Improving cost efficiency and coverage of HIV Viral Load Testing in Zimbabwe through Laboratory Network Optimization

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USAID GLOBAL HEALTH SUPPLY CHAIN PROGRAM

Procurement and Supply Management

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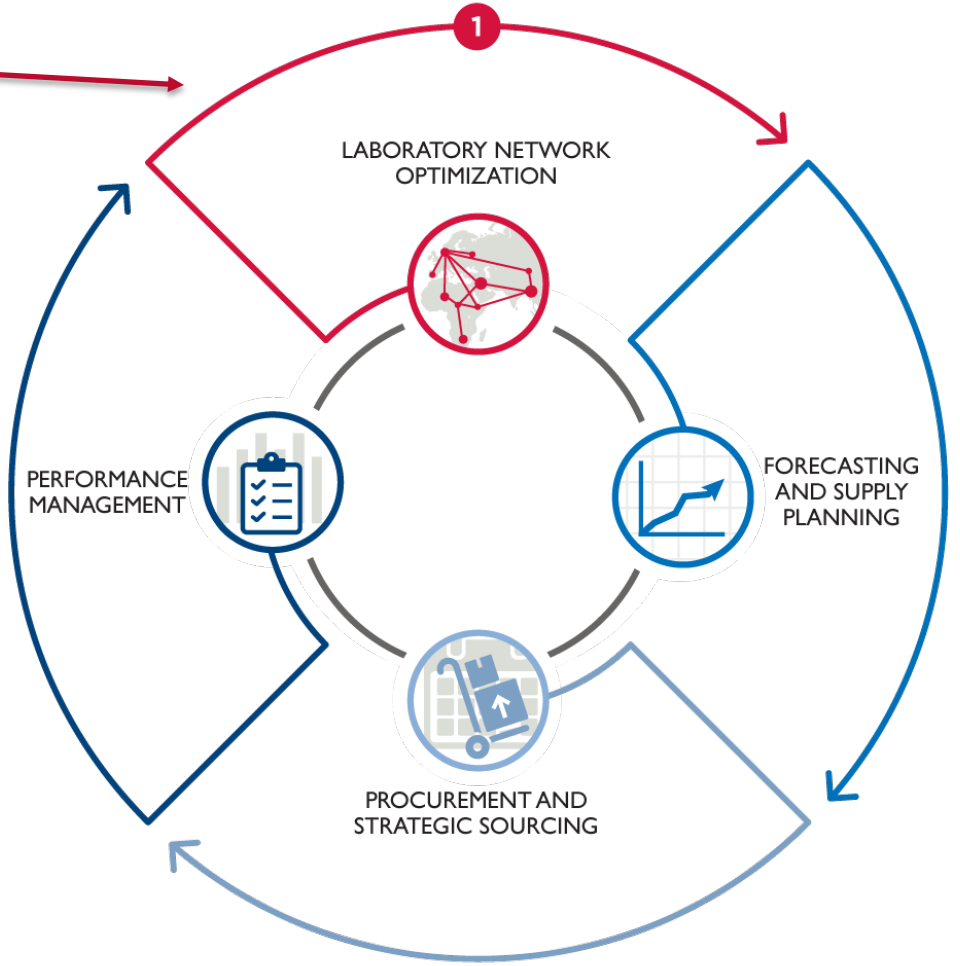
USAID FROM THE AMERICAN PEOPLE

PEPFAR U.S. President's Emergency Plan for AIDS Relief

Laboratory Network Approach for Procurement and Supply Chain Management

Benefits of Network Optimization

- Alignment of MOH. , donors, and stakeholders around current laboratory network and approach
- Identification of current and future needs for laboratory testing
- Virtual piloting of various network scenarios
- Balanced and efficient workloads across testing laboratories
- More cost efficient laboratory testing: higher utilization rates and lower operational costs across the network

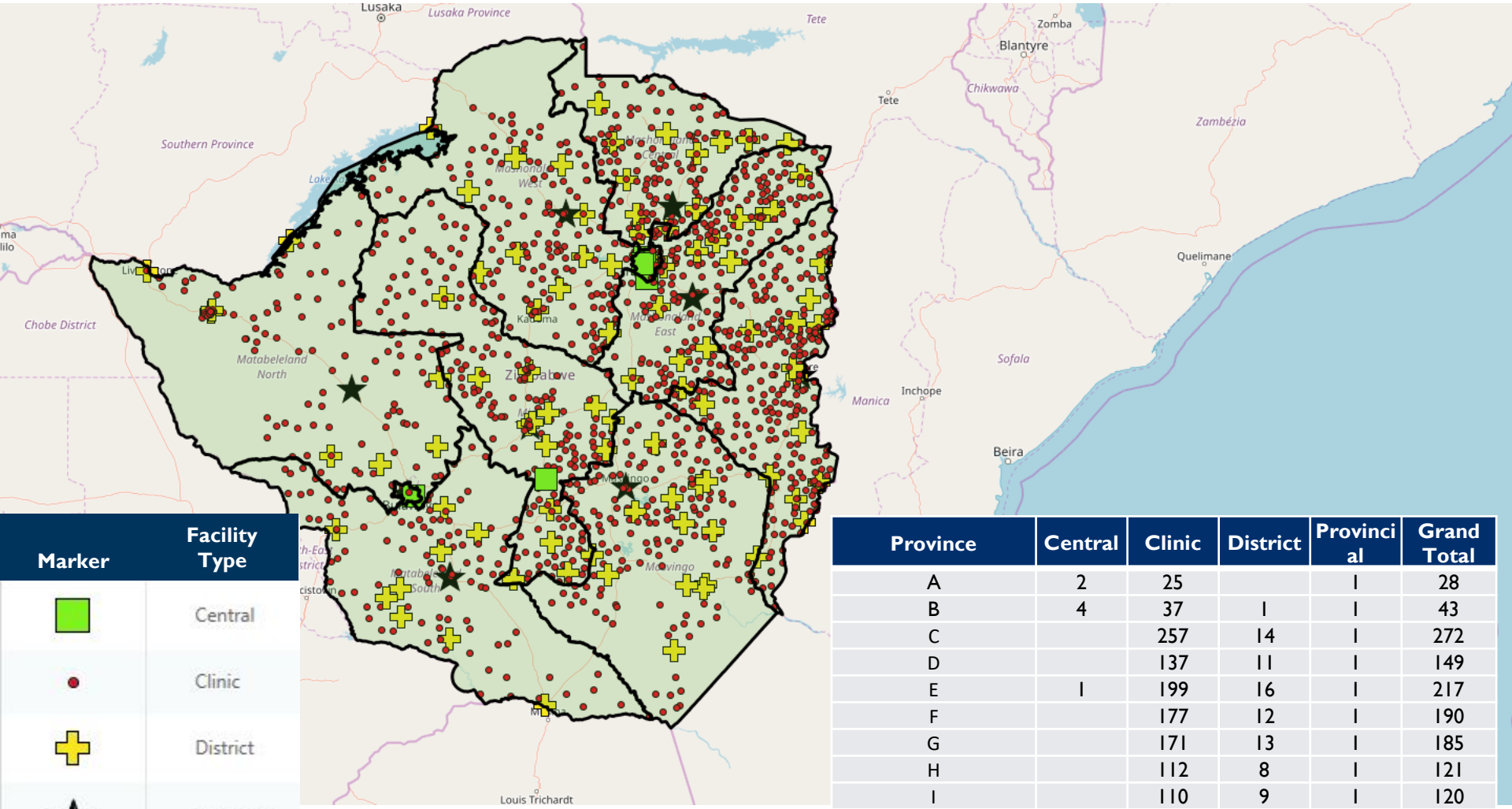


Laboratory Network Optimization in Zimbabwe

- The Ministry of Health and Child Care (MOHCC) in Zimbabwe and PEPFAR partners expressed the need to further enhance the efficiency and planning around Viral Load Scale-up in the country
- GHSC-PSM worked collaboratively with the MOHCC and country stakeholders to collect and analyze data for over 2500 clinics and 45 viral load testing labs
- LabEQIP and Supply Chain Guru software platforms were used to lead data driven decision making throughout the network optimization process.
- The network models and scenarios were developed during an in-country workshop that included MOH personnel, VL testing laboratory managers, donors, and implementing partners

Understanding the Zimbabwe Lab Network Baseline:

All Health Facilities

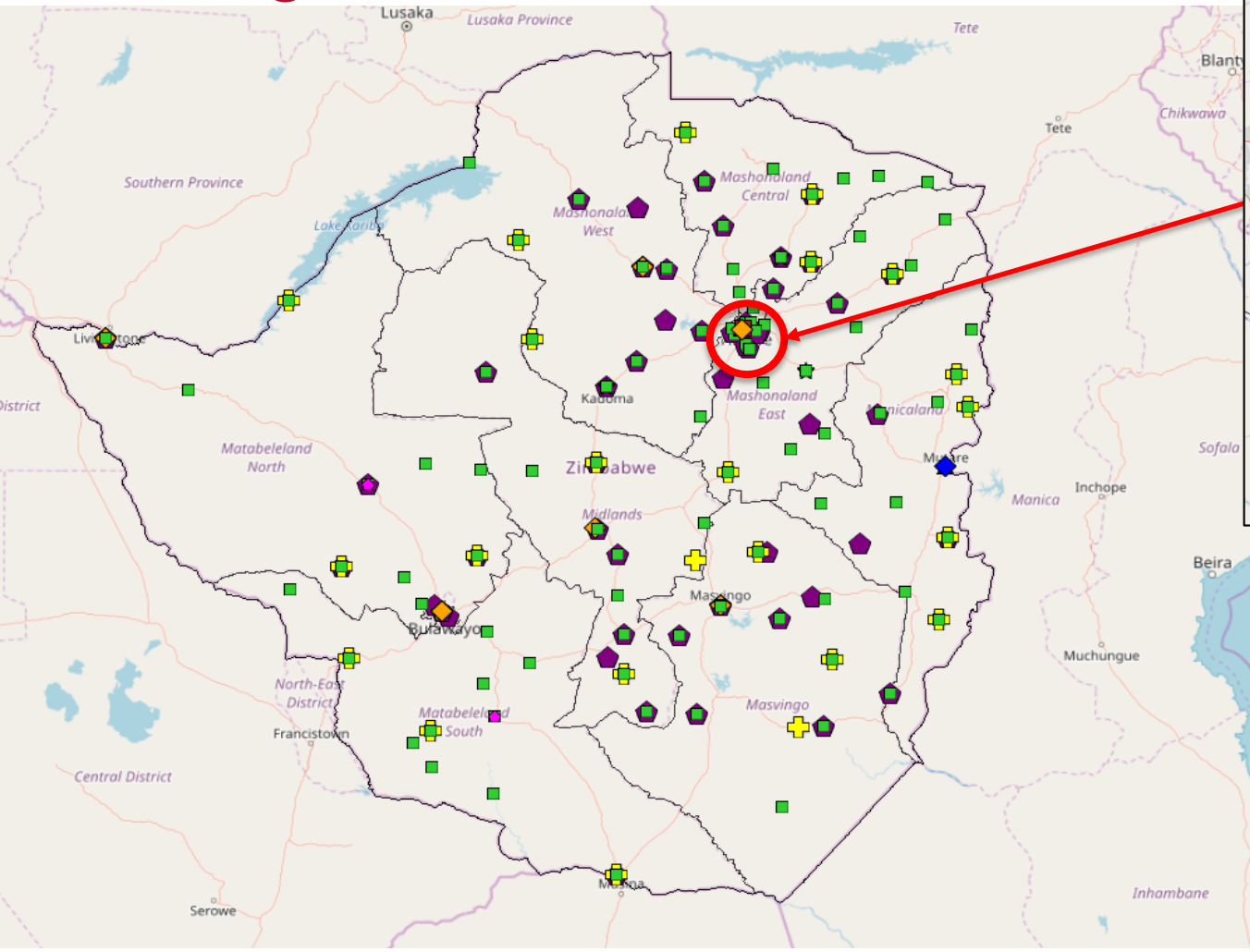


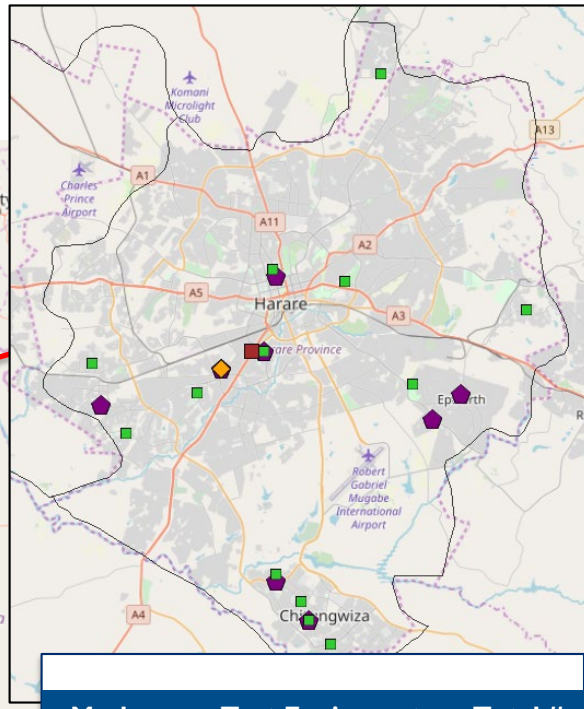
Marker	Facility Type
	Central
	Clinic
	District
	Provincial

Province	Central	Clinic	District	Provincial	Grand Total
A	2	25		1	28
B	4	37	1	1	43
C		257	14	1	272
D		137	11	1	149
E	1	199	16	1	217
F		177	12	1	190
G		171	13	1	185
H		112	8	1	121
I		110	9	1	120
J		212	15	1	228
Grand Total	**7**	**1437**	**99**	**10**	**1553**

Understanding the Zimbabwe Lab Network Baseline:

Testing Site Locations

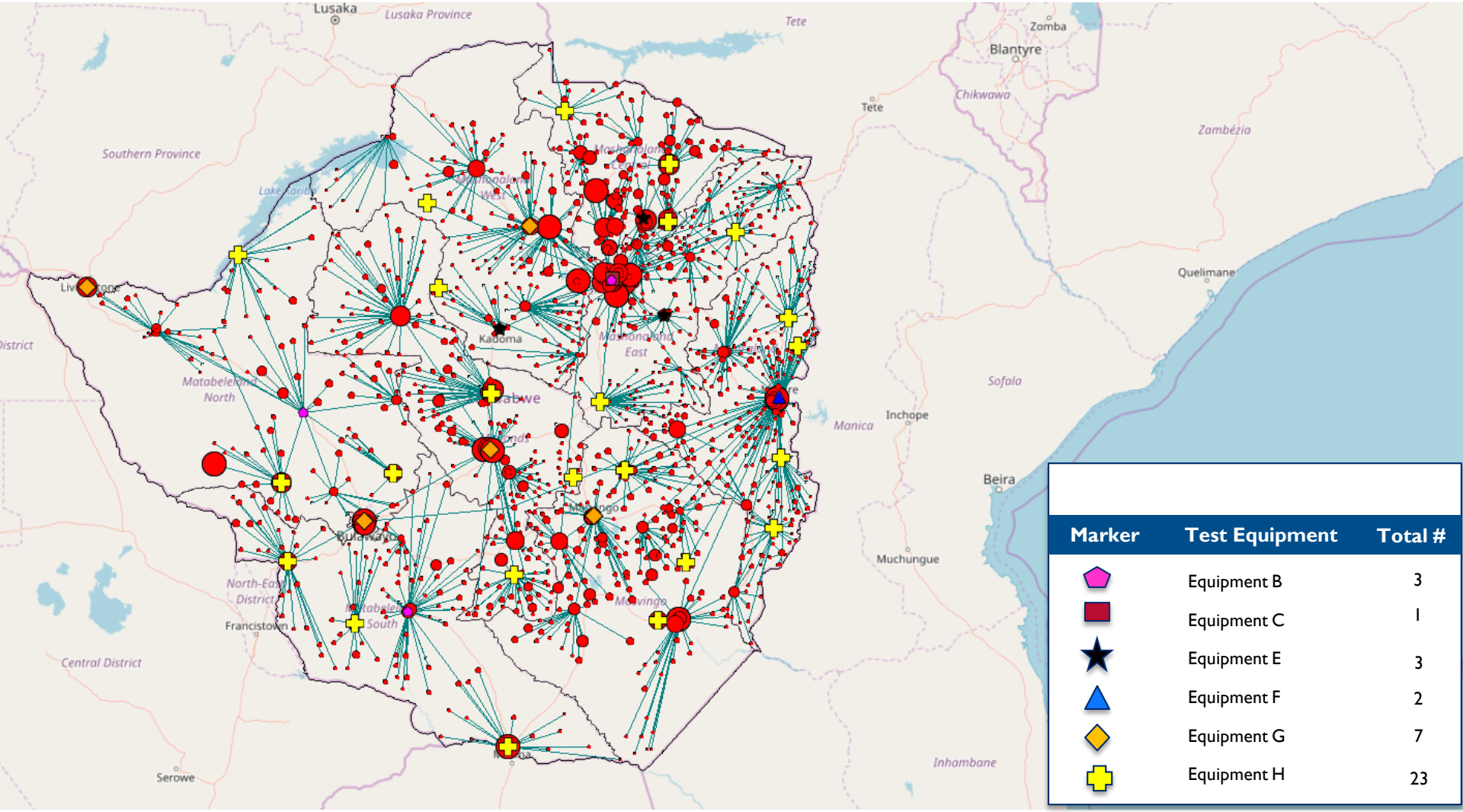




Marker	Test Equipment	Total #
	Equipment A	52
	Equipment B	10*
	Equipment C	2
	Equipment D	120
	Equipment E	3
	Equipment F	2
	Equipment G	7
	Equipment H	92**

***6 Abbott m2000sp Locations & 10 machines total**
**** 23 Salmba II Locations & 4 machines at each site**

Understanding the Zimbabwe Lab Network Baseline:
Viral Load Referral Network



Marker	Test Equipment	Total #
	Equipment B	3
	Equipment C	1
	Equipment E	3
	Equipment F	2
	Equipment G	7
	Equipment H	23

Understanding the Zimbabwe Lab Network Baseline:

Testing Capacity

Equipment Name	Single Machine Daily Cap[1]	Single Machine Annual Cap[2]
Roche CAP/CTM 48	84[3]	22,176
Roche CAP/CTM 96	147[3]	38,808
Abbott m2000sp	93	24,552
Biomerieux NucliSENS	288	76,032
Hologic Panther	270	71,280
Samba II	3	792

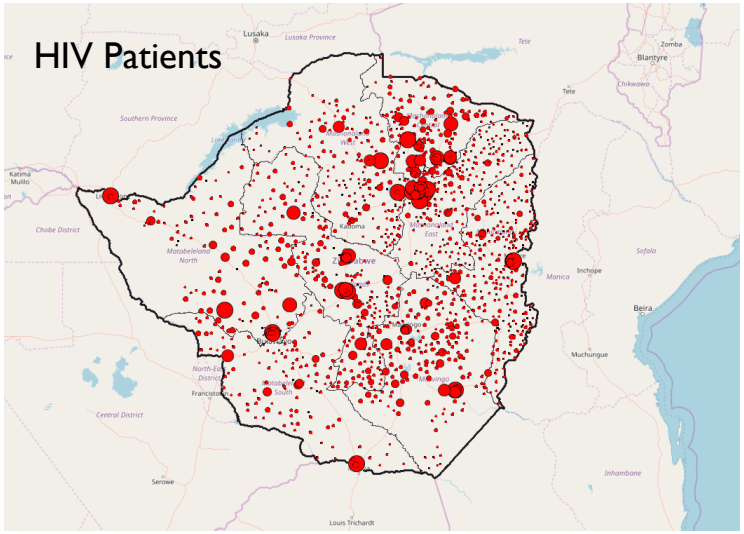
[1]Assuming an 8hr day
[2]Assuming 12months*22working days = 264 testing days/yr
[3]Based on discussion there will be one throughput for each machine

Understanding the Zimbabwe Lab Network Baseline:

Testing Demand

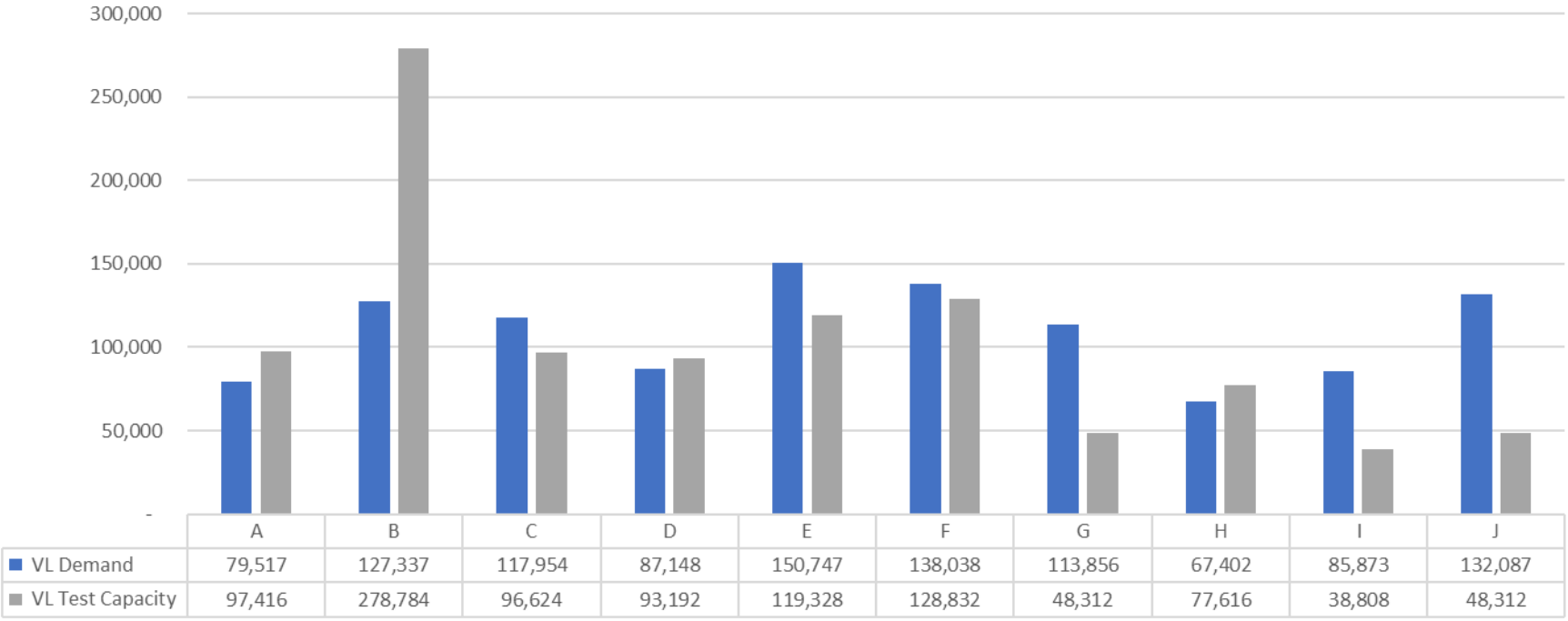
Treatment guidelines used to convert patient and pregnant women numbers into VL, TB and EID test demand:

Test Program	Assumption	Annual Tests (est.)
VL	[# Patients] * 1 test/year	= 1,099,959



Understanding the Zimbabwe Lab Network Baseline:

VL Test Demand and Equipment Capacity by Province



	A	B	C	D	E	F	G	H	I	J
VL Demand	79,517	127,337	117,954	87,148	150,747	138,038	113,856	67,402	85,873	132,087
VL Test Capacity	97,416	278,784	96,624	93,192	119,328	128,832	48,312	77,616	38,808	48,312

Key Takeaways:

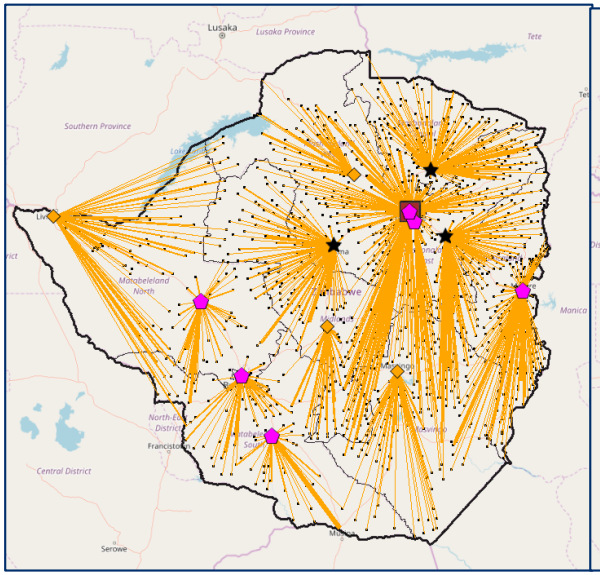
- VL Demand > VL Capacity – both overall and across multiple provinces
- Opportunities to optimize and distribute testing capacity

Analyzing the Zimbabwe Lab Network :

Reviewing the Various Scenarios

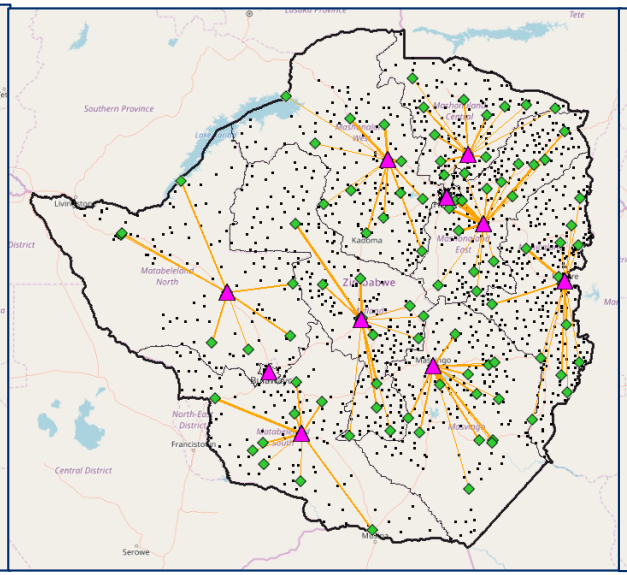
Proposed Scenarios: #1 - Optimized

Health Facility
→ Any Current Testing Facilities



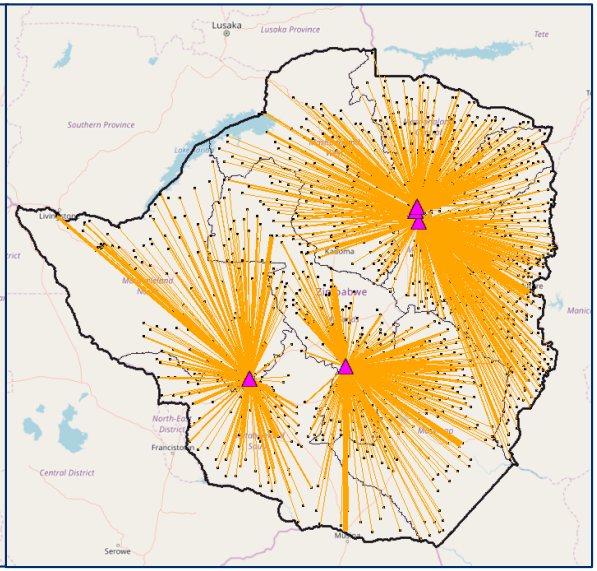
Proposed Scenarios: #2 - Provincial

Health Facility → District Referral Center → Provincial Testing Lab



Proposed Scenarios: #3 – Superlab

Health Facility
→ Central Testing Lab

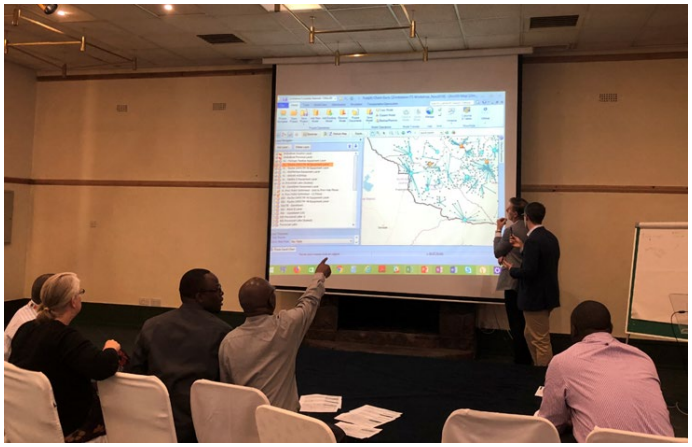


- Modeled and presented 3 proposed scenarios
- Group work by program to present pros & cons of each
- MOH guided discussion to pursue Scenario #2

Analyzing the Zimbabwe VL Lab Network :

Deciding on Scenario: #2 - Provincial

Baseline	Provincial with exceptions
Mix of different referral patterns	Health Facility → District Referral Center → Provincial Testing Lab
1553 Health Facilities	
99 District Referral Centers (includes Gov / Mission Hospital with Lab facilities)	
10 Provincial Testing Labs	
All other baseline assumptions remain	

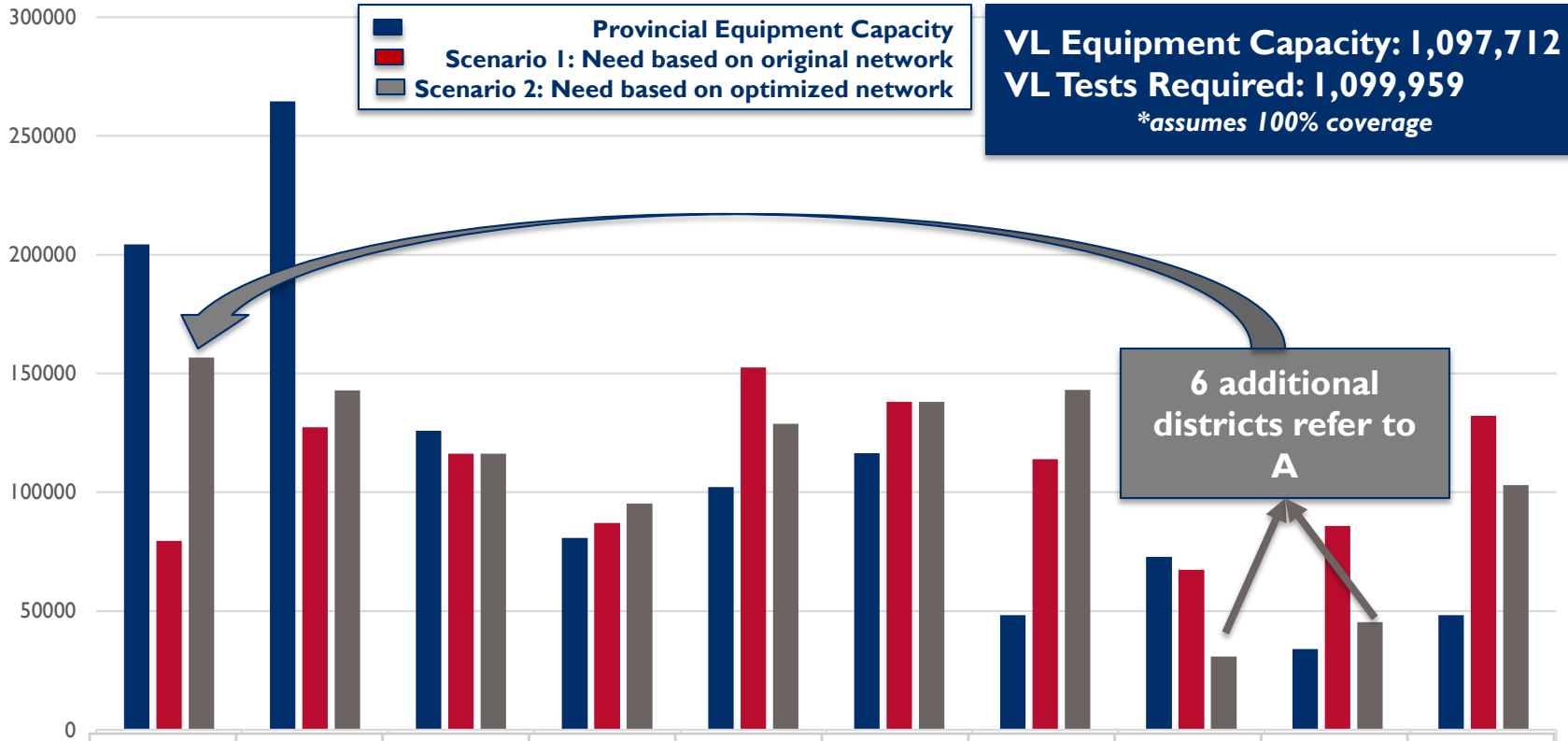


After discussions on the pros & cons of each scenario option, participants decided on Scenario #2 (provincial). Then, MOH, partners & province experts did hands-on, province-by-province refinement

Scenario assumes Provincial Hub has capacity to do ALL tests

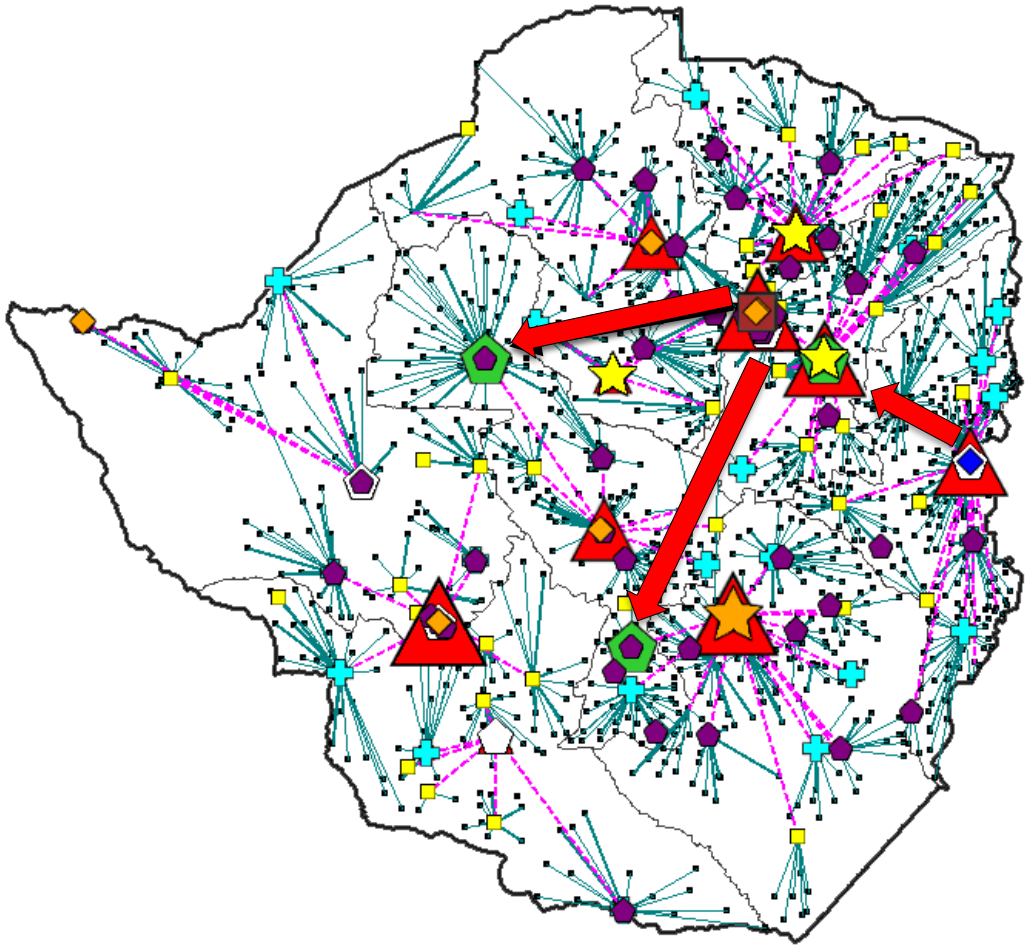
Analyzing the Zimbabwe VL Lab Network :

Deciding on Scenario: #2 - Provincial



	A	B	C	D	E	F	G	H	I	J
Provincial Capacity	204336	264528	125928	80784	102168	116424	48312	72864	34056	48312
Scenario 1	79,517	127,337	116,226	87148	152,475	138,038	113,856	67,402	85873	132,087
Scenario 2	156,795	142,903	116,226	95334	128,723	138,038	143,005	30,771	45226	102,938

Zimbabwe: Proposed Equipment Re-Allocations



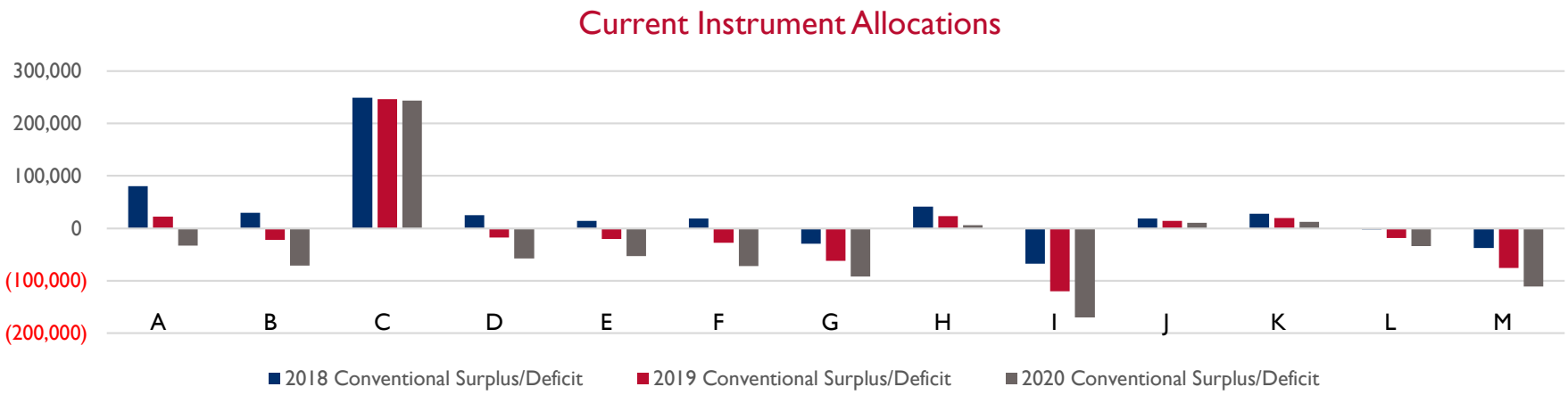
Health Facility to Referral Center

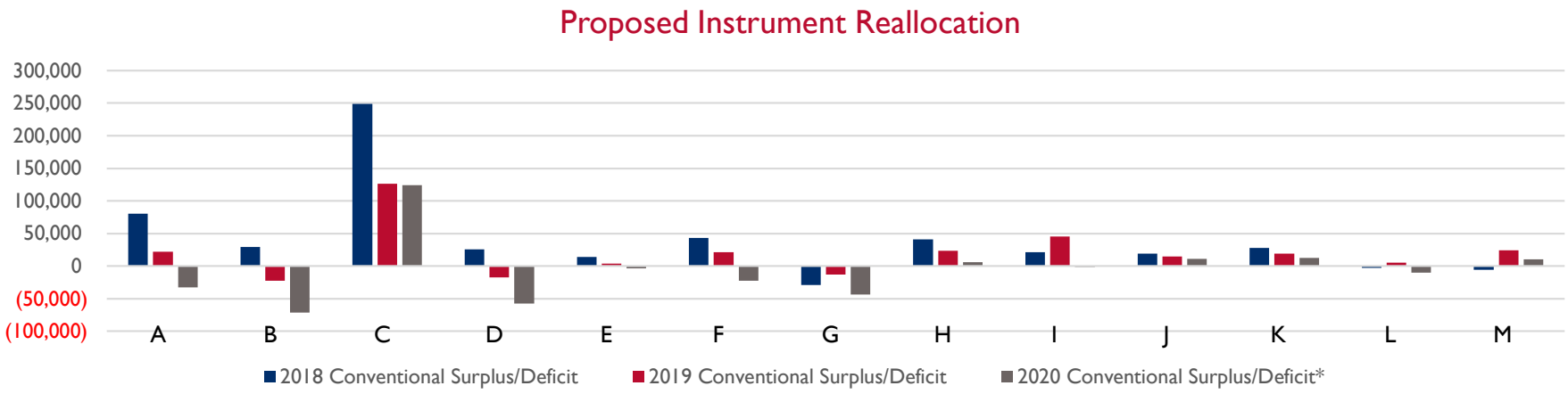
VL Referral Center to Provincial Testing Center

Marker	Facility Type	Total #
▲	Provincial Hub	10
	*Scaled by VL Provincial Test Demand	
●	Health Facilities	1553

Marker	Test Equipment	Total #
⬠	Equipment B	10*
⬠	Equipment B	3
	New Potential Locations	
■	BioMerieux NucliSENS	2
★	Equipment E	3
★	Equipment E	1
	New Potential Locations	
▲	Equipment F	1
◆	Equipment G	10
✚	Equipment H	92**
■	Equipment D	120

Zimbabwe: Proposed Equipment Re-Allocations & Projected Surplus/Deficit





Takeaways from Zimbabwe VL Laboratory Network Optimization

- **Baseline**:
  - Current sample transport network is functional but lacks coordination
  - Instrument locations are not aligned with HIV patient distribution
- **Outcomes & Challenges**:
  - As a result of the optimization, Zimbabwe will be able to increase Viral Load instrument utilization rates and expand national Viral Load coverage from **40%** to **65%** without procuring additional instruments.
  - Budgetary challenges pose significant implications in respect to reaching the last 90
  - Instrument movements and additional capacity may require infrastructure upgrades & political buy-in from stakeholders
- **Optimization Essentials:**
  - Stakeholder alignment and accurate data are crucial to laboratory network optimization
  - All stakeholders that participated in the workshop actively shaped the modelling, recommendations, and way forward – **MOH is driving the vison and open to redefining the network**

Questions?