

## **Appendices to Investigating inequalities in HIV testing in sub-Saharan Africa: spatial analysis of cross-sectional population-based surveys in 25 countries**

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**Table S1. Total number of participants at the country level and primary sampling unit analysis.**

ISO	Country	Year	Female (n cluster) PSU	Female (n/N) country	Participation rate % (Female) †	Male (n cluster) PSU	Male (n/N) country	Participation rate %* (Male) †
AO	Angola (WCA)	2015-16	11 150	14 379 (14 379)	100	2 151	5 684 (5 684)	100
BI	Burundi (ESA)	2016-17	14 912	17 269 (17 269)	100	4 039	7 552 (7 552)	100
CD	Congo DR (WCA)	2013-14	7 939	18 675 (18 827)	99.2	2 554	8 631 (8 656)	99.7
CI	Côte d'Ivoire (WCA)	2011-12	8 012	9 902 (10 060)	98.4	2382	5 131 (5 135)	99.9
CM	Cameroon (WCA)	2018	14 135	14 677 (14 677)	100	5 681	6 978 (6 978)	100
ET	Ethiopia (ESA)	2016	8 722	15 683 (15 683)	100	6 869	12 688 (12 688)	100
GA	Gabon (WCA)	2012	7 171	8 332 (8 422)	98.9	4 086	5 651 (5 654)	99.9
GH	Ghana (WCA)	2014	7 379	9 388 (9 396)	99.9	1167	4 388 (4 388)	100
GN	Guinea (WCA)	2018	6 258	10 874 (10 874)	100	916	4 117 (4 117)	100
LB	Liberia (WCA)	2013	8 152	9 192 (9 239)	99.5	2 061	4 118 (4 118)	100
LS	Lesotho (ESA)	2014	6 272	6 621 (6 621)	100	806	2 931 (2 931)	100
ML	Mali (WCA)	2012	4 753	10 424 (10 424)	100	929	4 399 (4 399)	100
MW	Malawi (ESA)	2015-16	23 764	24 562 (24 562)	100	3 162	7 478 (7 478)	100
MZ	Mozambique (ESA)	2015	6 675	7 602 (7 749)	98.1	3 502	5 271 (5 283)	99.8
NA	Namibia (ESA)	2013	8 919	9 884 (10 018)	98.7	1 484	4 474 (4 481)	99.8
RW	Rwanda (ESA)	2014-15	11 902	13 449 (13 497)	99.6	4 117	6 209 (6 217)	99.9
SL	Sierra Leone (WCA)	2019	13 331	15 574 (15 574)	100	3 371	7 197 (7 197)	100
SN	Senegal (WCA)	2017	14 577	16 787 (16 787)	100	3 065	6 977 (6 977)	100
TD	Chad (WCA)	2014-15	3 497	17 610 (17 719)	99.4	410	5 245 (5 248)	99.9

<b>TG</b>	<b>Togo</b> (WCA)	<b>2013-14</b>	7 981	9 429 (9 480)	99.5	2 204	4 473 (4 476)	99.9
<b>TZ</b>	<b>Tanzania</b> (ESA)	<b>2011-12</b>	9 220	10 836 (10 967)	98.8	5 974	8 345 (8 352)	99.9
<b>UG</b>	<b>Uganda</b> (ESA)	<b>2011</b>	6 997	8 805 (12 153)	72.5	6 334	9 588 (9 588)	100
<b>ZA</b>	<b>South Africa</b> (ESA)	<b>2016</b>	6 430	8 514 (8 514)	100	572	3 618 (3 618)	100
<b>ZM</b>	<b>Zambia</b> (ESA)	<b>2018</b>	13 238	13 683 (13 683)	100	11 470	12 132 (12 132)	100
<b>ZW</b>	<b>Zimbabwe</b> (ESA)	<b>2015</b>	9 698	9 953 (9 955)	99.98	7 893	8 396 (8 396)	100

**n cluster**: Total number of participants at the cluster level after excluding missing values for wealth index, recent HIV testing and cluster with less than 10 sample size; **PSU**: Primary Sampling Unit; **n**: Total number of participants after excluding missing values for wealth index and recent HIV testing; **N**: Total number of participants; **WCA**: Western Central Africa; **ESA**: Eastern Southern Africa  
† Participation rate at the country level

**Table S2. Summary estimates of national level HIV prevalence, HIV testing, absolute and relative inequalities in HIV testing uptake in the previous 12 months in 25 sub-Saharan African countries between 2011 and 2019 by country and sex.**

Country	Year	Female					Male				
		n	HIV prevalence	HIV testing <sup>†</sup>	SII (x 100) <sup>‡</sup> (95% CI)	RII (95% CI)	n	HIV prevalence	HIV testing <sup>†</sup>	SII (x 100) <sup>‡</sup> (95% CI)	RII (95% CI)
AO Angola	2015-16	14 379	3%	31%	40 (37; 44)	4.07 (3.54; 4.69)	5 684	1%	21%	26 (21; 31)	3.23 (2.63; 3.97)
BI Burundi	2016-17	17 269	1%	30%	7 (4; 10)	1.26 (1.15; 1.39)	7 552	0.7%	21%	7 (4; 11)	1.42 (1.19; 1.69)
CD Congo DR	2013-14	18 675	2%	9%	19 (16; 22)	18.29 (12.83; 26.08)	8 631	0.5%	8%	16 (13; 19)	12.83 (8.47; 19.43)
CI Côte d'Ivoire	2011-12	9 902	15%	5%	20 (17; 23)	3.65 (2.98; 4.48)	5 131	3%	10%	15 (12; 19)	5.38 (3.68; 7.86)
CM Cameroon	2018	14 677	4%	40%	40 (36; 44)	2.68 (2.43; 2.96)	6 978	2%	35%	42 (36; 47)	3.05 (2.65; 3.52)
ET Ethiopia	2016	15 683	1%	21%	44 (39; 48)	4.73 (4.13; 5.42)	12 688	0.5%	20%	35 (31; 39)	4.11 (3.52; 4.79)
GA Gabon	2012	8 332	6%	35%	16 (12; 20)	1.68 (1.45; 1.94)	5 651	3%	24%	23 (20; 27)	3.52 (2.80; 4.42)
GH Ghana	2014	9 388	3%	14%	11 (8; 13)	2.11 (1.74; 2.56)	4 388	1%	7%	11 (8; 15)	5.75 (3.25; 10.15)
GN Guinea	2018	10 874	2%	9%	23 (19; 26)	11.09 (8.20; 14.98)	4 117	1%	6%	15 (11; 20)	12.25 (7.17; 20.95)
LB Liberia	2013	9 192	2%	22%	5 (1; 8)	1.26 (1.06; 1.49)	4 118	2%	14%	14 (10; 17)	3.28 (2.30; 4.66)
LS Lesotho	2014	6 621	30%	59%	-10 (-14; -5)	0.85 (0.79; 0.92)	2 931	19%	38%	23 (16; 29)	1.82 (1.53; 2.17)
ML Mali	2012	10 424	1%	7%	26 (21; 30)	22.66 (16.15; 31.78)	4 399	0.9%	7%	20 (15; 25)	14.74 (8.89; 24; 44)
MW Malawi	2015-16	24 562	11%	44%	0.8 (-2; 3)	1.02 (0.96; 1.08)	7 478	7%	42%	-0.2 (-4; 4)	0.996 (0.91; 1.09)
MZ Mozambique	2015	7 602	15%	31%	27 (22; 32)	2.04 (1.76; 2.36)	5 271	10%	20%	32 (26; 37)	3.35 (2.77; 4.04)

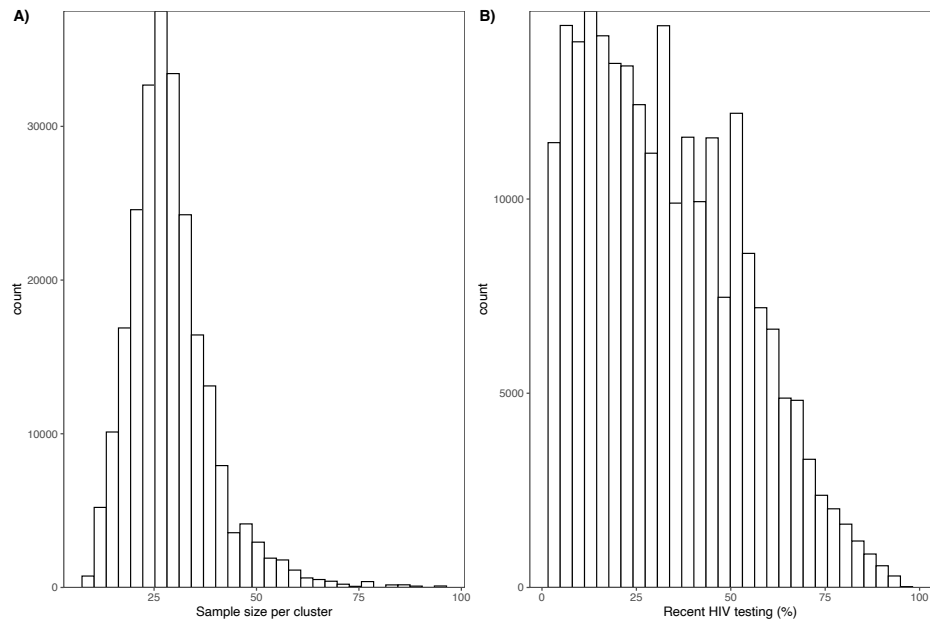
NA Namibia	<b>2013</b>	9 884	17%	51%	-4 (-8; -0.5)	0.91 (0.85; 0.99)	4 474	11%	39%	17 (12; 22)	1.57 (1.36; 1.81)
RW Rwanda	<b>2014-15</b>	13 449	4%	40%	3 (-0.2; 7)	1.08 (0.99; 1.18)	6 209	2%	37%	-3 (-7; 1)	0.92 (0.82; 1.04)
SL Sierra Leone	<b>2019</b>	15 574	2%	23%	12 (9; 16)	1.74 (1.50; 2.02)	7 197	1%	13%	20 (16; 24)	4.93 (3.71; 6.56)
SN Senegal	<b>2017</b>	16 787	0.5%	13%	5 (3; 7)	1.47 (1.25; 1.74)	6 977	0.5%	6%	8 (6; 11)	4.48 (3.02; 6.65)
TD Chad	<b>2014-15</b>	17 610	2%	3%	5 (3; 6)	6.82 (4.34; 10.72)	5 245	1%	8%	16 (11; 20)	9.09 (5.58; 14.80)
TG Togo	<b>2013-14</b>	9 429	3%	17%	19 (15; 22)	3.15 (2.58; 3.85)	4 473	2%	12%	21 (17; 25)	6.90 (4.84; 9.84)
TZ Tanzania	<b>2011-12</b>	10 836	6%	33%	12 (8; 15)	1.44 (1.29; 1.61)	8 345	4%	28%	13 (9; 17)	1.61 (1.41; 1.85)
UG Uganda	<b>2011</b>	8 805	8%	12%	5 (2; 7)	1.48 (1.18; 1.85)	9 588	6%	12%	5 (2; 7)	1.46 (1.17; 1.82)
ZA South Africa	<b>2016</b>	8 514	28%	60%	-8 (-12; -4)	0.87 (0.82; 0.93)	3 618	14%	45%	9 (3; 14)	1.21 (1.06; 1.38)
ZM Zambia	<b>2018</b>	13 683	14%	65%	9 (5; 13)	1.15 (1.07; 1.22)	12 132	8%	53%	14 (10; 18)	1.31 (1.22; 1.41)
ZW Zimbabwe	<b>2015</b>	9 953	17%	49%	-4 (-7; -0.5)	0.92 (0.86; 0.99)	8 396	11%	37%	7 (3; 11)	1.19 (1.08; 1.32)
Average			8%	29%				5%	23%		

n: Total number of participants after excluding missing values for wealth index and recent HIV testing; SII: Slope index of inequality; RII:

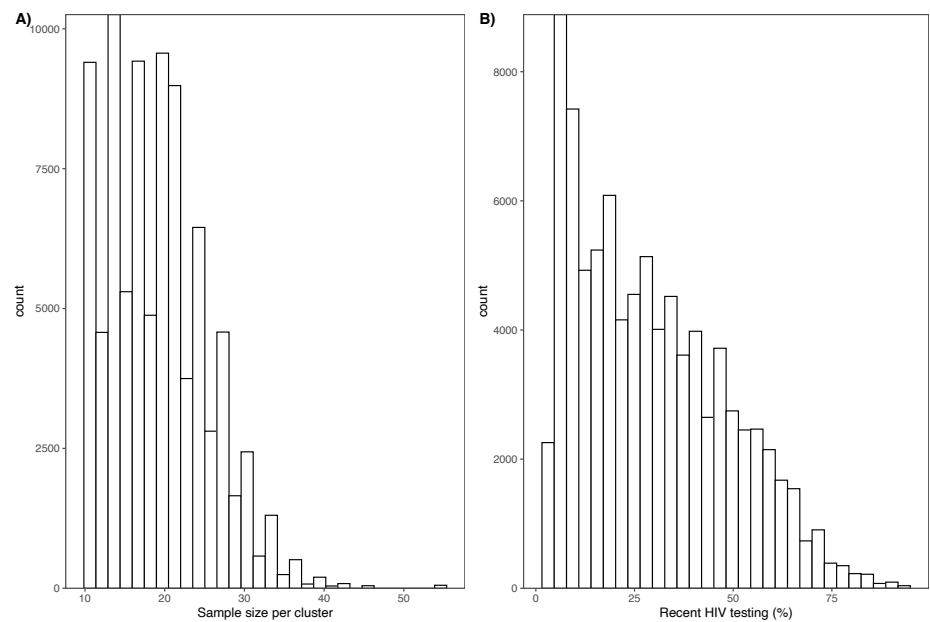
Relative index of inequality; 95% CI: 95% Confidence Interval.

† Self-reported recent (< 12 months) uptake of HIV testing.

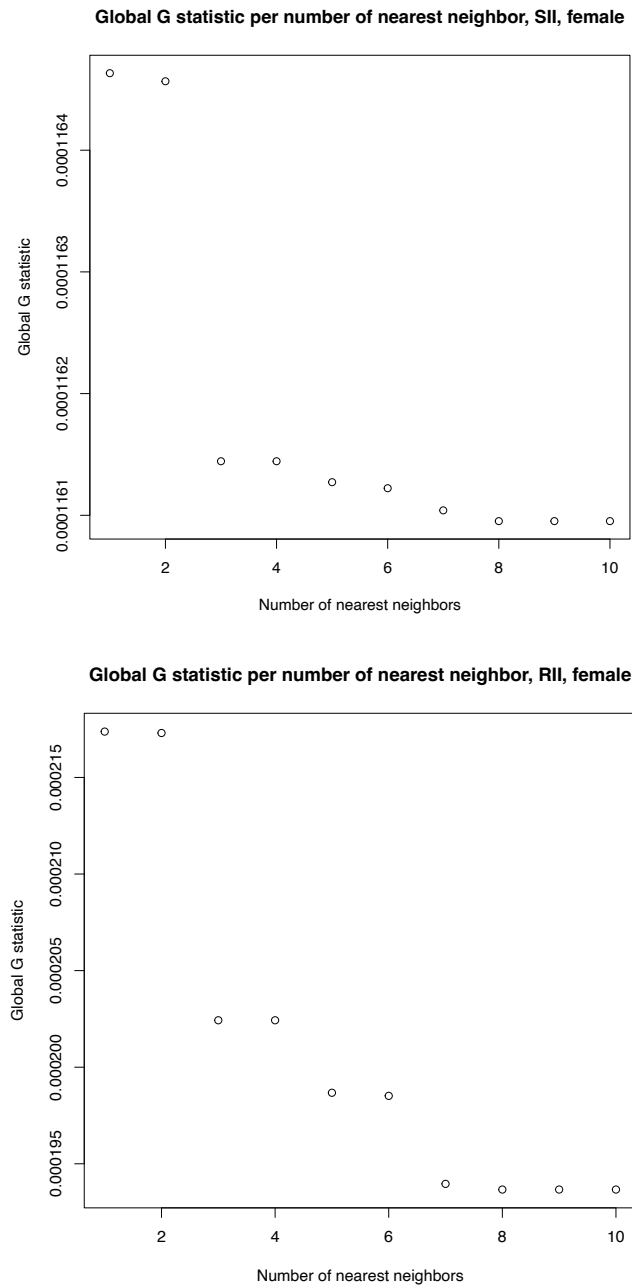
‡ SII values and their 95% CIs were multiplied by 100 so that they may be easily interpreted as percentage point differences (instead of proportion differences).s



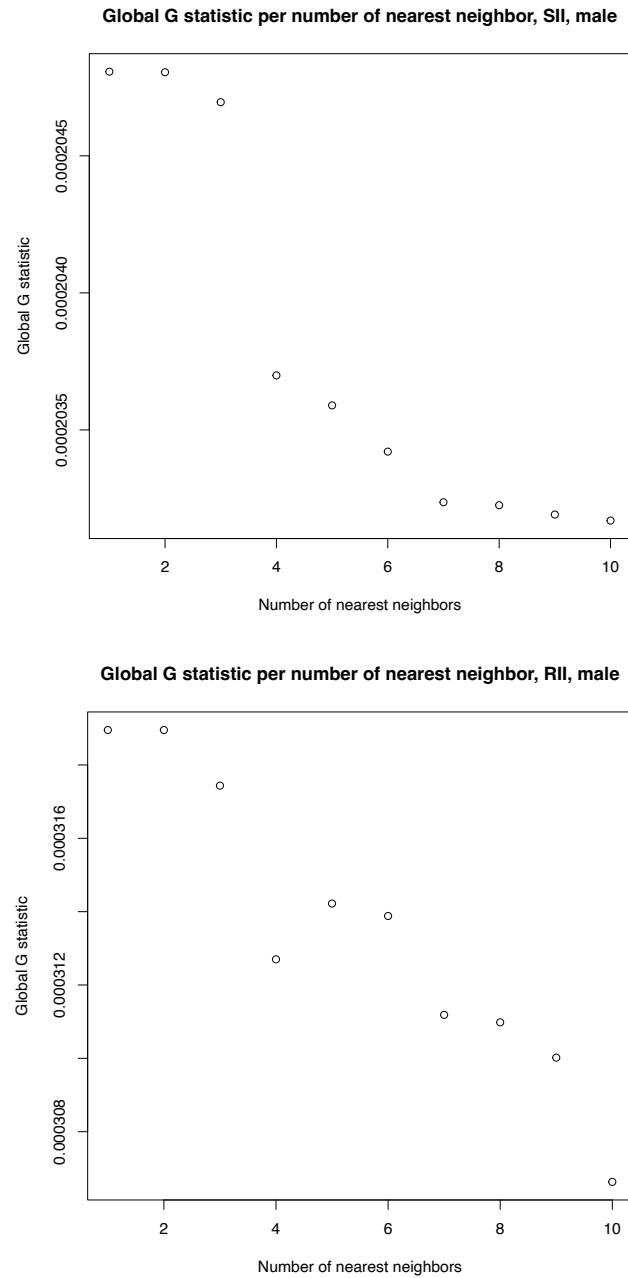
**Figure S1 (A). PSU distribution among women A) sample size and B) proportion of self-reported uptake of recent (< 12 months) HIV testing.**



**Figure S1 (B). PSU distribution among men A) sample size and B) proportion of self-reported uptake of recent (< 12 months) HIV testing.**

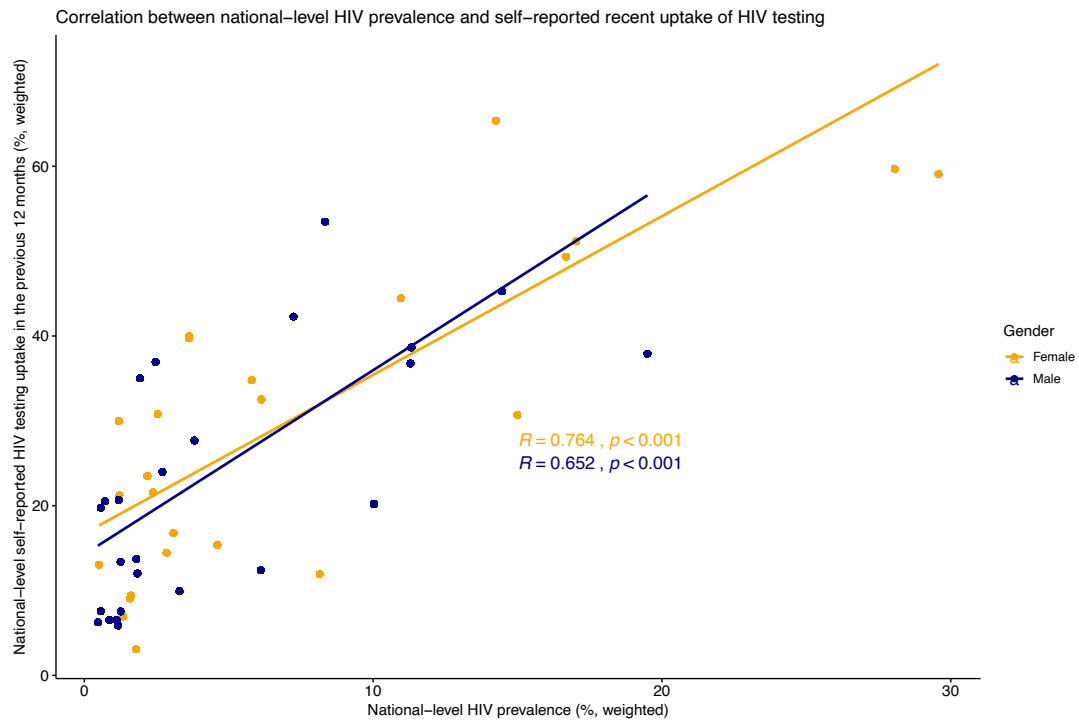


**Figure S2 (A). Global G statistic test by number of nearest neighbor (1-10) inequality scales among women.**

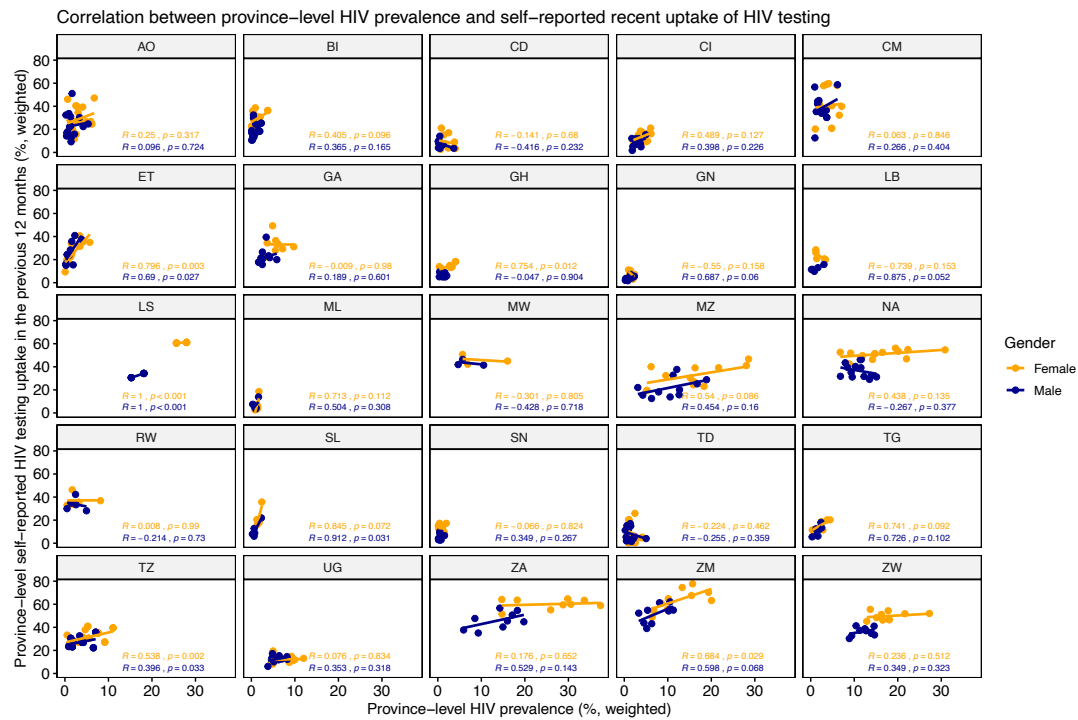


**Figure S2 (B). Global G statistic test by number of nearest neighbor (1-10) by inequality scales among men.**

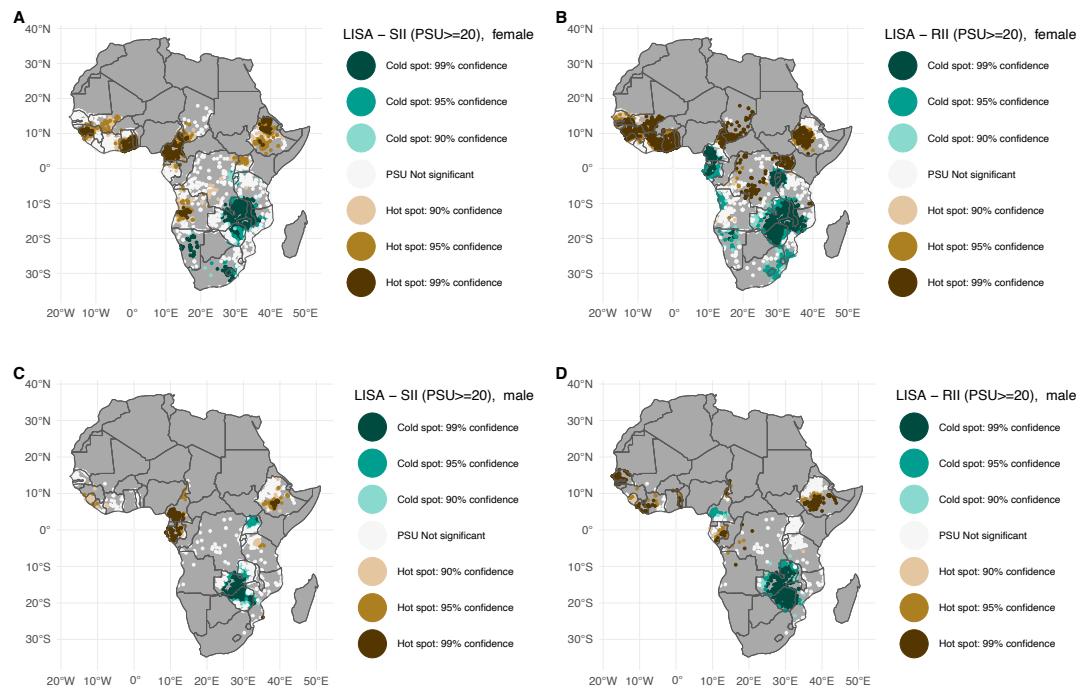




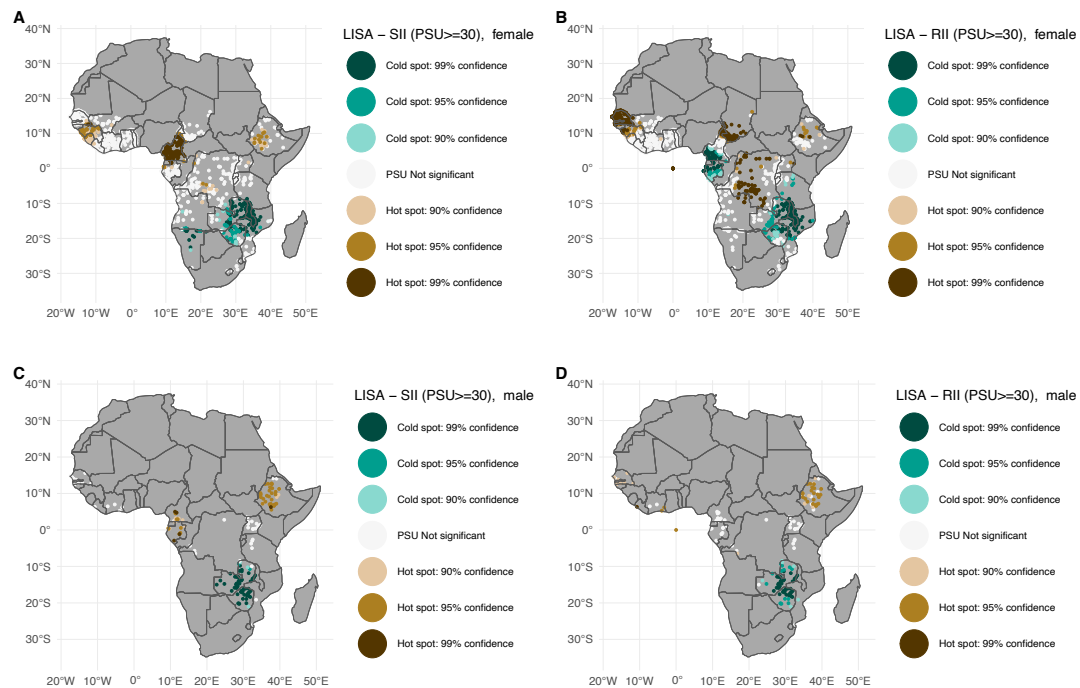
**Figure S3. Correlation (Spearman correlation coefficient R and p-value) between weighted HIV prevalence and weighted self-reported recent (< 12 months) uptake of HIV testing at the national level in 25 sub-Saharan African countries by sex.**



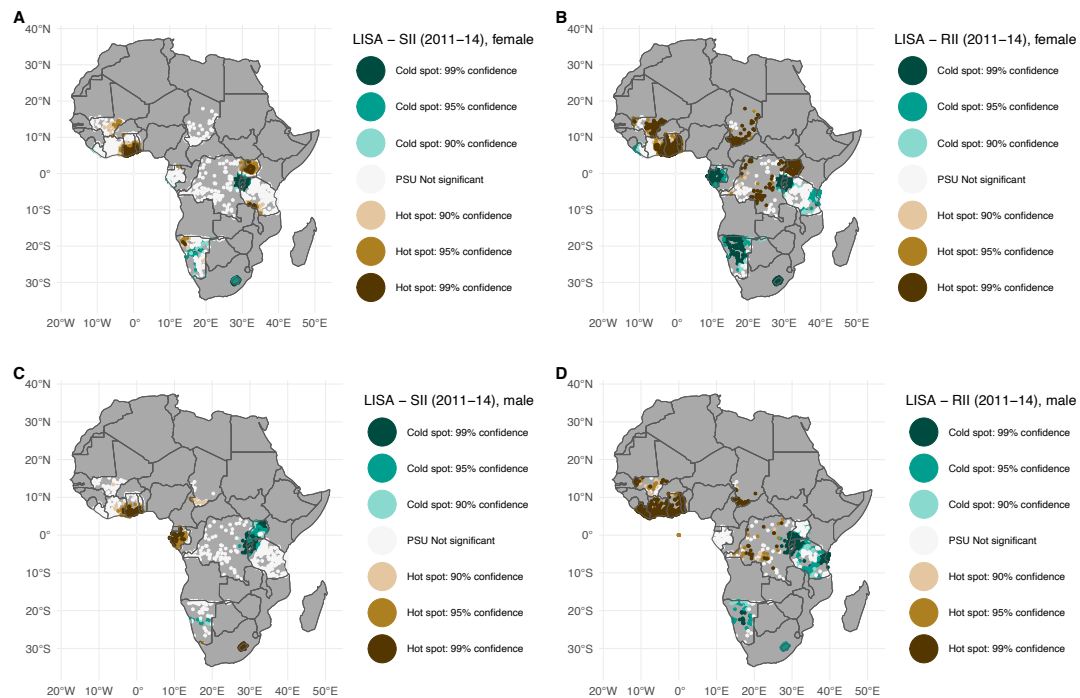
**Figure S4. Correlation (Spearman correlation coefficient R and p-value) between weighted HIV prevalence and weighted self-reported recent (< 12 months) uptake of HIV testing at the province level in 25 sub-Saharan African countries by sex. Only included regions with both the HIV biomarker and HIV testing variables.**



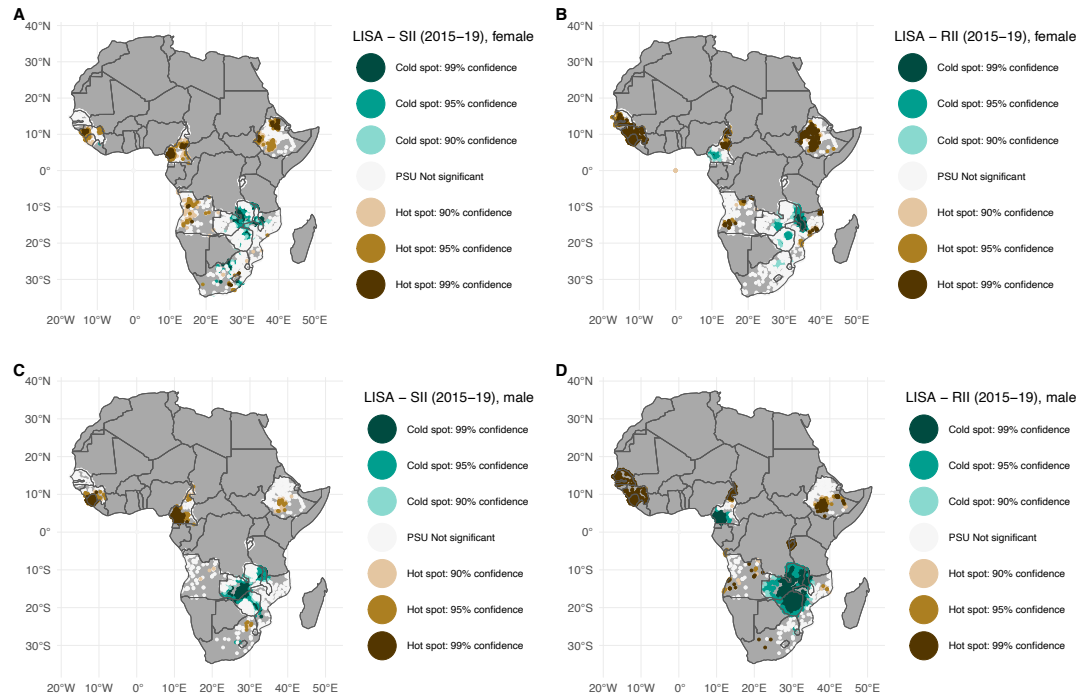
**Figure S5. Sensitivity analysis of local spatial autocorrelation of socioeconomic inequalities in self-reported (<12 months) uptake of HIV testing as Local Getis-Ord  $G_i^*$  at Primary Sampling Unit (PSU) level (1 nearest neighbor) with at least 20 participants across sub-Saharan African countries. Spatial clustering at the absolute scales (A and B) and relative scales (C and D) among women and men, respectively. Only PSUs with a sample size of at least 20 and more than one wealth quintile were included.**



**Figure S6. Sensitivity analysis of local spatial autocorrelation of socioeconomic inequalities in self-reported (<12 months) uptake of HIV testing as Local Getis-Ord  $G_i^*$  at Primary Sampling Unit (PSU) level (1 nearest neighbor) with at least 30 participants across sub-Saharan African countries. Spatial clustering at the absolute scales (A and C) and relative scales (B and D) among women and men, respectively. Only PSUs with a sample size of at least 30 and more than one wealth quintile were included.**



**Figure S7. Sensitivity analysis of local spatial autocorrelation of HIV testing socioeconomic inequalities as Local Getis-Ord  $G_i^*$  at PSU level (1 nearest neighbor) across sub-Saharan African countries with surveys between 2011 and 2014. Spatial clustering at the absolute scales (A and C) and relative scales (B and D) among women and men, respectively. Only PSUs with a sample size of at least 10 and more than one wealth quintile were included.**



**Figure S8. Sensitivity analysis of local spatial autocorrelation of HIV testing socioeconomic inequalities as Local Getis-Ord  $G_i^*$  at PSU level (1 nearest neighbor) across sub-Saharan African countries with surveys between 2015 and 2019. Spatial clustering at the absolute scales (A and C) and relative scales (B and D) among women and men, respectively. Only PSUs with a sample size of at least 10 and more than one wealth quintile were included.**