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## **Appendix Text** - Narrative description of the community-based HIVST distribution models across countries – PSI New Start programme in all countries (adapted from Mangenah et al., 2019; d’Elbée et al., 2020)

### **Malawi**

In Malawi, a randomised controlled trial (RCT) was conducted in rural areas of Blantyre, Machinga, Mwanza and Neno districts in Southern Malawi and comprised a total trial population of approximately 62,500 residents. Catchment populations of 22 public rural primary health clinics (PHCs) were randomized 1:1 to either HIVST or standard of care. In the 11 HIVST intervention communities, residents had access to community-based distribution agent’s (CBDA) delivered HIVST (door-to-door) or the option to go to the CBDA’s home over a continuous 1-year period (June 2016 to May 2017). CBDAs were paid an incentive of United States Dollar (US) \$0.15 [100 Malawi Kwacha (MWK)] per kit distributed. This was integrated into their regular activities distributing contraceptives and other health products. In all sites, residents could access free HTS and ART if HIV-positive, through the PHCs.

### **Zambia**

In Zambia, residents across 16 rural community sites had access to CBDA delivered HIVST or the option to go to the CBDA’s home over a continuous 1-year period (July 2016 to June 2017), reaching a total target adult population of 416,294 across Ndola, Kapiri, Lusaka and Choma districts. In this hub and spoke model CBDAs were linked to specific clinics and worked in their surrounding catchment populations. CBDAs were initially paid a monthly allowance of US\$78 [750 Zambia Kwacha (ZMK)] independent of performance; this was later supplemented by a US\$0.21 (2 ZMK) incentive per used kit returned. Though only six sites were included in the RCT, costs were evaluated for all 16 sites.

### **Zimbabwe**

In Zimbabwe, the RCT was conducted across eight rural district sites with a total trial population of approximately 224,116 residents. Forty-four geographically defined wards were randomized 1:1 to either linkage intervention (HIVST plus distributor incentive for linkage events) or control (HIVST with fixed distributor allowance) clusters. HIVST was delivered across sites through one-off 4-6 week campaigns, moving sequentially from one district to the other between August 2016, and May 2017. In each district, new CBDAs were recruited and trained for three days. CBDAs then each distributed a specific number of tests proportional to their confined catchment area. Each CBDA was equipped with a tablet to demonstrate how to conduct a self-test through a video and to collate data on each self-tester.

At one to two weeks following HIVST distribution, the routine PSI mobile outreach service offered HIV confirmatory testing for individuals with reactive HIVST test result and HIV treatment referral to public sector health facilities for individuals with confirmed HIV positive results, including other services such as family planning and screening for non-communicable diseases. All CBDAs received a fixed allowance of USD\$50, with an additional US\$0.20 incentive for those in the linkage intervention arm per HIVST positive tester who linked for post-test services at PSI mobile outreach services. There was no compensation given to HIV negatives linking to post-test services. We estimated the cost of HIVST distribution in both intervention and –control sites. The cost of providing confirmatory testing at outreach services is not included in this study, for consistency across countries.

## Lesotho

HIVST provision was done through PSI mobile outreaches or mobile team conducting door-to-door HTS and HIVST distribution in five priority districts of Lesotho (Maseru, Berea, Leribe, Mafeteng, and Mohale's Hoek).

In the case of outreach based activities, the client is offered the option to self-test or to receive provider delivered HTS at the mobile outreach. The HTS provider collects client data based on the HIVST register. Clients who opt for self-testing have the choice of testing on site or taking the kit away for testing at their convenience. Clients are encouraged to test at mobile outreach where possible to maximize review of test result with HTS provider.

Clients who choose to self-test on-site are given a self-test package and access to testing tent where they can self-test in private. If the result is positive, the client is offered confirmatory HIV Testing by the HTS provider at the site. If confirmatory results are positive, the client is referred to the preferred nearby health facility. All confirmed clients living with HIV are offered HIV self-test kit for secondary distribution to their sexual partner(s) or home visit for index HIV testing.

If HIV self-test is negative, the client is counselled on HIV prevention and offered preventive methods including VMMC for males, PrEP if eligible according to guidelines and consistent & correct condom use. The clients with a negative HIV status are also counselled on need for subsequent repeat testing according to risk profile outlined in the national guidelines. Clients who opt to do self-test off site also follow similar processes for clients who test off site at New Start.

## South Africa

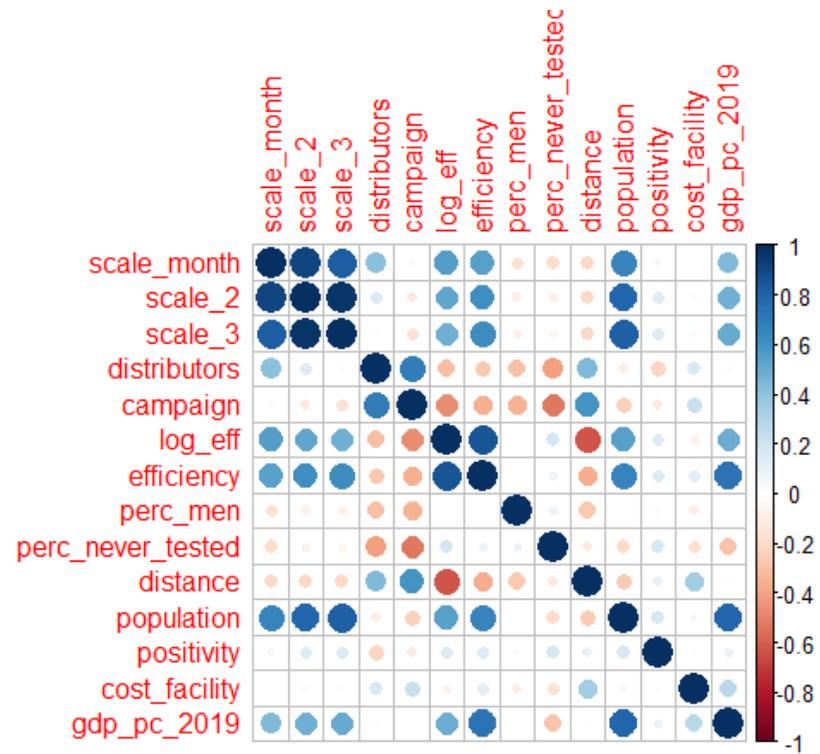
Between Jan 2018 and Oct 2019, 158,997 HIVST kits were distributed by Society for Family Health - SFH (PSI affiliate) in community-based models through fixed-point distribution in the districts of City of Tshwane, City of Johannesburg, and Dr Kenneth Kaunda.

HIVST was integrated with existing community-based HTS activity platforms where HIVST was offered to individual clients after demonstration of how to use it as an HTS screening option. At the time of receiving the package clients were shown an instructional video on a tablet or smartphone. Basic information were collected from the client, including demographics and history of HIV testing; using REDCap™. Clients could choose to self-test themselves onsite or with assistance of the counsellor. Clients who chose to self-test onsite were given a HIVST kit with validated instructions and access to a private space. Clients were encouraged to disclose their HIVST results to the counsellor. Clients who self-tested negative were referred for prevention services and clients who had a reactive self-test were confirmed and referred for further managed health care.

**Appendix Table S1.** Allocation factors from STAR expenditures to model, and model to districts

Input types	STAR expenditure - Allocation of incremental HIVST costs	STAR expenditure - Allocation factors - Model to districts
<i>Start-up</i>		
S1: Training	Not applicable	% of participants to the training
S2: Sensitisation	Not applicable	Equally across districts
S3: Start-up other	Not applicable	% of HIVST kits distributed
<i>Capital</i>		
A: Building & storage	Full: Direct expenditures Incremental: Direct expenditure	% of direct expenditure
B: Equipment	Full: % of HTS versus HIVST activities Incremental: Direct expenditure	% of direct expenditure
<i>Recurrent</i>		
E: Personnel & Per diems – HQ (international and national)	Full: Direct expenditures Incremental: Direct expenditures	Equally across districts
E: Personnel & Per diems – HQ (district)		% of HIVST distributors
E: Personnel & Per diems – HQ (field)		% of HIVST distributors
F: Supplies (including HIVST kits)	Full: Direct expenditures Incremental: Direct expenditures	% of HIVST kits distributed
G: Vehicle operation, maintenance & transport	Full: Direct expenditures	% of mileage (HQ to district HQ) and # of cars per site
H: Building operation/maintenance	Full: Direct expenditures	% of direct expenditure
K: Other recurrent	Full: Direct expenditures Incremental: Direct expenditures	% of HIVST kits distributed

Appendix Figure S1. Correlation matrix



**Appendix Table S2.** Observed incremental HIVST costs for each of the three costing periods (period 1: December 2017 – April 2018, period 2: May 2018 – October 2018, period 3: November 2018 – April 2019) at national and district levels in Lesotho (1/3)

# of implementation month	5 districts						Berea					
	Dec 17 – Apr 18		May 18 - Oct 18		Nov 18 – Apr 19		Dec 17 - Apr 18		May 18 - Oct 18		Nov 18 – Apr 19	
	5	6	6	6	5	6	6	6				
Input types	Costs	%	Costs	%	Costs	%	Costs	%	Costs	%	Costs	%
<i>Start-up</i>												
S1: Training	\$574.57	0%	\$574.57	0%	\$574.57	0%	\$68.31	0%	\$68.31	0%	\$68.31	0%
S2: Sensitisation	\$188.75	0%	\$188.75	0%	\$188.75	0%	\$37.75	0%	\$37.75	0%	\$37.75	0%
S3: Start-up other	\$4,039.27	3%	\$4,039.27	2%	\$4,039.27	2%	\$786.35	3%	\$786.35	2%	\$786.35	2%
<b>Start-up - sub-total</b>	<b>\$4,802.59</b>	<b>3%</b>	<b>\$4,802.59</b>	<b>3%</b>	<b>\$4,802.59</b>	<b>2%</b>	<b>\$892.41</b>	<b>3%</b>	<b>\$892.41</b>	<b>3%</b>	<b>\$892.41</b>	<b>2%</b>
<i>Capital</i>												
A: Building & storage	\$64.75	0%	\$1,374.58	1%	\$1,367.43	1%	\$11.51	0%	\$244.25	1%	\$242.98	1%
B1: Equipment - National	\$0.00	0%	\$32.43	0%	\$0.00	0%	\$0.00	0%	\$5.76	0%	\$0.00	0%
B2: Equipment - District	\$315.96	0%	\$588.52	0%	\$2,373.13	1%	\$56.15	0%	\$104.58	0%	\$421.69	1%
<b>Capital - sub-total</b>	<b>\$380.71</b>	<b>0%</b>	<b>\$1,995.53</b>	<b>1%</b>	<b>\$3,740.57</b>	<b>2%</b>	<b>\$67.65</b>	<b>0%</b>	<b>\$354.59</b>	<b>1%</b>	<b>\$664.68</b>	<b>1%</b>
<i>Recurrent</i>												
E1: Personnel & Per diems - HQ - International	\$7,623.82	5%	\$7,166.08	4%	\$3,502.23	2%	\$1,524.76	5%	\$1,433.22	4%	\$700.45	1%
E2: Personnel & Per diems - HQ - National	\$13,966.18	9%	\$20,438.02	12%	\$20,469.76	9%	\$2,793.24	9%	\$4,087.60	12%	\$4,093.95	9%
E3: Personnel & Per diems - HQ - District	\$43,608.84	29%	\$50,170.86	29%	\$70,638.18	31%	\$9,344.75	30%	\$10,750.90	31%	\$15,136.75	32%
E4: Personnel & Per diems - Field	\$40,247.13	27%	\$48,296.56	28%	\$48,296.56	21%	\$8,624.39	28%	\$10,349.26	29%	\$10,349.26	22%
F1: Supplies	\$465.80	0%	\$165.28	0%	\$173.01	0%	\$90.68	0%	\$32.18	0%	\$33.68	0%
F2: HIVST kits	\$38,255.60	25%	\$33,838.26	20%	\$68,121.51	30%	\$7,447.51	24%	\$6,587.55	19%	\$13,261.74	28%
G: Vehicle operation, maintenance & transport	\$422.02	0%	\$1,311.18	1%	\$3,802.08	2%	\$67.17	0%	\$208.68	1%	\$605.11	1%
H: Building operation/maintenance	\$284.57	0%	\$656.66	0%	\$1,282.08	1%	\$50.57	0%	\$116.68	0%	\$227.82	0%
K: Other recurrent costs	\$664.84	0%	\$2,080.78	1%	\$4,250.60	2%	\$129.43	0%	\$405.08	1%	\$827.50	2%
<b>Recurrent - sub-total</b>	<b>\$145,538.81</b>	<b>97%</b>	<b>\$164,123.68</b>	<b>96%</b>	<b>\$220,536.00</b>	<b>96%</b>	<b>\$30,072.49</b>	<b>97%</b>	<b>\$33,971.16</b>	<b>96%</b>	<b>\$45,236.26</b>	<b>97%</b>
<b>Total HIVST costs</b>	<b>\$150,722.11</b>		<b>\$170,921.79</b>		<b>\$229,079.16</b>		<b>\$31,032.55</b>		<b>\$35,218.16</b>		<b>\$46,793.34</b>	
HIVST kits distributed	<b>14,099</b>		<b>12,471</b>		<b>25,106</b>		<b>3,656</b>		<b>1,544</b>		<b>4,258</b>	
Average HIVST costs	<b>\$10.69</b>		<b>\$13.71</b>		<b>\$9.12</b>		<b>\$8.49</b>		<b>\$22.81</b>		<b>\$10.99</b>	

**Appendix Table S2.** Observed incremental HIVST costs for each of the three costing periods (period 1: December 2017 – April 2018, period 2: May 2018 – October 2018, period 3: November 2018 – April 2019) at national and district levels in Lesotho (2/3)

# of implementation month	Leribe						Mafeteng					
	Dec 17 - Apr 18		May 18 - Oct 18		Nov 18 - Apr 19		Dec 17 - Apr 18		May 18 - Oct 18		Nov 18 - Apr 19	
Input types	5		6		6		5		6		6	
	Costs	%										
<i>Start-up</i>												
S1: Training	\$130.58	0%	\$130.58	0%	\$130.58	0%	\$88.40	0%	\$88.40	0%	\$88.40	0%
S2: Sensitisation	\$37.75	0%	\$37.75	0%	\$37.75	0%	\$37.75	0%	\$37.75	0%	\$37.75	0%
S3: Start-up other	\$987.18	3%	\$987.18	2%	\$987.18	2%	\$639.74	3%	\$639.74	3%	\$639.74	2%
<b>Start-up - sub-total</b>	<b>\$1,155.52</b>	<b>3%</b>	<b>\$1,155.52</b>	<b>3%</b>	<b>\$1,155.52</b>	<b>2%</b>	<b>\$765.89</b>	<b>4%</b>	<b>\$765.89</b>	<b>3%</b>	<b>\$765.89</b>	<b>2%</b>
<i>Capital</i>												
A: Building & storage	\$16.16	0%	\$343.00	1%	\$341.22	1%	\$10.03	0%	\$212.98	1%	\$211.87	1%
B1: Equipment - National	\$0.00	0%	\$8.09	0%	\$0.00	0%	\$0.00	0%	\$5.02	0%	\$0.00	0%
B2: Equipment - District	\$78.84	0%	\$146.86	0%	\$592.18	1%	\$48.96	0%	\$91.19	0%	\$367.70	1%
<b>Capital - sub-total</b>	<b>\$95.00</b>	<b>0%</b>	<b>\$497.95</b>	<b>1%</b>	<b>\$933.40</b>	<b>2%</b>	<b>\$58.99</b>	<b>0%</b>	<b>\$309.19</b>	<b>1%</b>	<b>\$579.58</b>	<b>2%</b>
<i>Recurrent</i>												
E1: Personnel & Per diems - HQ - International	\$1,524.76	4%	\$1,433.22	4%	\$700.45	1%	\$1,524.76	7%	\$1,433.22	6%	\$700.45	2%
E2: Personnel & Per diems - HQ - National	\$2,793.24	8%	\$4,087.60	10%	\$4,093.95	7%	\$2,793.24	13%	\$4,087.60	16%	\$4,093.95	12%
E3: Personnel & Per diems - HQ - District	\$10,760.62	30%	\$12,379.82	30%	\$17,430.20	31%	\$5,380.31	25%	\$6,189.91	25%	\$8,715.10	26%
E4: Personnel & Per diems - Field	\$9,931.11	28%	\$11,917.33	29%	\$11,917.33	21%	\$4,965.56	23%	\$5,958.67	24%	\$5,958.67	18%
F1: Supplies	\$113.84	0%	\$40.39	0%	\$42.28	0%	\$73.77	0%	\$26.18	0%	\$27.40	0%
F2: HIVST kits	\$9,349.54	26%	\$8,269.96	20%	\$16,648.67	30%	\$6,058.93	28%	\$5,359.31	22%	\$10,789.10	32%
G: Vehicle operation, maintenance & transport	\$129.41	0%	\$402.08	1%	\$1,165.92	2%	\$82.81	0%	\$257.29	1%	\$746.08	2%
H: Building operation/maintenance	\$71.01	0%	\$163.86	0%	\$319.92	1%	\$44.09	0%	\$101.75	0%	\$198.65	1%
K: Other recurrent costs	\$162.48	0%	\$508.53	1%	\$1,038.83	2%	\$105.30	0%	\$329.55	1%	\$673.21	2%
<b>Recurrent - sub-total</b>	<b>\$34,836.02</b>	<b>97%</b>	<b>\$39,202.80</b>	<b>96%</b>	<b>\$53,357.56</b>	<b>96%</b>	<b>\$21,028.77</b>	<b>96%</b>	<b>\$23,743.47</b>	<b>96%</b>	<b>\$31,902.60</b>	<b>96%</b>
<b>Total HIVST costs</b>	<b>\$36,086.54</b>		<b>\$40,856.27</b>		<b>\$55,446.47</b>		<b>\$21,853.65</b>		<b>\$24,818.55</b>		<b>\$33,248.06</b>	
HIVST kits distributed	<b>3,270</b>		<b>3,064</b>		<b>7,958</b>		<b>1,411</b>		<b>2,866</b>		<b>3,625</b>	
Average HIVST costs	<b>\$11.04</b>		<b>\$13.33</b>		<b>\$6.97</b>		<b>\$15.49</b>		<b>\$8.66</b>		<b>\$9.17</b>	

**Appendix Table S2.** Observed incremental HIVST costs for each of the three costing periods (period 1: December 2017 – April 2018, period 2: May 2018 – October 2018, period 3: November 2018 – April 2019) at national and district levels in Lesotho (3/3)

# of implementation month	Maseru						Mohale					
	Dec 17 - Apr 18		May 18 - Oct 18		Nov 18 - Apr 19		Dec 17 - Apr 18		May 18 - Oct 18		Nov 18 - Apr 19	
	5	6	6	6	5	6	6	6				
Input types	Costs	%										
<i>Start-up</i>												
S1: Training	\$245.10	1%	\$245.10	0%	\$245.10	0%	\$42.19	0%	\$42.19	0%	\$42.19	0%
S2: Sensitisation	\$37.75	0%	\$37.75	0%	\$37.75	0%	\$37.75	0%	\$37.75	0%	\$37.75	0%
S3: Start-up other	\$1,150.76	3%	\$1,150.76	2%	\$1,150.76	2%	\$475.23	3%	\$475.23	2%	\$475.23	2%
<b>Start-up - sub-total</b>	<b>\$1,433.60</b>	<b>3%</b>	<b>\$1,433.60</b>	<b>3%</b>	<b>\$1,433.60</b>	<b>2%</b>	<b>\$555.17</b>	<b>3%</b>	<b>\$555.17</b>	<b>3%</b>	<b>\$555.17</b>	<b>2%</b>
<i>Capital</i>												
A: Building & storage	\$20.41	0%	\$433.30	1%	\$431.05	1%	\$6.64	0%	\$141.03	1%	\$140.30	1%
B1: Equipment - National	\$0.00	0%	\$10.22	0%	\$0.00	0%	\$0.00	0%	\$3.33	0%	\$0.00	0%
B2: Equipment - District	\$99.60	0%	\$185.52	0%	\$748.08	1%	\$32.42	0%	\$60.38	0%	\$243.49	1%
<b>Capital - sub-total</b>	<b>\$120.01</b>	<b>0%</b>	<b>\$629.04</b>	<b>1%</b>	<b>\$1,179.13</b>	<b>2%</b>	<b>\$39.06</b>	<b>0%</b>	<b>\$204.74</b>	<b>1%</b>	<b>\$383.79</b>	<b>1%</b>
<i>Recurrent</i>												
E1: Personnel & Per diems - HQ - International	\$1,524.76	3%	\$1,433.22	3%	\$700.45	1%	\$1,524.76	9%	\$1,433.22	7%	\$700.45	3%
E2: Personnel & Per diems - HQ - National	\$2,793.24	6%	\$4,087.60	8%	\$4,093.95	6%	\$2,793.24	16%	\$4,087.60	20%	\$4,093.95	15%
E3: Personnel & Per diems - HQ - District	\$13,875.54	32%	\$15,963.46	32%	\$22,475.78	34%	\$4,247.61	24%	\$4,886.77	24%	\$6,880.34	25%
E4: Personnel & Per diems - Field	\$12,805.91	29%	\$15,367.09	31%	\$15,367.09	23%	\$3,920.18	22%	\$4,704.21	23%	\$4,704.21	17%
F1: Supplies	\$132.70	0%	\$47.09	0%	\$49.29	0%	\$54.80	0%	\$19.45	0%	\$20.35	0%
F2: HIVST kits	\$10,898.74	25%	\$9,640.27	19%	\$19,407.31	29%	\$4,500.88	25%	\$3,981.17	19%	\$8,014.69	30%
G: Vehicle operation, maintenance & transport	\$16.20	0%	\$50.34	0%	\$145.96	0%	\$126.43	1%	\$392.80	2%	\$1,139.01	4%
H: Building operation/maintenance	\$89.70	0%	\$207.00	0%	\$404.14	1%	\$29.20	0%	\$67.37	0%	\$131.54	0%
K: Other recurrent costs	\$189.41	0%	\$592.80	1%	\$1,210.96	2%	\$78.22	0%	\$244.81	1%	\$500.10	2%
<b>Recurrent - sub-total</b>	<b>\$42,326.20</b>	<b>96%</b>	<b>\$47,388.85</b>	<b>96%</b>	<b>\$63,854.94</b>	<b>96%</b>	<b>\$17,275.32</b>	<b>97%</b>	<b>\$19,817.40</b>	<b>96%</b>	<b>\$26,184.65</b>	<b>97%</b>
<b>Total HIVST costs</b>	<b>\$43,879.81</b>		<b>\$49,451.50</b>		<b>\$66,467.67</b>		<b>\$17,869.55</b>		<b>\$20,577.31</b>		<b>\$27,123.61</b>	
HIVST kits distributed	<b>3,739</b>		<b>3,867</b>		<b>6,598</b>		<b>2,023</b>		<b>1,130</b>		<b>2,667</b>	
Average HIVST costs	<b>\$11.74</b>		<b>\$12.79</b>		<b>\$10.07</b>		<b>\$8.83</b>		<b>\$18.21</b>		<b>\$10.17</b>	