

## Indicator 32: Ever Tested for HIV

Internal variable name: outc32\_hiv\_test

Definition: Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation. Include testing fluid from your mouth.

### Predictive models

	Mixed, demos only	Logit, no area effects	Mixed with area covariates
	b/se	b/se	b/se
Outcome 32: Ever Tested for HIV			
NH Black vs. NH White	0.7242*** (0.0925)	0.6423*** (0.0951)	0.6440*** (0.0925)
NH Asian vs. NH White	-0.7004*** (0.1609)	-0.7100*** (0.1912)	-0.7208*** (0.1580)
NH Other vs. NH White	0.4173** (0.1409)	0.3840* (0.1745)	0.3812** (0.1393)
Hispanic vs. NH White	-0.0036 (0.1163)	-0.0277 (0.1525)	-0.0250 (0.1111)
Female	0.0604 (0.0696)	0.0771 (0.0693)	0.0732 (0.0697)
Age 18-34 vs. 65+	1.4952*** (0.0812)	1.4848*** (0.0980)	1.4918*** (0.0823)
Age 35-44 vs. 65+	2.1447*** (0.0926)	2.1049*** (0.1109)	2.1192*** (0.0914)
Age 45-54 vs. 65+	1.7317*** (0.0760)	1.7271*** (0.0956)	1.7344*** (0.0780)
Age 55-64 vs. 65+	0.9529*** (0.0714)	0.9597*** (0.0912)	0.9604*** (0.0709)
Average aggregate household income per occupied housing unit in the ACS		0.0105*** (0.0024)	0.0104*** (0.0025)
Adult obesity rate, County Rankings/CDC Diabetes atlas		0.0424** (0.0159)	0.0407* (0.0171)
Town on 4-cat urban/rural scale		-0.2360 (0.1299)	-0.2444 (0.1501)
% renter occupied HUs, ACS 2016 5yr		0.0112* (0.0044)	0.0103* (0.0044)
% speaking English less than very well		-0.0253 (0.0192)	-0.0316 (0.0234)
Thyroid Male Rate		0.0235* (0.0093)	0.0225* (0.0105)
c.ACS_pct_less_well_Eng#c.ThyroidMaleRate		-0.0020 (0.0017)	-0.0014 (0.0018)

% NH minority among adults 18 to 64		0.0101* (0.0047)	0.0111* (0.0054)
Prostate Male Rate		-0.0024* (0.0011)	-0.0025* (0.0011)
c.ACS_pct_NHmin_18to64#c.ProstateMaleRate		-0.0000 (0.0000)	-0.0000 (0.0000)
Intercept	-1.7396*** (0.0901)	-4.1063*** (0.6346)	-4.0299*** (0.6782)
Area effect variance	0.0942** (0.0316)		0.0241 (0.0182)

Number of alternative models used to estimate model error = 15.

Results

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Augusta County	51015	31.1%	(21.5%, 42.8%)	30.7%	(26.1%, 35.8%)
Bath County	51017	25.6%	(5.8%, 65.6%)	26.8%	(22.9%, 31.0%)
Caroline County	51033	45.5%	(19.9%, 73.8%)	36.7%	(33.3%, 40.3%)
Clarke County	51043	10.0%	(4.2%, 37.1%)	25.3%	(19.2%, 32.4%)
Culpeper County	51047	34.7%	(19.9%, 53.2%)	29.7%	(24.0%, 36.2%)
Fauquier County	51061	59.1%	(41.2%, 74.8%)	39.8%	(35.2%, 44.7%)
Frederick County	51069	44.8%	(30.5%, 59.9%)	35.6%	(31.7%, 39.7%)
Highland County	51091	43.1%	(10.0%, 83.8%)	22.9%	(19.2%, 27.0%)
King George County	51099	53.1%	(26.8%, 77.7%)	41.9%	(37.5%, 46.5%)
Madison County	51113	10.8%	(4.5%, 37.0%)	30.9%	(26.9%, 35.2%)
Orange County	51137	26.1%	(12.4%, 47.1%)	26.1%	(21.3%, 31.6%)
Page County	51139	21.2%	(7.6%, 46.9%)	27.1%	(22.7%, 32.0%)
Rappahannock County	51157	34.7%	(14.1%, 63.2%)	31.7%	(27.8%, 35.8%)
Rockbridge County	51163	43.0%	(24.2%, 64.2%)	33.0%	(23.7%, 43.9%)
Rockingham County	51165	24.8%	(16.0%, 36.4%)	26.7%	(22.5%, 31.4%)
Shenandoah County	51171	30.9%	(17.6%, 48.4%)	27.8%	(22.4%, 34.0%)
Spotsylvania County	51177	34.4%	(23.3%, 47.5%)	38.9%	(34.7%, 43.3%)
Stafford County	51179	44.9%	(34.5%, 55.8%)	44.8%	(40.4%, 49.2%)
Warren County	51187	21.9%	(10.9%, 39.0%)	24.3%	(19.1%, 30.4%)
Buena Vista City	51530	29.9%	(6.5%, 72.4%)	25.1%	(20.7%, 30.1%)
Fredericksburg City	51630	47.5%	(23.7%, 72.5%)	45.6%	(37.9%, 53.6%)
Harrisonburg City	51660	12.4%	(4.5%, 57.7%)	26.8%	(18.4%, 37.3%)
Lexington City	51678	20.1%	(0.5%, 97.3%)	43.9%	(19.0%, 72.3%)
Staunton City	51790	58.7%	(24.0%, 86.5%)	35.6%	(28.7%, 43.2%)
Waynesboro City	51820	65.1%	(29.3%, 89.3%)	26.5%	(21.6%, 32.1%)
Winchester City	51840	60.4%	(14.6%, 93.2%)	34.9%	(28.6%, 41.8%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Albemarle County	51003	41.4%	(30.3%, 53.3%)	36.9%	(32.4%, 41.6%)
Alleghany County	51005	48.8%	(21.3%, 77.0%)	32.8%	(28.1%, 37.9%)
Amherst County	51009	61.6%	(39.1%, 80.0%)	35.8%	(32.5%, 39.3%)
Appomattox County	51011	37.0%	(18.2%, 60.7%)	32.0%	(28.7%, 35.5%)
Arlington City	51013	55.9%	(45.8%, 65.5%)	53.8%	(47.2%, 60.2%)
Bedford County	51019	45.0%	(33.6%, 56.9%)	38.0%	(33.0%, 43.4%)
Botetourt County	51023	30.4%	(14.2%, 53.7%)	25.1%	(21.2%, 29.5%)
Campbell County	51031	29.3%	(18.8%, 42.6%)	34.4%	(30.6%, 38.5%)
Craig County	51045	34.3%	(6.3%, 80.0%)	24.5%	(20.9%, 28.6%)
Fairfax County	51059	46.2%	(41.9%, 50.5%)	41.8%	(39.0%, 44.6%)
Fluvanna County	51065	59.3%	(39.4%, 76.5%)	38.9%	(35.3%, 42.7%)
Greene County	51079	13.3%	(3.3%, 40.5%)	29.6%	(24.3%, 35.4%)
Loudoun County	51107	42.2%	(33.7%, 51.2%)	40.2%	(36.3%, 44.2%)
Louisa County	51109	62.3%	(43.0%, 78.4%)	38.5%	(35.2%, 41.8%)
Nelson County	51125	38.2%	(14.0%, 70.1%)	30.2%	(26.6%, 33.9%)
Prince William County	51153	55.9%	(48.6%, 62.9%)	50.6%	(44.8%, 56.4%)
Roanoke County	51161	44.7%	(33.2%, 56.8%)	34.5%	(31.4%, 37.7%)
Alexandria City	51510	53.3%	(41.9%, 64.4%)	51.8%	(45.6%, 58.0%)
Charlottesville City	51540	38.6%	(19.9%, 61.3%)	31.9%	(25.6%, 39.0%)
Covington City	51580	80.5%	(2.6%, 99.6%)	22.3%	(17.1%, 28.4%)
Fairfax City	51600	43.2%	(29.6%, 57.9%)	33.0%	(26.9%, 39.9%)
Falls Church City	51610	56.1%	(29.5%, 79.6%)	47.4%	(36.7%, 58.3%)
Lynchburg City	51680	43.3%	(29.5%, 58.2%)	39.2%	(34.7%, 43.8%)
Manassas City	51683	57.7%	(26.9%, 83.5%)	39.6%	(27.4%, 53.2%)
Manassas Park City	51685	6.7%	(1.2%, 78.4%)	33.9%	(17.8%, 54.7%)
Salem City	51775	42.0%	(13.4%, 77.2%)	31.5%	(27.1%, 36.2%)

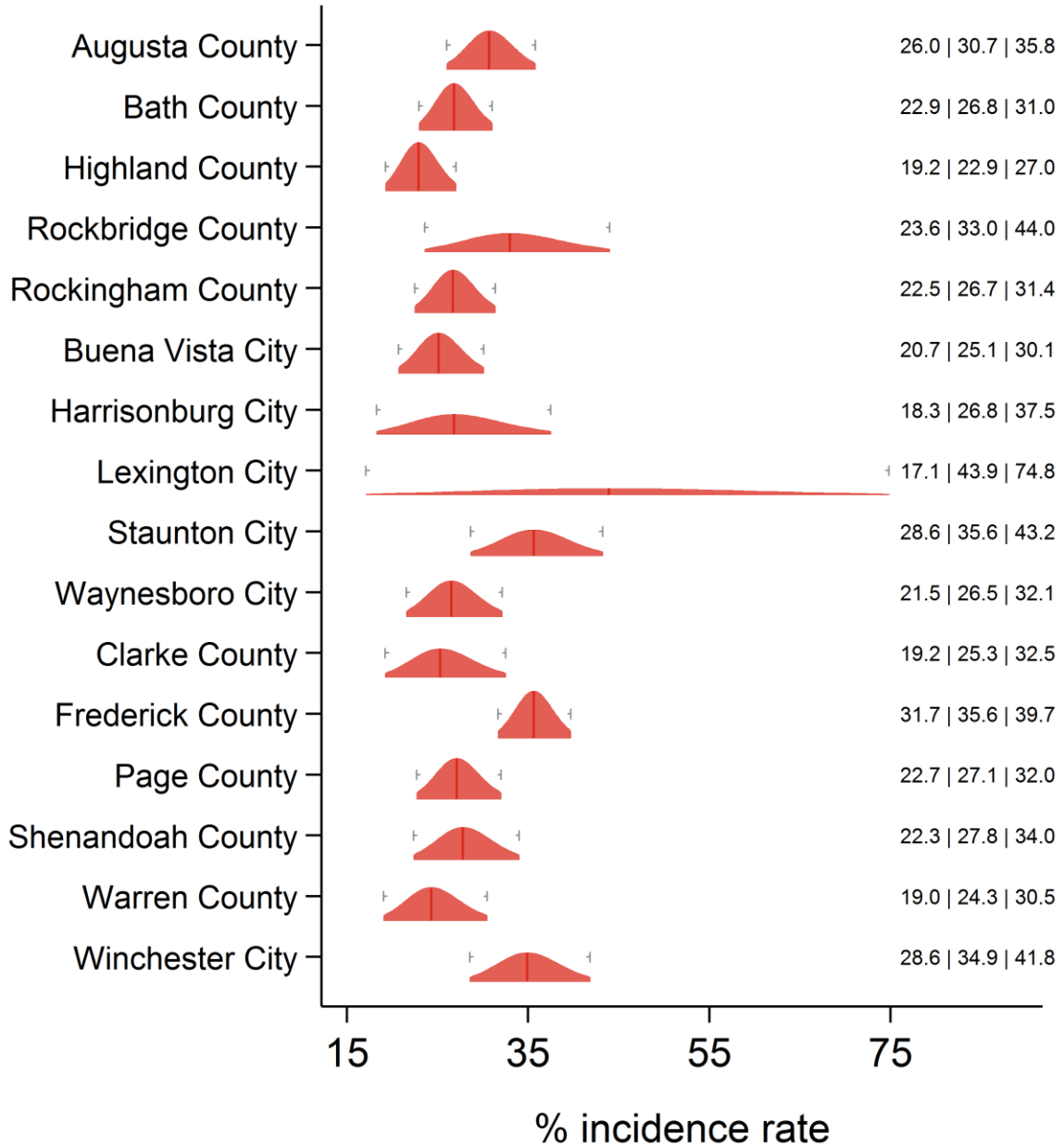
County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Bland County	51021	24.2%	(7.4%, 55.9%)	24.3%	(20.9%, 28.0%)
Buchanan County	51027	32.7%	(13.9%, 59.3%)	27.9%	(23.9%, 32.4%)
Carroll County	51035	28.7%	(13.8%, 50.2%)	24.8%	(21.2%, 28.9%)
Dickenson County	51051	44.4%	(21.5%, 69.9%)	30.9%	(26.0%, 36.3%)
Floyd County	51063	39.1%	(17.6%, 65.9%)	28.7%	(24.4%, 33.3%)
Franklin County	51067	15.1%	(6.1%, 32.5%)	22.7%	(18.4%, 27.8%)
Giles County	51071	31.8%	(17.9%, 49.9%)	31.6%	(25.6%, 38.4%)
Grayson County	51077	34.0%	(12.9%, 64.2%)	22.3%	(18.9%, 26.3%)
Henry County	51089	31.8%	(18.4%, 49.3%)	31.2%	(27.5%, 35.2%)
Lee County	51105	33.1%	(14.4%, 59.3%)	30.5%	(26.5%, 34.9%)
Montgomery County	51121	41.3%	(28.2%, 55.8%)	35.2%	(30.2%, 40.7%)
Patrick County	51141	6.6%	(3.2%, 36.3%)	24.6%	(21.0%, 28.5%)
Pittsylvania County	51143	46.0%	(34.6%, 57.8%)	39.1%	(35.4%, 42.9%)
Pulaski County	51155	31.6%	(15.2%, 54.4%)	34.0%	(30.1%, 38.1%)
Russell County	51167	22.4%	(11.0%, 40.3%)	23.9%	(20.4%, 27.9%)
Scott County	51169	18.4%	(6.3%, 43.4%)	27.4%	(23.2%, 32.2%)
Smyth County	51173	29.7%	(12.4%, 55.7%)	25.9%	(22.3%, 29.8%)
Tazewell County	51185	53.0%	(35.5%, 69.9%)	35.8%	(28.8%, 43.4%)
Washington County	51191	25.4%	(14.8%, 40.1%)	26.5%	(23.1%, 30.1%)
Wise County	51195	42.6%	(27.5%, 59.1%)	28.8%	(23.4%, 34.9%)
Wythe County	51197	36.9%	(19.5%, 58.6%)	29.9%	(26.3%, 33.8%)
Bristol City	51520	0.0%	(0.0%, 78.6%)	32.7%	(27.8%, 37.9%)
Danville City	51590	67.8%	(42.3%, 85.8%)	41.9%	(33.8%, 50.4%)
Galax City	51640	0.0%	(0.0%, 76.1%)	13.6%	(8.1%, 21.9%)
Martinsville City	51690	91.5%	(33.7%, 97.6%)	42.9%	(33.6%, 52.7%)
Norton City	51720	87.0%	(33.0%, 96.3%)	54.5%	(28.5%, 78.3%)
Radford City	51750	59.5%	(25.5%, 86.4%)	29.1%	(22.2%, 37.2%)
Roanoke City	51770	53.1%	(40.0%, 65.7%)	40.7%	(36.2%, 45.3%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Amelia County	51007	62.7%	(35.0%, 84.1%)	40.4%	(35.3%, 45.8%)
Brunswick County	51025	33.7%	(13.8%, 61.7%)	40.2%	(34.6%, 46.1%)
Buckingham County	51029	50.9%	(28.6%, 72.8%)	40.3%	(35.9%, 44.7%)
Charles City County	51036	61.7%	(16.8%, 92.8%)	45.5%	(38.4%, 52.7%)
Charlotte County	51037	38.1%	(18.0%, 63.3%)	34.3%	(30.5%, 38.2%)
Chesterfield County	51041	40.8%	(32.5%, 49.7%)	37.1%	(34.0%, 40.3%)
Cumberland County	51049	43.8%	(23.0%, 67.1%)	39.7%	(35.3%, 44.4%)
Dinwiddie County	51053	48.4%	(24.7%, 72.8%)	40.4%	(36.6%, 44.3%)
Goochland County	51075	25.9%	(10.2%, 52.0%)	34.8%	(29.5%, 40.4%)
Greensville County	51081	39.4%	(13.3%, 73.4%)	41.7%	(34.7%, 49.0%)
Halifax County	51083	40.8%	(25.3%, 58.5%)	31.5%	(25.7%, 38.0%)
Hanover County	51085	44.2%	(31.7%, 57.4%)	34.6%	(30.6%, 38.9%)
Henrico County	51087	41.5%	(33.0%, 50.5%)	40.4%	(36.9%, 43.9%)
Lunenburg County	51111	53.0%	(22.6%, 81.3%)	33.3%	(28.7%, 38.3%)
Mecklenburg County	51117	36.5%	(24.3%, 50.8%)	35.9%	(31.7%, 40.3%)
New Kent County	51127	55.7%	(30.6%, 78.2%)	36.0%	(31.6%, 40.6%)
Nottoway County	51135	34.4%	(13.0%, 64.7%)	38.1%	(34.1%, 42.3%)
Powhatan County	51145	37.4%	(16.3%, 64.7%)	32.3%	(28.1%, 36.9%)
Prince Edward County	51147	25.7%	(11.1%, 48.7%)	31.3%	(25.7%, 37.4%)
Prince George County	51149	50.7%	(32.3%, 69.0%)	49.6%	(44.0%, 55.2%)
Surry County	51181	54.0%	(22.7%, 82.5%)	41.7%	(36.6%, 46.9%)
Sussex County	51183	66.7%	(46.2%, 82.3%)	52.6%	(46.4%, 58.8%)
Colonial Heights City	51570	51.4%	(29.0%, 73.3%)	35.2%	(30.7%, 39.9%)
Emporia City	51595	0.0%	(0.0%, 91.8%)	44.1%	(37.4%, 51.0%)
Hopewell City	51670	37.7%	(16.5%, 64.8%)	37.0%	(32.1%, 42.2%)
Petersburg City	51730	69.6%	(52.7%, 82.4%)	53.5%	(35.8%, 70.5%)
Richmond City	51760	53.6%	(41.7%, 65.1%)	52.1%	(47.3%, 56.8%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Accomack County	51001	51.0%	(34.7%, 67.1%)	37.0%	(31.6%, 42.7%)
Essex County	51057	43.6%	(20.3%, 70.1%)	31.2%	(25.1%, 38.1%)
Gloucester County	51073	49.9%	(33.4%, 66.5%)	34.6%	(29.6%, 40.0%)
Isle of Wight County	51093	28.8%	(12.2%, 54.1%)	38.4%	(34.4%, 42.6%)
James City County	51095	29.6%	(19.4%, 42.4%)	33.5%	(29.5%, 37.8%)
King and Queen County	51097	38.7%	(11.5%, 75.4%)	32.3%	(29.1%, 35.8%)
King William County	51101	18.1%	(3.8%, 55.5%)	25.7%	(21.4%, 30.6%)
Lancaster County	51103	31.9%	(11.0%, 63.9%)	36.0%	(32.0%, 40.3%)
Mathews County	51115	51.7%	(23.9%, 78.5%)	36.2%	(29.5%, 43.5%)
Middlesex County	51119	21.5%	(8.2%, 45.8%)	27.3%	(22.8%, 32.3%)
Northampton County	51131	41.1%	(20.9%, 64.9%)	34.7%	(30.2%, 39.4%)
Northumberland County	51133	29.7%	(10.5%, 60.3%)	30.6%	(25.5%, 36.2%)
Richmond County	51159	49.6%	(24.7%, 74.8%)	28.4%	(23.2%, 34.3%)
Southampton County	51175	36.1%	(11.7%, 70.6%)	41.4%	(36.9%, 46.0%)
Westmoreland County	51193	74.6%	(47.9%, 90.4%)	45.7%	(35.5%, 56.3%)
York County	51199	30.0%	(17.8%, 45.7%)	33.3%	(29.6%, 37.1%)
Chesapeake City	51550	55.4%	(45.7%, 64.8%)	50.6%	(46.5%, 54.7%)
Franklin City	51620	32.2%	(12.3%, 61.7%)	39.9%	(30.9%, 49.7%)
Hampton City	51650	55.7%	(45.2%, 65.8%)	55.5%	(49.7%, 61.2%)
Newport News City	51700	40.2%	(30.2%, 51.2%)	44.0%	(39.9%, 48.1%)
Norfolk City	51710	59.3%	(49.9%, 68.0%)	56.9%	(52.1%, 61.7%)
Poquoson City	51735	17.0%	(2.0%, 67.3%)	30.1%	(25.3%, 35.3%)
Portsmouth City	51740	59.4%	(47.4%, 70.4%)	56.6%	(51.3%, 61.7%)
Suffolk City	51800	46.4%	(32.7%, 60.7%)	46.6%	(42.1%, 51.1%)
Virginia Beach City	51810	52.7%	(45.7%, 59.7%)	48.5%	(45.8%, 51.2%)
Williamsburg City	51830	12.4%	(3.2%, 71.2%)	15.6%	(6.9%, 31.5%)

Graphical representation

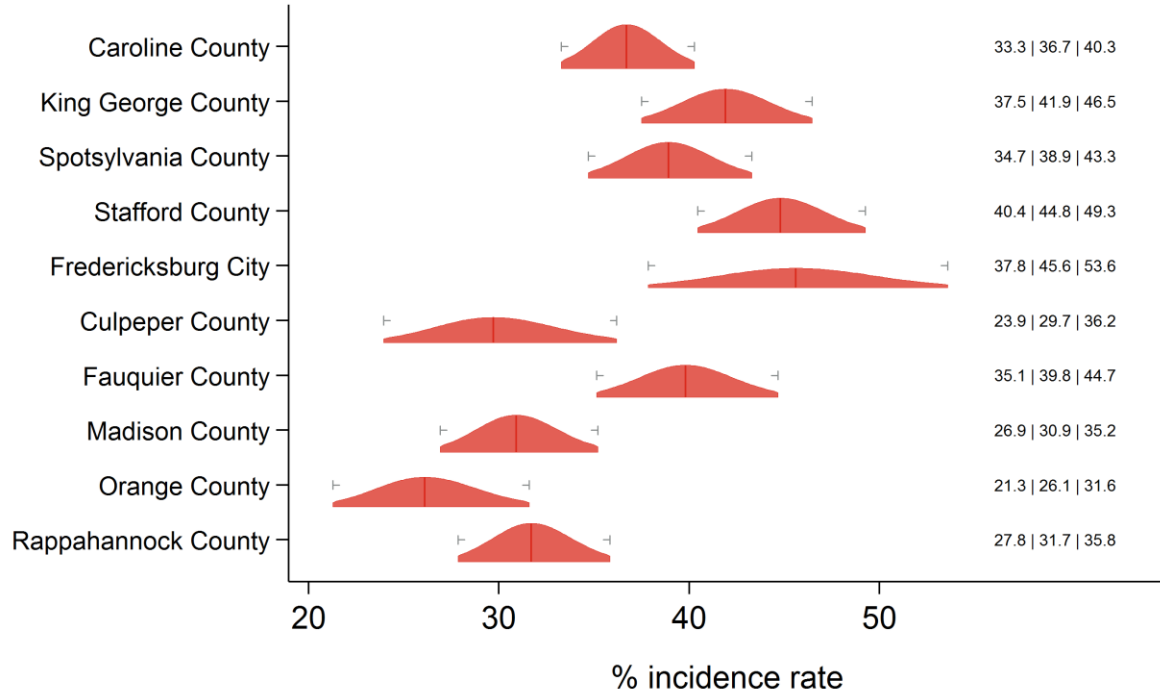
## Ever Tested for HIV Central Shenandoah and Lord Fairfax HDs



Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

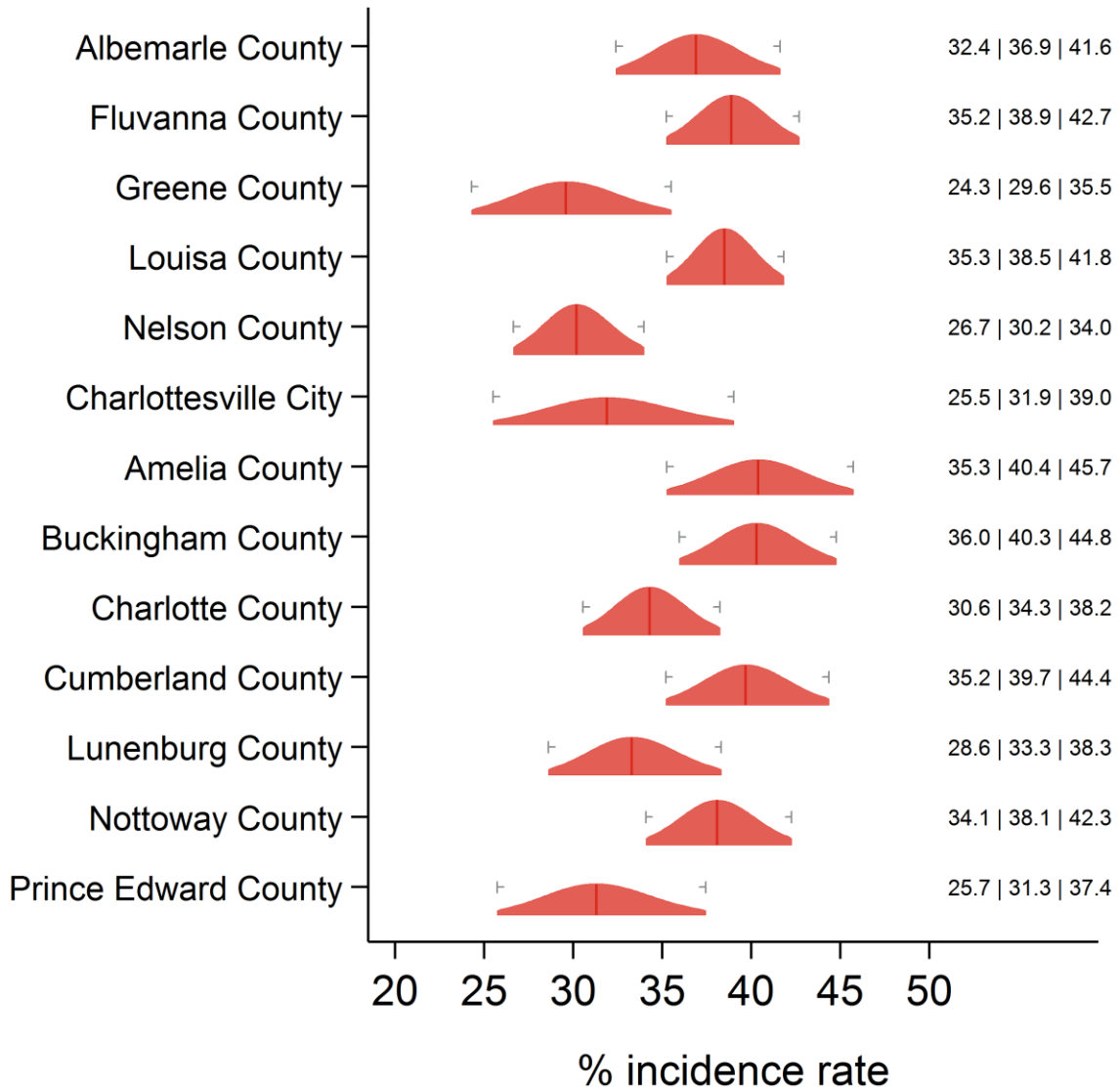


## Ever Tested for HIV Rappahannock/Rapidan and Rappahannock HDs



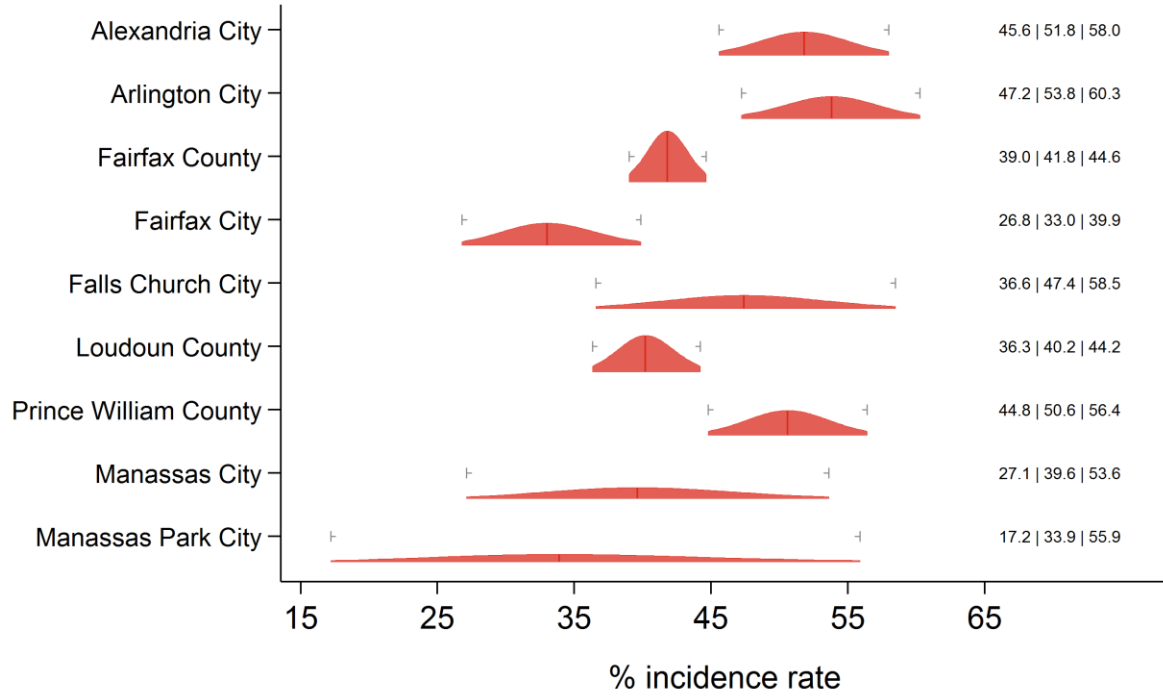
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

## Ever Tested for HIV Thomas Jefferson and Piedmont HDs



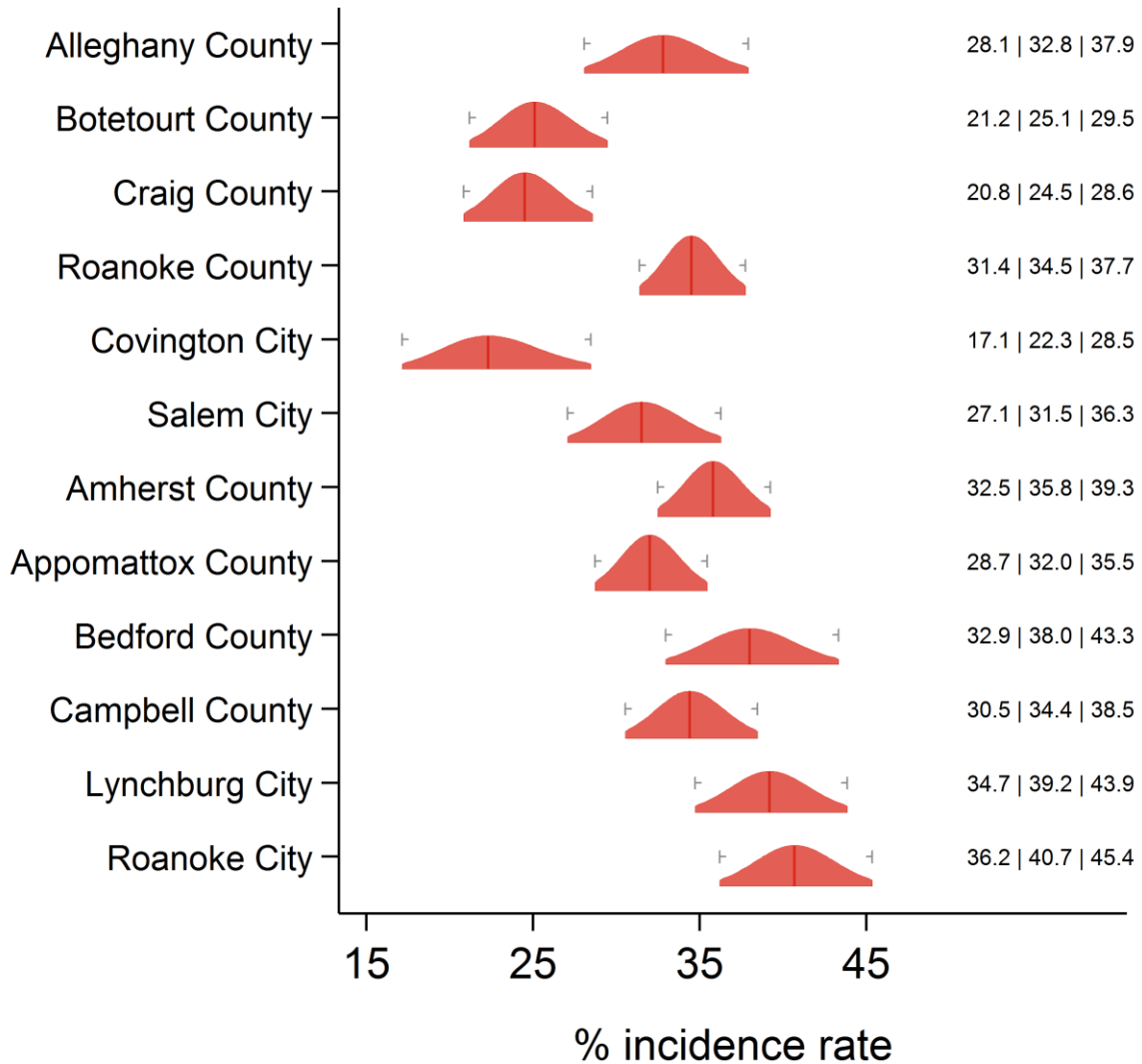
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

## Ever Tested for HIV Alexandria, Fairfax, Arlington, Loudon, Prince William HDs



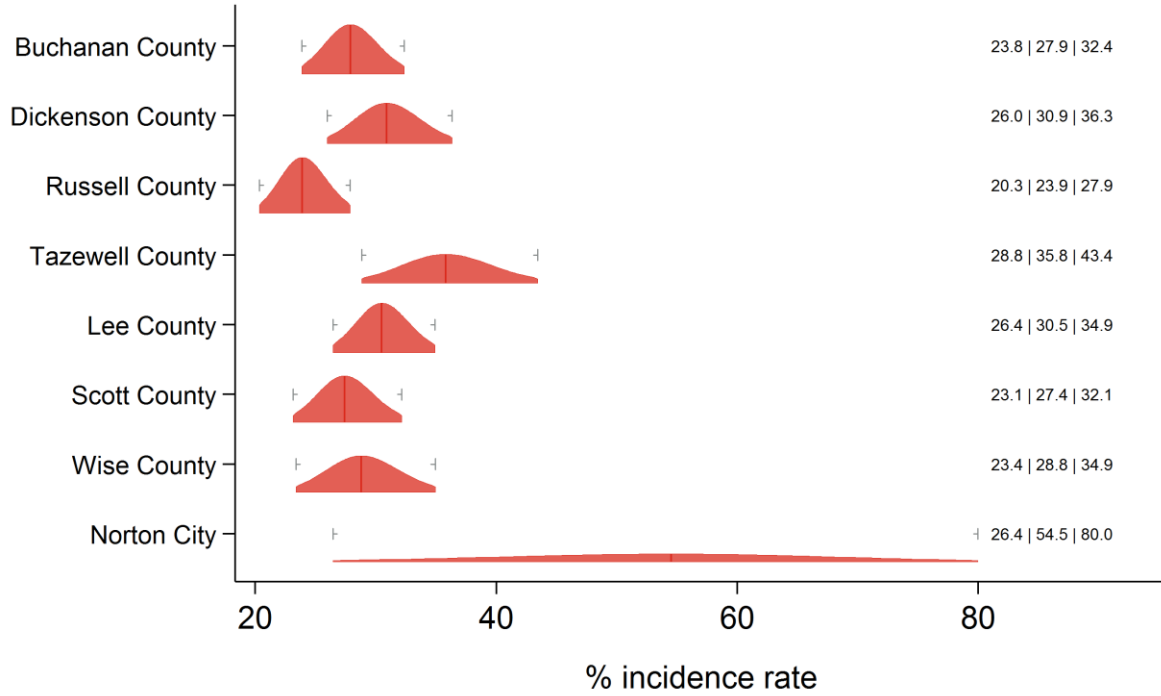
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

## Ever Tested for HIV Alleghany, Roanoke and Central Virginia HDs



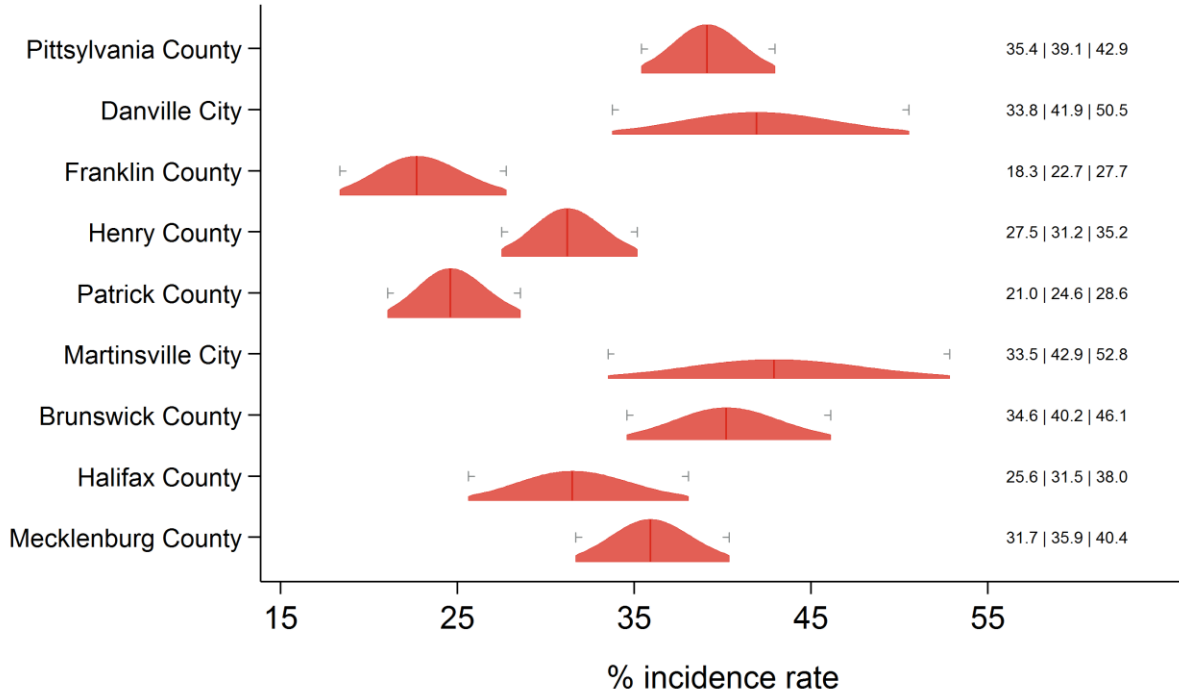
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

## Ever Tested for HIV Cumberland Plateau and Lenowisco HDs



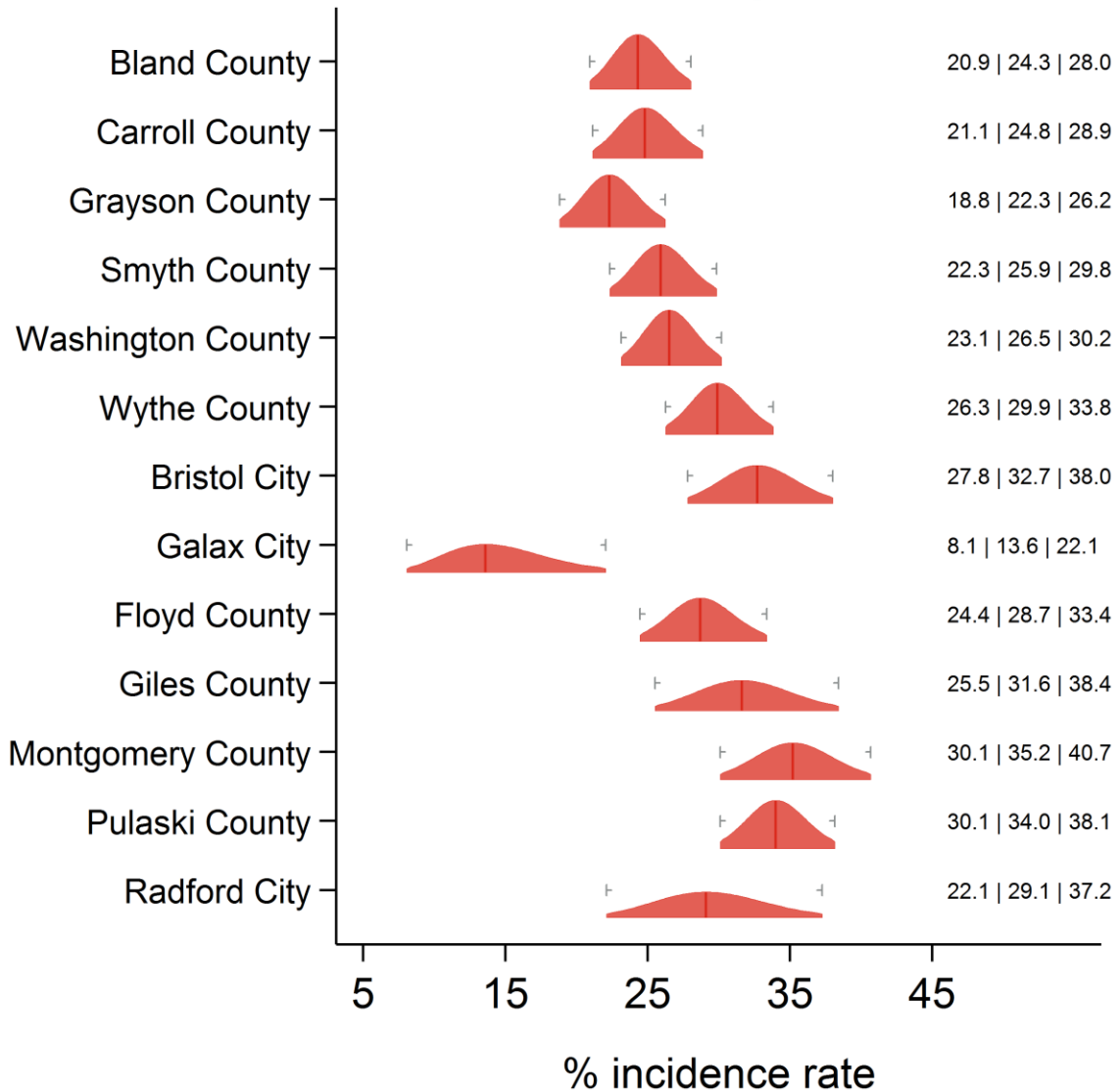
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

## Ever Tested for HIV Pittsylvania/Danville, Southside and West Piedmont HDs



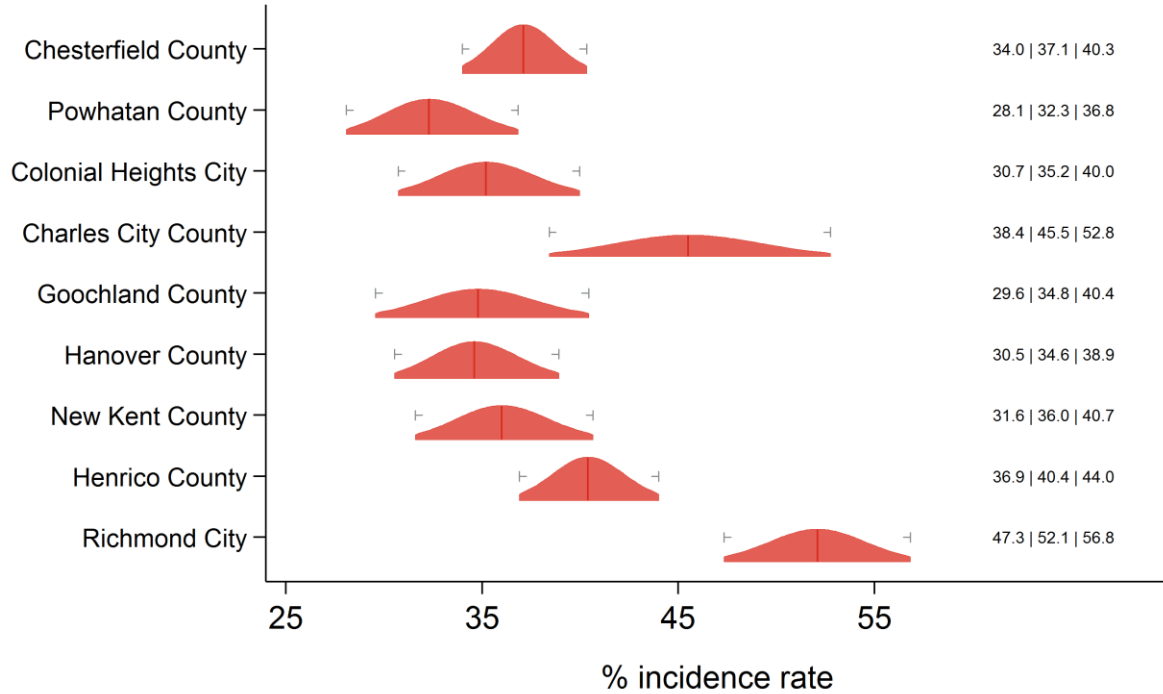
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

## Ever Tested for HIV New River and Mount Rogers HDs



Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

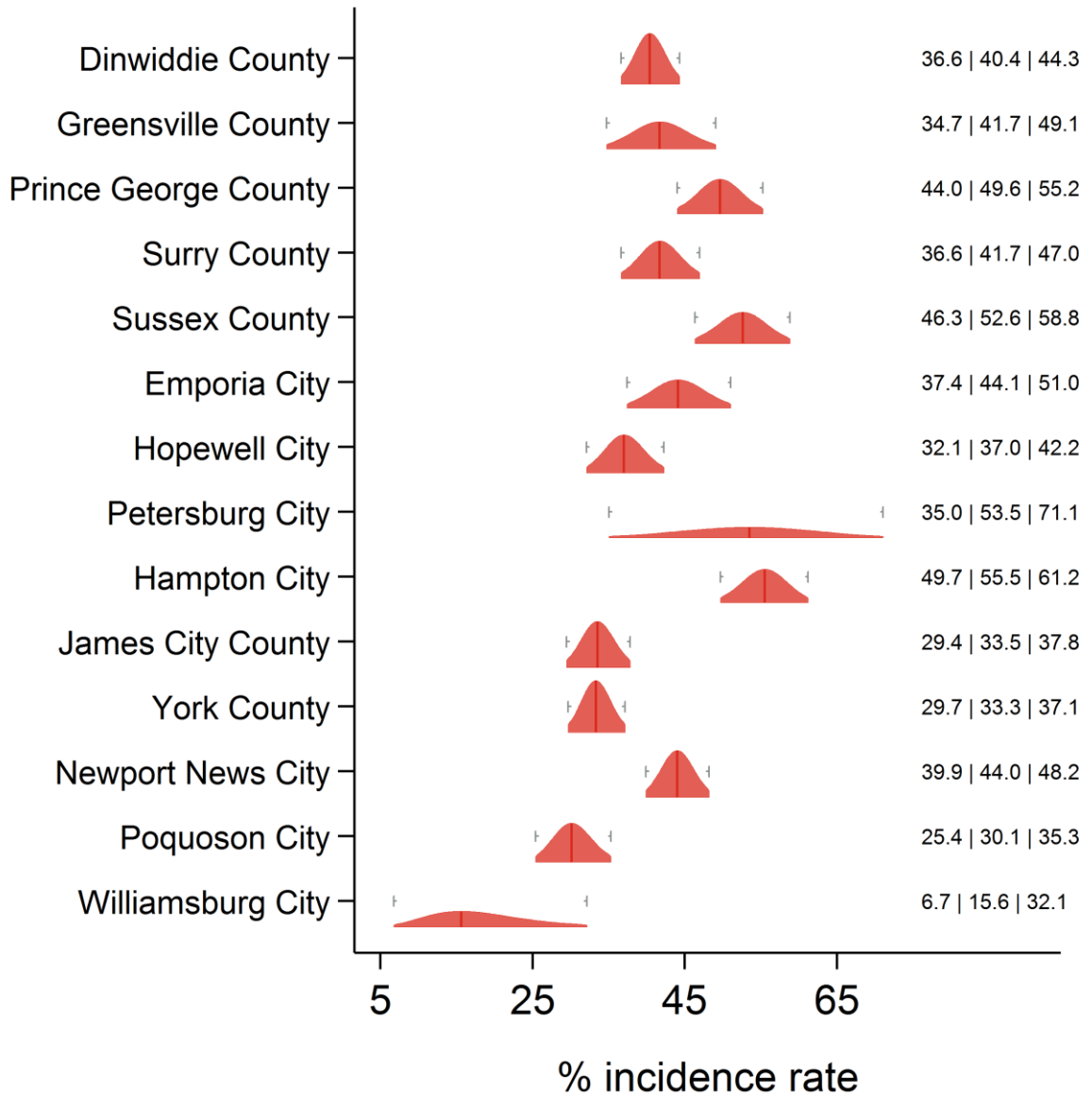
## Ever Tested for HIV Chesterfield, Chickahominy, Henrico and Richmond HDs



Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

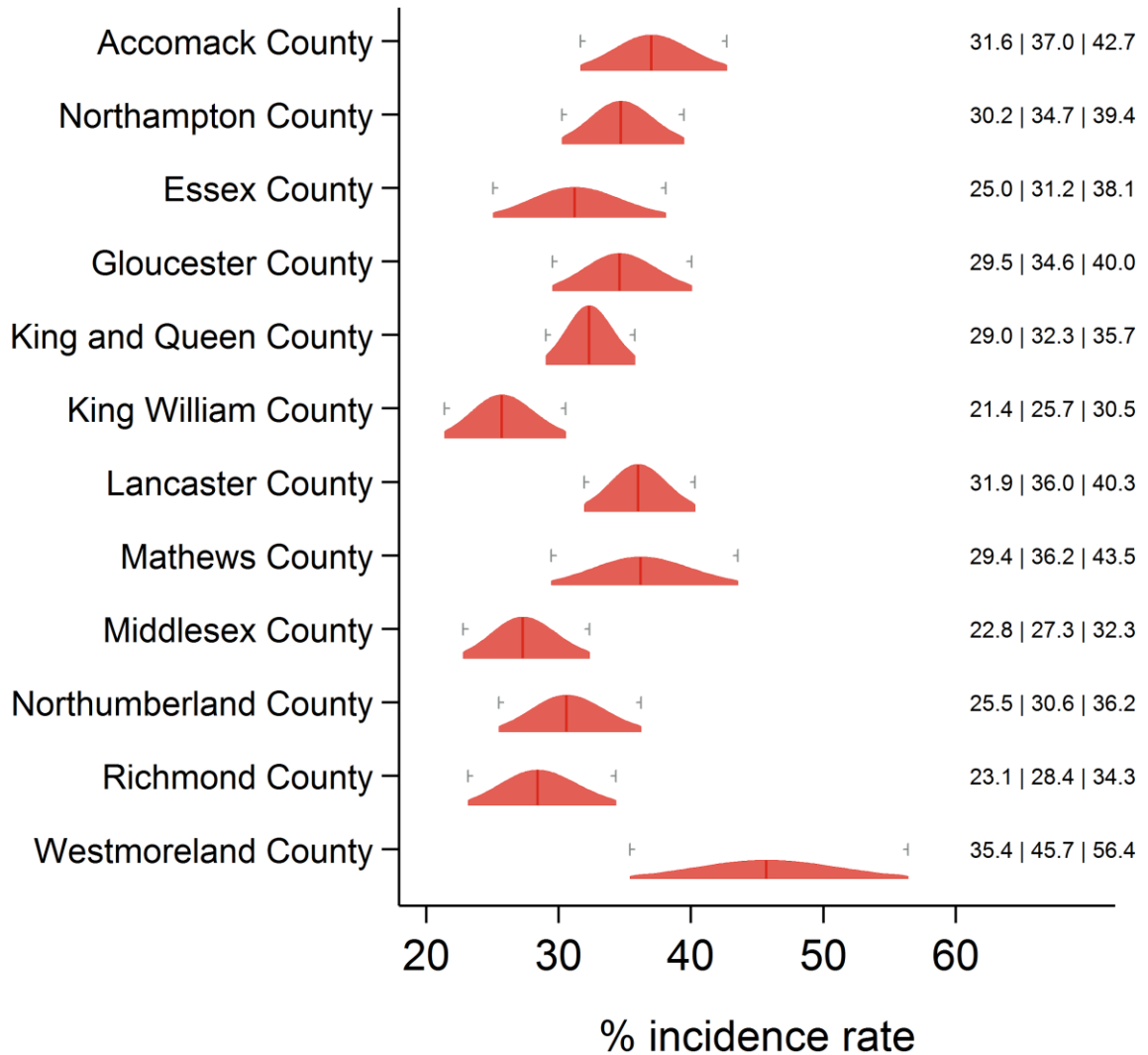


## Ever Tested for HIV Crater, Peninsula and Hampton HDs



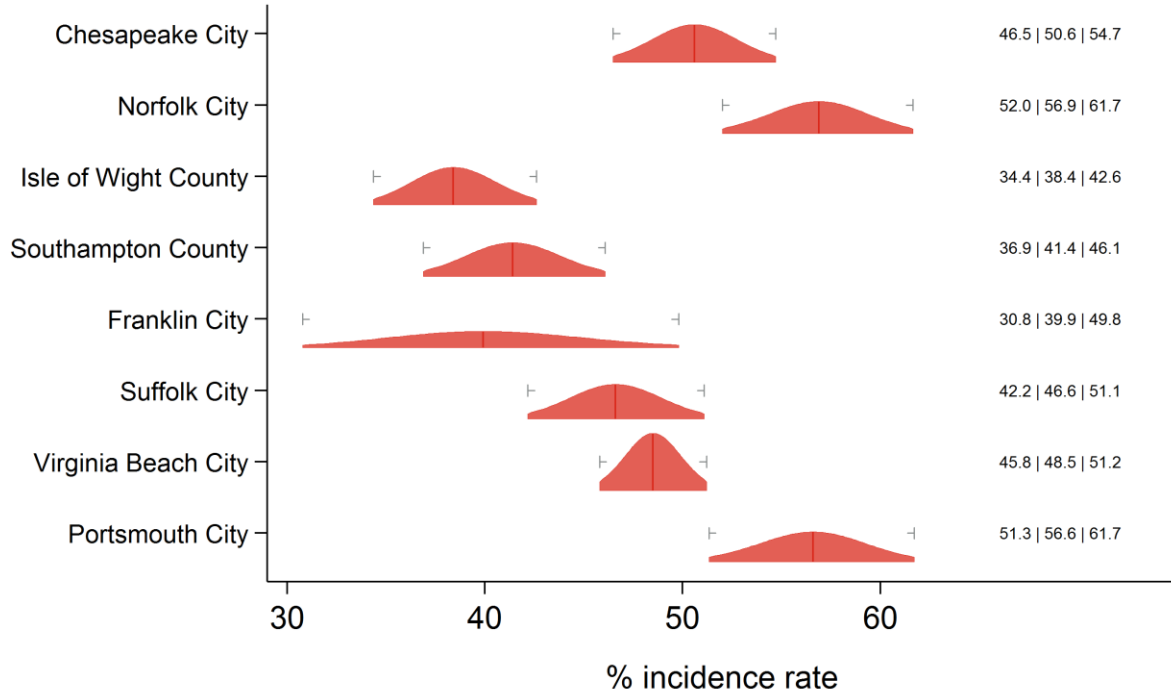
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

## Ever Tested for HIV Eastern Shore and Three Rivers HDs



Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

## Ever Tested for HIV Norfolk, Portsmouth, Chesapeake, VA Beach, W. Tidewater HDs



Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB  
 Gray markers: 95% confidence interval

## Additional diagnostics

Direct estimate is inside the 95% SAE Wilson CI: 50 areas.

Direct estimate is outside the 95% SAE Wilson CI: 83 areas.

SAE estimate is inside the 95% direct Wilson CI: 125 areas.

SAE estimate is outside the 95% direct Wilson CI: 8 areas.

SAE Wilson 95% CI is fully inside the 95% direct Wilson CI: 109 areas.

SAE Wilson 95% CI partially overlaps with the 95% direct Wilson CI: 24 areas.

SAE Wilson 95% CI and the 95% direct Wilson CI do not overlap: 0 areas.

SAE standard error is less than the direct standard error: 127 areas.

SAE standard error is greater than the (nonzero) direct standard error: 3 areas.

Direct standard error is zero: 3 areas.

Proportion of SAE variance due to ACS sampling error: min = 0.34%; med = 7.29%; max = 34.37%.

Proportion of SAE variance due to sampling error in regression coefficient estimates: min = 48.57%; med = 80.35%; max = 96.82%.

Proportion of SAE variance due to model selection: min = 0.37%; med = 4.15%; max = 26.26%.

Proportion of SAE variance due to area random effects: min = 0.35%; med = 6.60%; max = 16.74%.