Identifying Where HIV Self-Screening Has Greatest Impact: Analysis of Routine Data in South Africa

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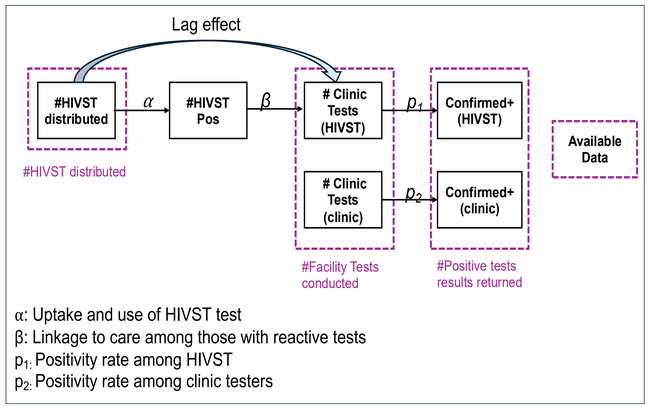
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BACKGROUND

- HIV self-tests (HIVSTs) can be distributed through multiple channels and can extend testing services to populations with historically lower uptake by enabling private, flexible testing.
- However, these benefits make measuring test utilization, test results and linkage to subsequent care challenging **(Figure 1)**.

Figure 1: HIVST within the broader testing system



α: Uptake and use of HIVST test
β: Linkage to care among those with reactive tests
p_1: Positivity rate among HIVST
p_2: Positivity rate among clinic testers

METHODS

- To initiate treatment, individuals with reactive HIVST results must receive confirmatory testing at a facility Hence HIVST, distribution could impact the number of facility tests performed and positive results returned
- **Data sources: October 2020 – June 2023**
  - Routine Data: #HIVST, #Facility HIV tests, #HIV positive results per district and quarter
  - Naomi model estimates: prevalence, proportion untreated
- **Multivariable linear regression:**
  - Predict the number of HIV positive results returned based on the number of HIVST distributed and number of facility tests performed
  - Additional analyses:
    - Effect modifiers: prevalence and proportion untreated (as tertiles)
    - Adjusted model: distribution channel (facility, community)

HIVSTs resulted in approximately 2.3 additional facility-confirmed HIV positive results returned per 100 HIVST distributed

RESULTS

- HIV facility-based tests have largest impact with 3 additional positive results per 100 tests (**table 1**).
- HIVST has significant positive association with 2.3 additional positive results per 100 HIVST distributed
- Estimated that 52,209 (4.3%) positive results are attributable to HIVST (**Figure 2**)

Table 1: Regression results showing positive results per 100 tests

Variable	Estimate per 100 tests (95% CI)
HIVST (n=2,275,359)	**2.3 (1.4 - 3.1) ***
Facility Tests (n=41,212,496)	**3 (2.9 - 3.1) ***
*Significant: p-value <0.05	

Figure2: Observed, predicted and counterfactual results over time. Counterfactual assumed 0 HIVST distributed

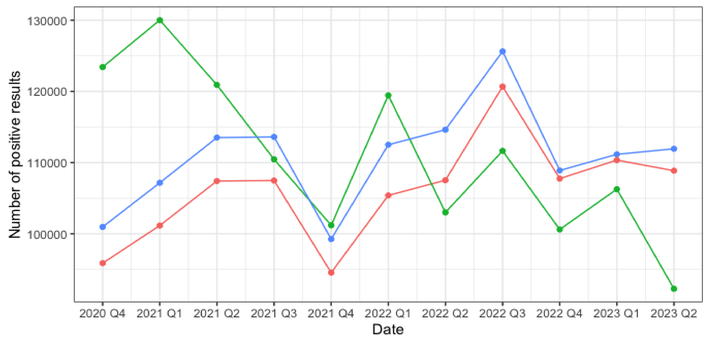


Table 2: Regression results from additional analyses

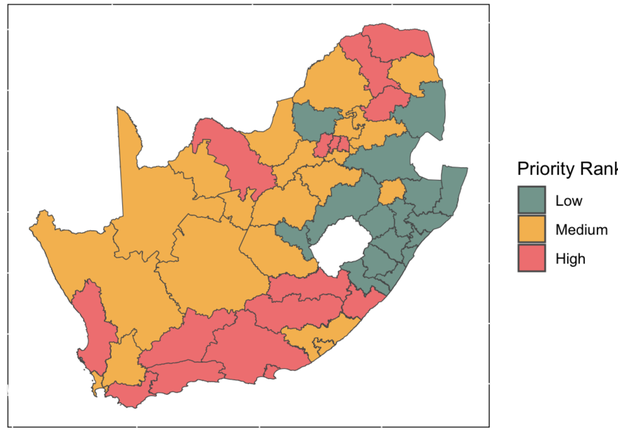
HIVST group	Estimate per 100 HIVST (95% confidence interval)
Prevalence (thirds: <11.5%, 11.5-14.%, >14.4%,)	
Lower third (n= 234,278)	**6.2 (4.3 - 8.2) ***
Middle third (n= 678,980)	**9.5 (7.3 - 11.7) ***
Upper third (n=1,362,101)	-0.4 (-1.5 - 0.7)
Proportion Untreated (thirds: <21.5%, 21.5-27.9%, >27.9%,)	
Lower third (n=1,166,406)	-0.7 (-1.5 - 0)
Middle Third (n=579,404)	-0.1 (-2.2 - 1.9)
Upper third (n= 529 549)	**11.2 (9.2 - 13.2) ***
Distribution Channel	
Community HIVST (n=823,589)	**3.4 (1.5 - 5.3) ***
Facility HIVST (n=1,200,495)	**1.8 (0.7 - 2.9) ***
*Significant: p-value <0.05,	

- Positive, significant associations for HIVST distribution in districts with lower and middle prevalence and in districts with a high proportion of untreated PLHIV
- Further, community HIVST had stronger association than facility distributed HIVST – 3.4 vs 1.8 additional positive results per 100 HIVST

IMPLICATIONS and CONCLUSIONS

- Results highlight HIVST as an important and impactful HIV testing modality, particularly if it reached people who may otherwise have remained untested
- Additional analyses could inform priorities for future HIVST distribution: e.g HIVST distribution through community channels could be targeted for lower prevalence districts and districts with high treatment gaps (**Figure 3**).

Figure 3: District HIVST prioritization



- **Low Priority**: high prevalence and low treatment gap
- **Medium priority**: lower prevalence or high treatment gap
- **High priority**: lower prevalence and high treatment gap

PLAIN LANGUAGE SUMMARY

HIV self-testing represent an impactful testing modality which could be used to reach people unaware of their status. Results also show how HIVST distribution could be prioritized at the community level and in high-priority districts.

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