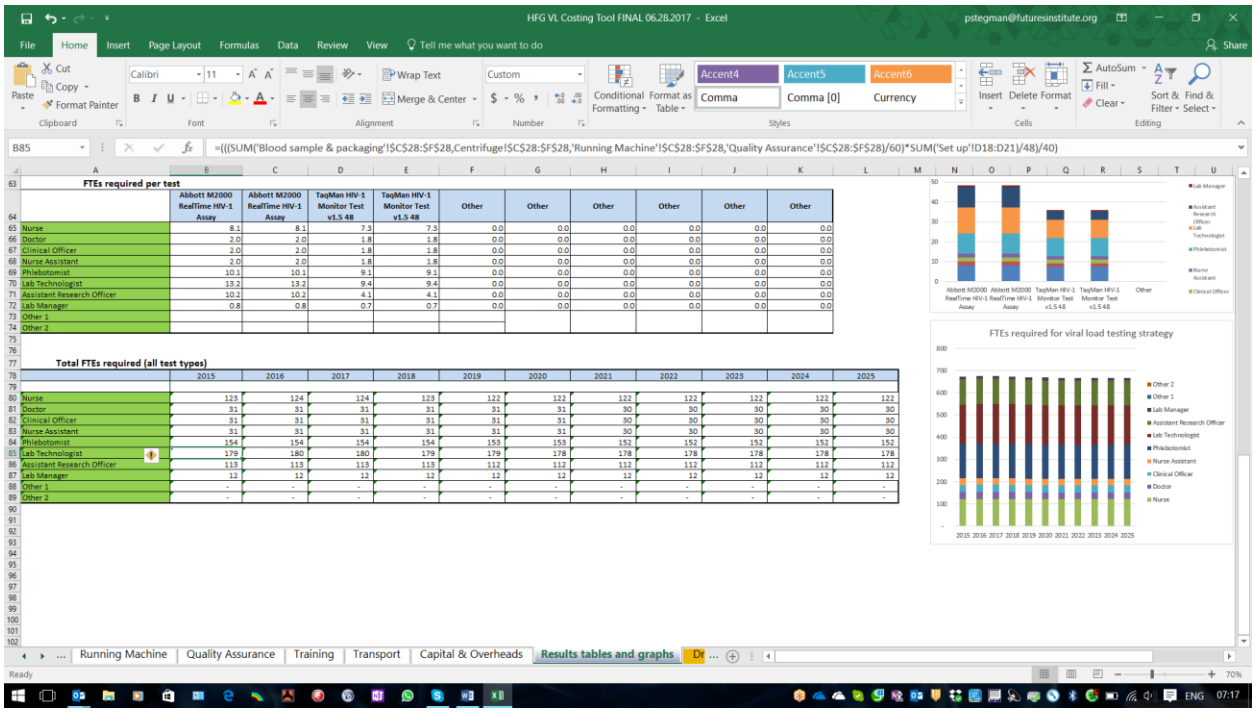
8. RESULTS TABLES AND GRAPHS

The blue tab at the end of the tool shows results tables and generic graphs derived from the data in each of the tool's sections. They can be used to examine the cost and human resource implications of current viral load monitoring and EID testing practices. The first set of tables and graphs are generated automatically and projected into the future based on the results of the target population that was selected in the "Set Up" page. The first table presents the *total number of tests by test type*, followed by the *total viral load costs*, and the *total costs by cost type* through to 2025.



The final set of tables and graphs address the Full-Time Equivalent (FTE) staffing needs based on test type and projected need. These are not generated automatically, as staffing types and the amounts of time each cadre may devote to VL monitoring and EID testing may vary from country to country and are, therefore, manually entered into the tool. The first table presents the FTEs by test type. Here, the user must sum all the time each individual staff cadre invests in VL monitoring or EID testing (presented in minutes in each of the sub-process pages); divide that number by 60 to achieve time in hours; multiply this by the total annual number of tests undertaken by that specific testing platform; divide this by 48 (the number of working weeks); and divide this by 40 (the number of working hours a week). For Phlebotomist, for example, the Excel formula would look like this:

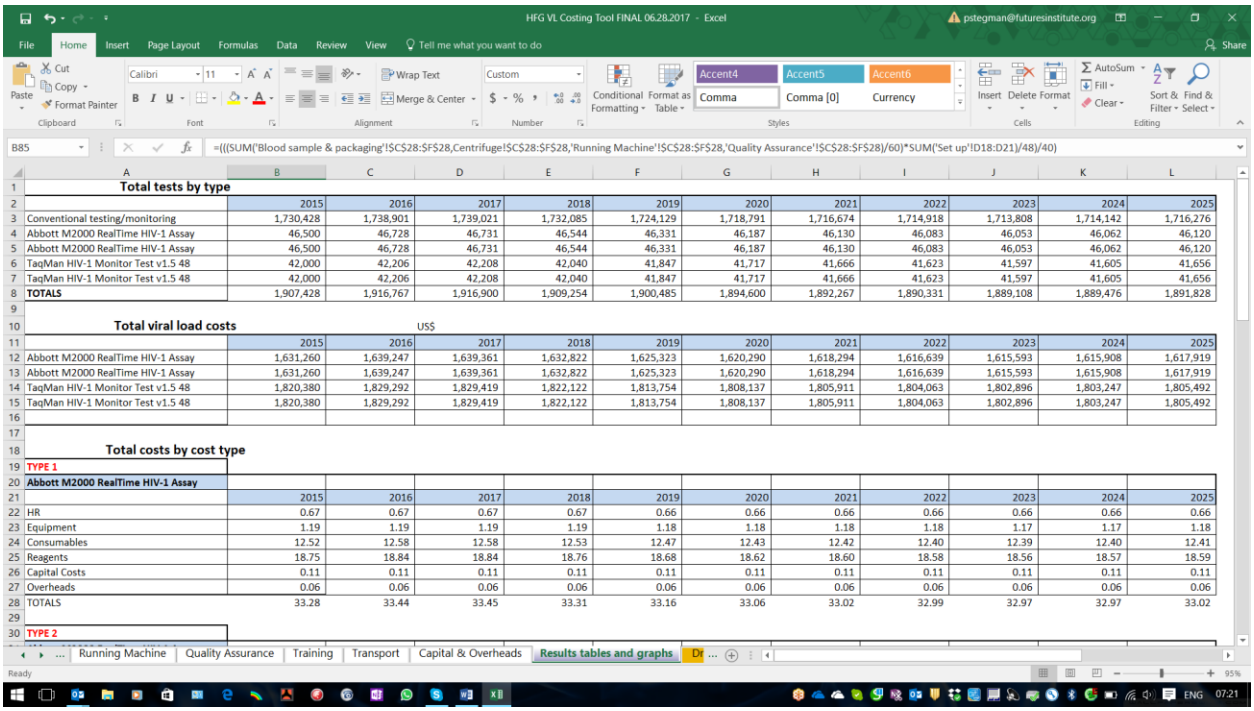
=((((('Blood sample & packaging'!C27+Centrifuge!C27)/60)*'Set up'!D18)/48)/40



The second table and graph presents the total FTEs for all test types, projected through 2025. The user must calculate this out using a similar approach to the table above. First, as above, the user must sum all the time each staff cadre devotes to VL monitoring or EID testing and divide this by 60 to arrive at total staff time in hours. To this, the user must multiply the total number of tests in a specific year. Again, this all must then be divided by 48 (the number of working weeks in a year), and 40 (the number of working hours in a week). Once again, for a Phlebotomist, the Excel formula would look like this:

=(((SUM('Blood sample & packaging'!$C$27:$F$27,Centrifuge!$C$27:$F$27)/60)*SUM('Set up'!D18:D21)/48)/40)

The formula above, would provide you with the total FTEs required in the base year (2015). To project the need into the future, the user would have to replace the input: *SUM('Set up'!D18:D21) above with the sum of all test undertaken in all subsequent years. These figures can be found in the first table on the "Results Tables and Graphs" page, B4:L7. This would allow the user to present staffing needs into the future to 2025.



Total tests by type											
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Conventional testing/monitoring	1,730,428	1,738,901	1,739,021	1,732,085	1,724,129	1,718,791	1,716,674	1,714,918	1,713,808	1,714,142	1,716,276
Abbott M2000 RealTime HIV-1 Assay	46,500	46,728	46,731	46,544	46,331	46,187	46,130	46,083	46,053	46,062	46,120
Abbott M2000 RealTime HIV-1 Assay	46,500	46,728	46,731	46,544	46,331	46,187	46,130	46,083	46,053	46,062	46,120
TaqMan HIV-1 Monitor Test v1.5 48	42,000	42,206	42,208	42,040	41,847	41,717	41,666	41,623	41,597	41,605	41,656
TaqMan HIV-1 Monitor Test v1.5 48	42,000	42,206	42,208	42,040	41,847	41,717	41,666	41,623	41,597	41,605	41,656
TOTALS	1,907,428	1,916,767	1,916,900	1,909,254	1,900,485	1,894,600	1,892,267	1,890,331	1,889,108	1,889,476	1,891,828

Total viral load costs											US$
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Abbott M2000 RealTime HIV-1 Assay	1,631,260	1,639,247	1,639,361	1,632,822	1,625,323	1,620,290	1,618,294	1,616,639	1,615,593	1,615,908	1,617,919
Abbott M2000 RealTime HIV-1 Assay	1,631,260	1,639,247	1,639,361	1,632,822	1,625,323	1,620,290	1,618,294	1,616,639	1,615,593	1,615,908	1,617,919
TaqMan HIV-1 Monitor Test v1.5 48	1,820,380	1,829,292	1,829,419	1,822,122	1,813,754	1,808,137	1,805,911	1,804,063	1,802,896	1,803,247	1,805,492
TaqMan HIV-1 Monitor Test v1.5 48	1,820,380	1,829,292	1,829,419	1,822,122	1,813,754	1,808,137	1,805,911	1,804,063	1,802,896	1,803,247	1,805,492

Total costs by cost type											
TYPE 1											
Abbott M2000 RealTime HIV-1 Assay											
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
HR	0.67	0.67	0.67	0.67	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Equipment	1.19	1.19	1.19	1.19	1.18	1.18	1.18	1.18	1.17	1.17	1.18
Consumables	12.52	12.58	12.58	12.53	12.47	12.43	12.42	12.40	12.39	12.40	12.41
Reagents	18.75	18.84	18.84	18.76	18.68	18.62	18.60	18.58	18.56	18.57	18.59
Capital Costs	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Overheads	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
TOTALS	33.28	33.44	33.45	33.31	33.16	33.06	33.02	32.99	32.97	32.97	33.02
TYPE 2											

9. BACKGROUND DATA

After the "Results Tables and Graphs" tab, the tool includes three gold tabs that each contain specific data vital to the overall performance of the tool. Generally, to simplify the use of the tool, and to avoid confusion, these tabs or hidden. It is advised that the contents of these tabs only be modified by those with some knowledge of the workings of Excel. The first of these tabs is the "Drop-down Master List", which contains all the entries for the drop-down lists included in the tool, such as countries and currencies, consumables, testing equipment, etc. Most of these lists can modified to accommodate the specifics of any country's context.

The second gold tab, "Selected Populations," contains the population data from Spectrum that provides the preloaded values for the target population the user selects in the "Set Up" page. These numbers can be updated when country Spectrum files are revised annually and released through UNIADS. The current "Selected Populations" tab is populated with figures from 2015.

The final gold tab, "Health Facilities," contains data that it used to calculate the capital and overhead costs for health facilities contained in the study. This data must be sourced from relevant offices and personnel in the public and/or private sector (depending on the scope of the VL monitoring and EID testing strategy). In the pilot study of this tool, data from Kenya are included and can be used as a representational guide for other users to enter their own data. Where actual costs are not known, for example capital costs for buildings, commercial equivalents may be used. The size of all labs and lab-related spaces may be roughly measured to estimate their size. Overall size of the facility, if actual square feet/meters of useable floor space is not known or cannot be found, can be estimated from perimeter measurements. Utility costs per facility may be available, or may have to be estimated using

facility size as a guide. These values are then entered in this sheet for use in the "Capital Costs and Overheads" sheet.

BOLD THINKERS DRIVING
REAL-WORLD IMPACT