

Indicator 2: Colon Cancer Screening 50+

Internal variable name: outc2_colon_test

Definition: Respondents aged 50 or older who have had a sigmoidoscopy or colonoscopy

Predictive models

	Mixed, demos only	Logit, no area effects	Mixed with area covariates
	b/se	b/se	b/se
Outcome 2: Colon Cancer Screening 50+			
NH Black vs. NH White	-0.0486 (0.1227)	-0.0657 (0.1224)	-0.0657 (0.1205)
NH Asian vs. NH White	-1.1041** (0.3673)	-1.2124** (0.3702)	-1.2124** (0.3791)
NH Other vs. NH White	-0.2884 (0.2315)	-0.3345 (0.2309)	-0.3345 (0.2333)
Hispanic vs. NH White	0.1059 (0.2971)	0.0171 (0.2834)	0.0171 (0.2967)
Female	0.0393 (0.0722)	0.0358 (0.0873)	0.0358 (0.0712)
Age 45-54 vs. 65+	-1.3329*** (0.1259)	-1.3560*** (0.1149)	-1.3560*** (0.1283)
Age 55-64 vs. 65+	-0.3919*** (0.0996)	-0.4067*** (0.0959)	-0.4067*** (0.0995)
Average aggregate household income per occupied housing unit in the ACS		-0.0045 (0.0025)	-0.0045* (0.0022)
% uninsured		-0.0419 (0.0243)	-0.0419 (0.0236)
Road density per county population		-0.2346** (0.0795)	-0.2346** (0.0707)
Crude mortality rate of diabetes mellitus per 10K		-0.1176* (0.0479)	-0.1176* (0.0509)
VA BRFSS 2014 SAE outc30_pay_food		-3.5739** (1.2879)	-3.5738** (1.2433)
% education below HS, population 25+ y/o		0.0541* (0.0242)	0.0541* (0.0255)
Myeloma Female Rate		0.0030 (0.0362)	0.0030 (0.0352)
c.ACS_pct_educ_lt_HS#c.MyelomaFemaleRate		0.0014 (0.0022)	0.0014 (0.0022)
Clinical care z-score, County Rankings		4.5017 (2.6905)	4.5017* (1.8832)

VA BRFSS 2014 SAE outc1_poor_hlth_days		-1.6508 (0.8536)	-1.6508* (0.7319)
c.CHR_Care_Z#c.VA14SAE_outc1_poor_hlth_days		-16.8448** (6.2209)	-16.8447*** (4.6166)
Intercept	1.5287*** (0.1071)	6.6577*** (1.3098)	6.6577*** (1.1776)
Area effect variance	0.0000 (0.0000)		0.0000 (0.0000)

Number of alternative models used to estimate model error = 3.

Results

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Augusta County	51015	76.4%	(62.7%, 86.2%)	78.2%	(74.1%, 81.8%)
Bath County	51017	64.4%	(21.2%, 92.4%)	80.6%	(73.6%, 86.1%)
Caroline County	51033	94.0%	(52.0%, 98.1%)	76.9%	(71.6%, 81.5%)
Clarke County	51043	86.3%	(42.7%, 98.2%)	80.8%	(74.9%, 85.6%)
Culpeper County	51047	73.3%	(54.0%, 86.6%)	77.5%	(73.2%, 81.3%)
Fauquier County	51061	61.0%	(36.5%, 81.0%)	69.7%	(64.2%, 74.6%)
Frederick County	51069	53.8%	(36.3%, 70.5%)	70.3%	(64.9%, 75.2%)
Highland County	51091	100.0%	(46.8%, 100.0%)	89.7%	(73.3%, 96.5%)
King George County	51099	100.0%	(62.6%, 100.0%)	73.9%	(66.2%, 80.4%)
Madison County	51113	87.6%	(54.3%, 95.5%)	78.1%	(72.1%, 83.1%)
Orange County	51137	71.7%	(50.3%, 86.4%)	76.4%	(72.5%, 79.9%)
Page County	51139	65.3%	(36.8%, 85.9%)	70.2%	(63.2%, 76.3%)
Rappahannock County	51157	86.9%	(45.7%, 98.1%)	71.5%	(61.6%, 79.7%)
Rockbridge County	51163	81.2%	(57.8%, 93.1%)	80.1%	(73.0%, 85.7%)
Rockingham County	51165	56.8%	(40.8%, 71.5%)	75.8%	(69.5%, 81.2%)
Shenandoah County	51171	56.0%	(35.4%, 74.7%)	68.2%	(61.9%, 74.0%)
Spotsylvania County	51177	79.2%	(64.9%, 88.7%)	75.0%	(70.2%, 79.2%)
Stafford County	51179	71.0%	(54.1%, 83.6%)	75.8%	(70.5%, 80.4%)
Warren County	51187	59.4%	(36.3%, 79.0%)	73.2%	(67.1%, 78.5%)
Buena Vista City	51530	53.5%	(11.9%, 90.7%)	71.9%	(57.1%, 83.1%)
Fredericksburg City	51630	78.4%	(51.5%, 92.5%)	81.1%	(75.3%, 85.7%)
Harrisonburg City	51660	100.0%	(16.5%, 100.0%)	79.9%	(71.3%, 86.4%)
Lexington City	51678	100.0%	(0.6%, 100.0%)	79.0%	(67.3%, 87.4%)
Staunton City	51790	100.0%	(40.3%, 100.0%)	86.0%	(77.3%, 91.8%)
Waynesboro City	51820	90.9%	(42.7%, 97.8%)	86.9%	(80.4%, 91.5%)
Winchester City	51840	88.9%	(37.5%, 97.7%)	77.9%	(71.6%, 83.2%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Albemarle County	51003	69.9%	(55.6%, 81.2%)	81.8%	(76.7%, 86.0%)
Alleghany County	51005	77.0%	(51.3%, 91.5%)	71.4%	(64.1%, 77.8%)
Amherst County	51009	80.0%	(54.7%, 93.0%)	75.0%	(70.0%, 79.4%)
Appomattox County	51011	74.6%	(41.9%, 91.4%)	79.5%	(72.9%, 84.9%)
Arlington City	51013	79.1%	(66.6%, 87.7%)	79.8%	(75.4%, 83.5%)
Bedford County	51019	84.2%	(73.9%, 91.0%)	78.9%	(73.5%, 83.4%)
Botetourt County	51023	87.9%	(67.1%, 96.3%)	84.3%	(79.4%, 88.3%)
Campbell County	51031	62.6%	(46.5%, 76.3%)	78.7%	(74.2%, 82.7%)
Craig County	51045	81.9%	(29.6%, 98.0%)	74.5%	(65.7%, 81.7%)
Fairfax County	51059	74.0%	(66.5%, 80.4%)	72.6%	(70.2%, 74.8%)
Fluvanna County	51065	88.1%	(65.9%, 94.5%)	78.5%	(73.6%, 82.8%)
Greene County	51079	57.0%	(26.3%, 83.1%)	71.2%	(64.9%, 76.9%)
Loudoun County	51107	67.0%	(57.0%, 75.7%)	72.3%	(68.7%, 75.6%)
Louisa County	51109	62.6%	(36.2%, 83.2%)	74.9%	(69.8%, 79.4%)
Nelson County	51125	38.6%	(16.3%, 66.9%)	74.7%	(69.7%, 79.2%)
Prince William County	51153	71.3%	(62.5%, 78.7%)	73.0%	(69.5%, 76.3%)
Roanoke County	51161	83.0%	(73.3%, 89.6%)	83.3%	(79.2%, 86.8%)
Alexandria City	51510	78.7%	(65.2%, 88.0%)	76.4%	(71.1%, 81.1%)
Charlottesville City	51540	67.0%	(36.6%, 87.7%)	84.7%	(76.0%, 90.7%)
Covington City	51580	100.0%	(3.6%, 100.0%)	81.5%	(74.8%, 86.8%)
Fairfax City	51600	73.1%	(53.0%, 86.7%)	81.1%	(75.1%, 85.9%)
Falls Church City	51610	90.8%	(60.2%, 95.9%)	81.6%	(70.6%, 89.1%)
Lynchburg City	51680	77.0%	(61.2%, 87.7%)	81.8%	(77.2%, 85.7%)
Manassas City	51683	71.5%	(25.7%, 94.8%)	75.6%	(66.8%, 82.7%)
Manassas Park City	51685	100.0%	(8.8%, 100.0%)	86.7%	(74.2%, 93.7%)
Salem City	51775	92.4%	(60.0%, 98.4%)	83.1%	(77.1%, 87.8%)

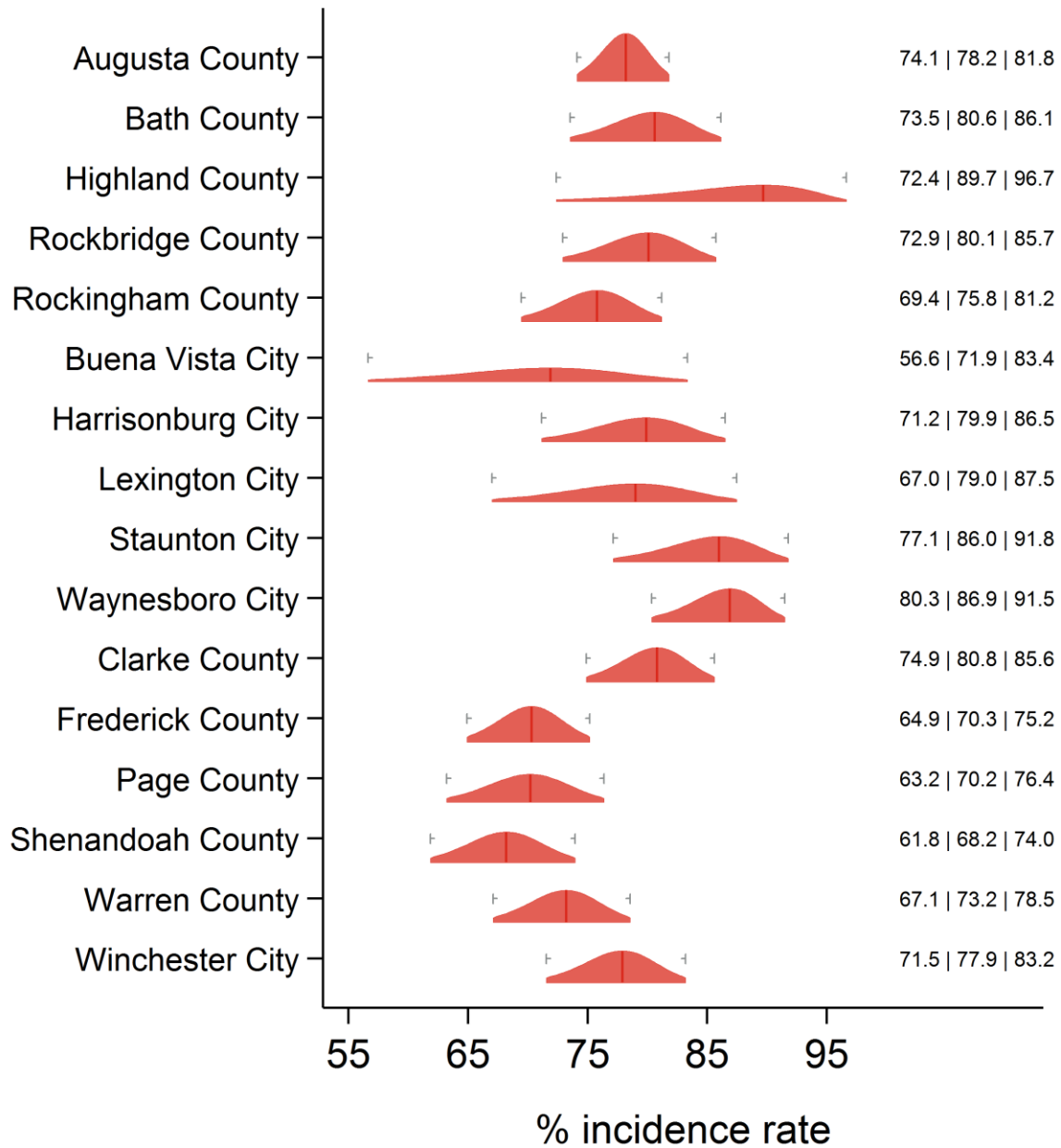
County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Bland County	51021	74.6%	(37.0%, 93.6%)	69.6%	(61.2%, 76.9%)
Buchanan County	51027	74.0%	(50.6%, 88.8%)	61.7%	(46.4%, 75.0%)
Carroll County	51035	51.1%	(28.3%, 73.4%)	72.4%	(67.0%, 77.2%)
Dickenson County	51051	69.2%	(37.4%, 89.4%)	64.2%	(55.1%, 72.3%)
Floyd County	51063	78.5%	(52.1%, 92.5%)	72.8%	(66.4%, 78.5%)
Franklin County	51067	73.4%	(49.1%, 88.8%)	75.6%	(70.7%, 79.9%)
Giles County	51071	70.5%	(46.4%, 86.8%)	77.0%	(71.4%, 81.7%)
Grayson County	51077	55.9%	(28.5%, 80.2%)	77.8%	(70.1%, 83.9%)
Henry County	51089	76.0%	(58.6%, 87.7%)	75.0%	(70.4%, 79.1%)
Lee County	51105	30.9%	(12.5%, 58.4%)	39.4%	(27.0%, 53.3%)
Montgomery County	51121	79.2%	(59.0%, 91.0%)	80.0%	(73.0%, 85.5%)
Patrick County	51141	92.7%	(59.7%, 96.5%)	72.3%	(67.0%, 77.0%)
Pittsylvania County	51143	65.4%	(53.7%, 75.5%)	69.7%	(65.3%, 73.8%)
Pulaski County	51155	81.8%	(53.2%, 94.7%)	81.0%	(75.6%, 85.4%)
Russell County	51167	41.0%	(21.0%, 64.4%)	44.8%	(34.9%, 55.1%)
Scott County	51169	61.6%	(39.1%, 80.0%)	68.8%	(62.7%, 74.3%)
Smyth County	51173	55.4%	(33.9%, 75.1%)	69.9%	(65.5%, 74.0%)
Tazewell County	51185	36.4%	(21.0%, 55.3%)	49.3%	(40.7%, 57.9%)
Washington County	51191	69.9%	(50.1%, 84.3%)	69.8%	(65.8%, 73.6%)
Wise County	51195	74.0%	(56.3%, 86.4%)	67.1%	(57.4%, 75.5%)
Wythe County	51197	59.3%	(35.8%, 79.1%)	69.9%	(63.5%, 75.6%)
Bristol City	51520	100.0%	(4.8%, 100.0%)	80.6%	(73.2%, 86.3%)
Danville City	51590	79.8%	(45.6%, 94.9%)	80.1%	(74.4%, 84.8%)
Galax City	51640	100.0%	(10.9%, 100.0%)	89.9%	(81.4%, 94.7%)
Martinsville City	51690	15.9%	(3.2%, 75.2%)	72.2%	(64.1%, 79.1%)
Norton City	51720	33.8%	(4.5%, 84.7%)	78.5%	(71.4%, 84.2%)
Radford City	51750	88.8%	(50.8%, 98.4%)	86.8%	(76.2%, 93.1%)
Roanoke City	51770	83.2%	(68.1%, 92.1%)	76.2%	(71.0%, 80.7%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Amelia County	51007	67.8%	(44.0%, 84.9%)	76.8%	(68.2%, 83.7%)
Brunswick County	51025	54.0%	(25.1%, 80.5%)	68.5%	(59.0%, 76.7%)
Buckingham County	51029	59.3%	(34.7%, 80.0%)	66.6%	(59.2%, 73.2%)
Charles City County	51036	100.0%	(22.1%, 100.0%)	76.8%	(62.2%, 86.9%)
Charlotte County	51037	78.0%	(56.2%, 90.8%)	75.8%	(64.6%, 84.4%)
Chesterfield County	51041	79.6%	(72.2%, 85.4%)	79.7%	(76.6%, 82.5%)
Cumberland County	51049	72.9%	(40.9%, 91.2%)	73.8%	(67.4%, 79.4%)
Dinwiddie County	51053	85.2%	(63.8%, 95.0%)	76.6%	(69.2%, 82.7%)
Goochland County	51075	75.9%	(47.4%, 91.7%)	87.2%	(81.4%, 91.4%)
Greensville County	51081	88.2%	(42.5%, 96.4%)	70.8%	(63.0%, 77.5%)
Halifax County	51083	72.5%	(49.1%, 87.8%)	70.7%	(64.4%, 76.2%)
Hanover County	51085	70.6%	(54.5%, 82.9%)	81.5%	(77.5%, 84.9%)
Henrico County	51087	76.1%	(65.5%, 84.2%)	76.5%	(73.5%, 79.3%)
Lunenburg County	51111	43.9%	(14.5%, 78.3%)	52.5%	(42.9%, 62.0%)
Mecklenburg County	51117	74.6%	(60.0%, 85.1%)	65.8%	(61.3%, 70.1%)
New Kent County	51127	81.1%	(45.9%, 95.6%)	77.7%	(71.7%, 82.6%)
Nottoway County	51135	90.4%	(68.7%, 97.6%)	83.6%	(75.3%, 89.5%)
Powhatan County	51145	72.0%	(35.2%, 92.4%)	78.9%	(74.3%, 82.8%)
Prince Edward County	51147	78.3%	(53.5%, 91.9%)	65.7%	(60.4%, 70.7%)
Prince George County	51149	76.0%	(56.5%, 88.5%)	69.1%	(61.3%, 75.9%)
Surry County	51181	65.4%	(24.1%, 91.9%)	72.2%	(66.8%, 77.0%)
Sussex County	51183	85.0%	(60.5%, 95.4%)	72.4%	(59.3%, 82.6%)
Colonial Heights City	51570	69.0%	(26.3%, 93.3%)	83.9%	(77.1%, 89.0%)
Emporia City	51595	100.0%	(0.6%, 100.0%)	59.9%	(35.1%, 80.4%)
Hopewell City	51670	84.8%	(61.4%, 95.2%)	77.6%	(67.9%, 85.0%)
Petersburg City	51730	59.5%	(36.0%, 79.4%)	76.5%	(70.1%, 81.8%)
Richmond City	51760	83.9%	(71.7%, 91.4%)	79.4%	(73.8%, 84.0%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Accomack County	51001	75.9%	(57.8%, 87.8%)	67.2%	(60.9%, 73.0%)
Essex County	51057	71.1%	(42.7%, 89.1%)	84.0%	(77.6%, 88.8%)
Gloucester County	51073	78.2%	(60.6%, 89.3%)	82.9%	(79.0%, 86.2%)
Isle of Wight County	51093	73.4%	(42.8%, 91.0%)	80.1%	(75.1%, 84.4%)
James City County	51095	83.8%	(67.2%, 92.9%)	82.4%	(77.0%, 86.7%)
King and Queen County	51097	72.7%	(36.9%, 92.4%)	73.8%	(68.4%, 78.7%)
King William County	51101	76.4%	(46.4%, 92.3%)	87.7%	(81.4%, 92.1%)
Lancaster County	51103	57.8%	(34.9%, 77.8%)	75.0%	(70.0%, 79.3%)
Mathews County	51115	89.2%	(54.0%, 96.7%)	85.9%	(79.2%, 90.6%)
Middlesex County	51119	86.8%	(59.0%, 96.8%)	84.6%	(79.0%, 88.9%)
Northampton County	51131	74.8%	(52.6%, 88.8%)	73.9%	(66.5%, 80.2%)
Northumberland County	51133	80.9%	(59.1%, 92.5%)	82.1%	(77.4%, 86.0%)
Richmond County	51159	73.3%	(45.3%, 90.1%)	78.0%	(70.8%, 83.8%)
Southampton County	51175	94.0%	(54.4%, 98.1%)	71.3%	(64.7%, 77.0%)
Westmoreland County	51193	52.3%	(24.5%, 78.8%)	54.8%	(40.5%, 68.4%)
York County	51199	92.3%	(78.9%, 97.4%)	81.8%	(76.8%, 85.8%)
Chesapeake City	51550	82.0%	(74.4%, 87.7%)	78.9%	(75.1%, 82.2%)
Franklin City	51620	73.8%	(40.3%, 92.1%)	85.2%	(68.9%, 93.7%)
Hampton City	51650	69.6%	(57.6%, 79.4%)	76.1%	(71.3%, 80.3%)
Newport News City	51700	62.5%	(47.6%, 75.4%)	75.3%	(70.9%, 79.1%)
Norfolk City	51710	77.3%	(67.3%, 84.9%)	75.0%	(71.1%, 78.5%)
Poquoson City	51735	76.6%	(8.6%, 98.5%)	81.6%	(71.3%, 88.7%)
Portsmouth City	51740	76.0%	(63.7%, 85.2%)	77.0%	(71.6%, 81.6%)
Suffolk City	51800	83.7%	(69.7%, 91.9%)	80.3%	(76.8%, 83.3%)
Virginia Beach City	51810	79.8%	(72.4%, 85.6%)	76.2%	(72.3%, 79.7%)
Williamsburg City	51830	100.0%	(39.3%, 100.0%)	80.8%	(62.7%, 91.3%)

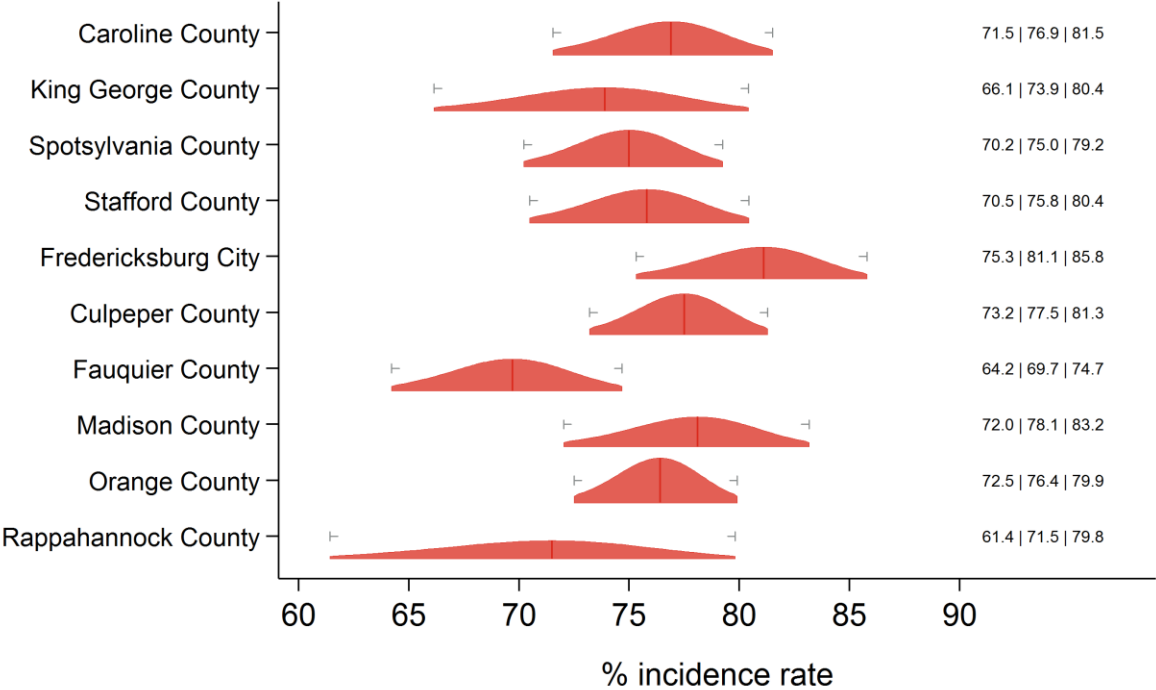
Graphical representation

Colon Cancer Screening 50+ Central Shenandoah and Lord Fairfax HDs



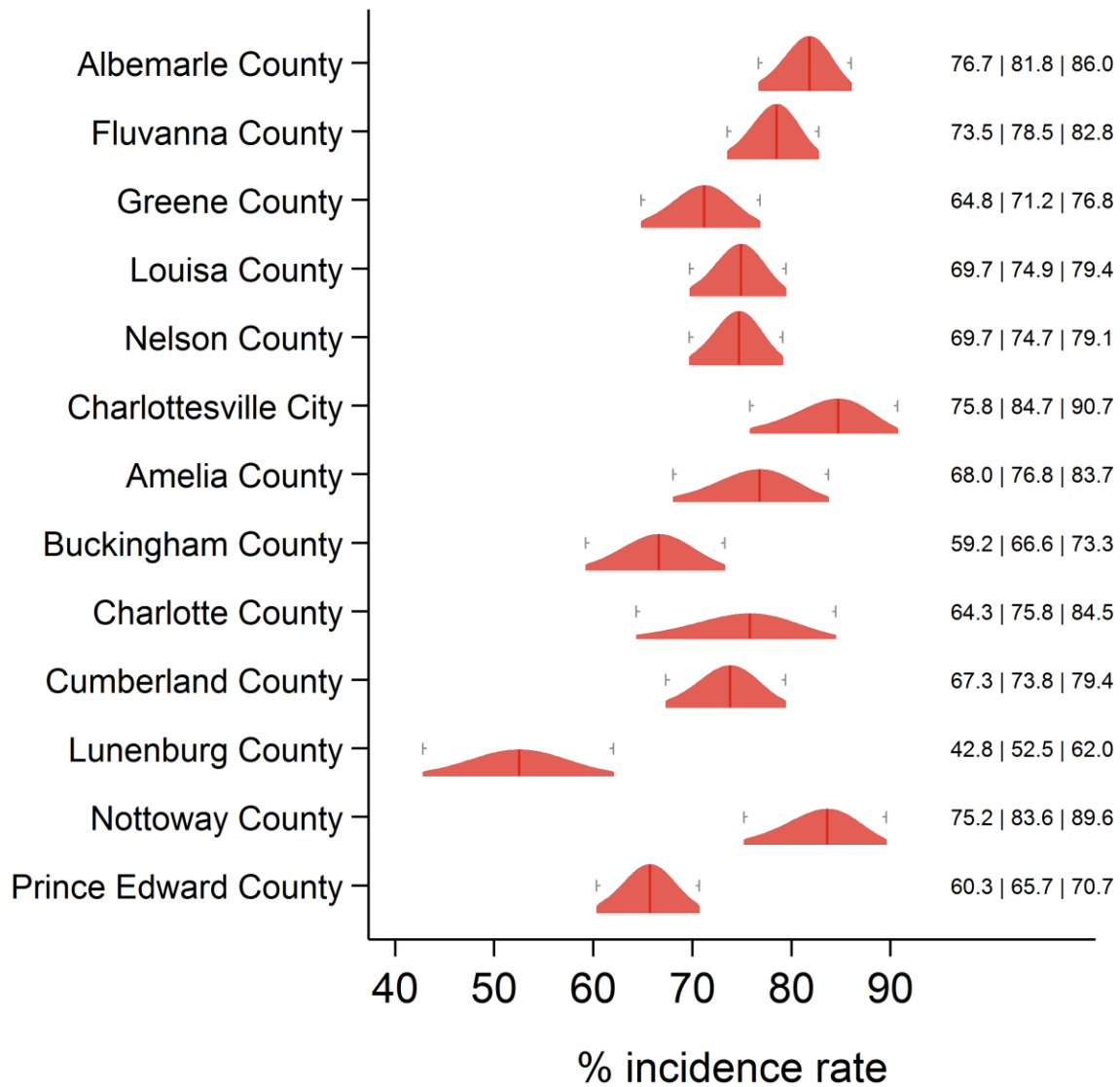
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Colon Cancer Screening 50+ Rappahannock/Rapidan and Rappahannock HDs



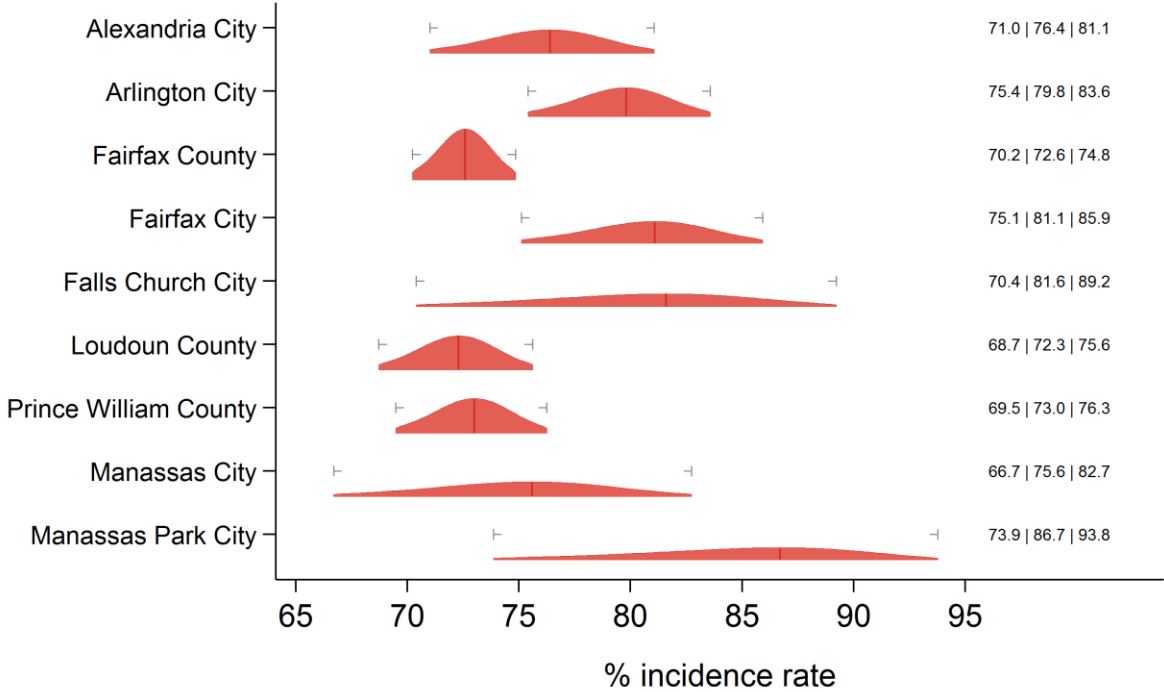
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Colon Cancer Screening 50+ Thomas Jefferson and Piedmont HDs



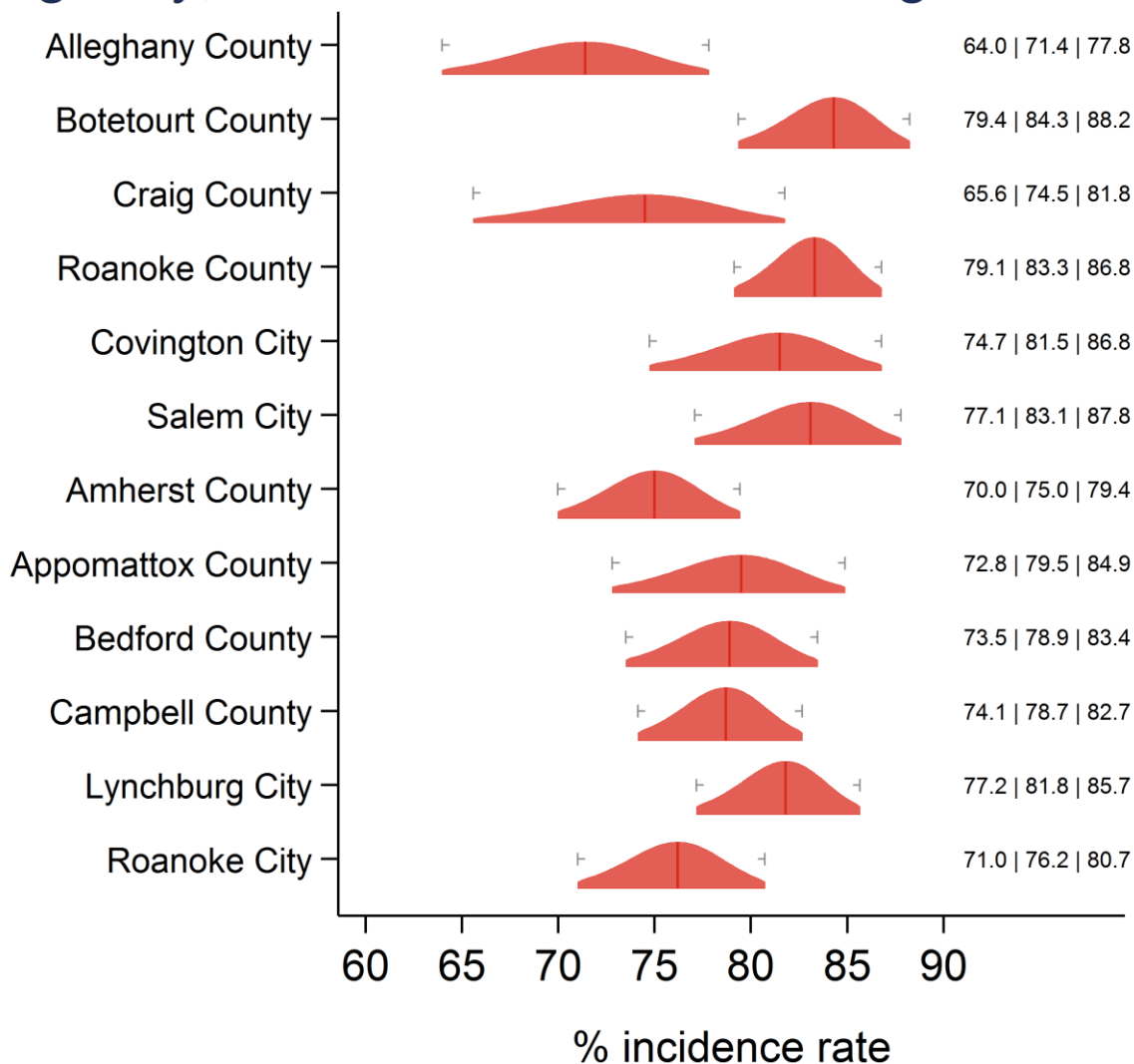
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Colon Cancer Screening 50+ Alexandria, Fairfax, Arlington, Loudon, Prince William HDs

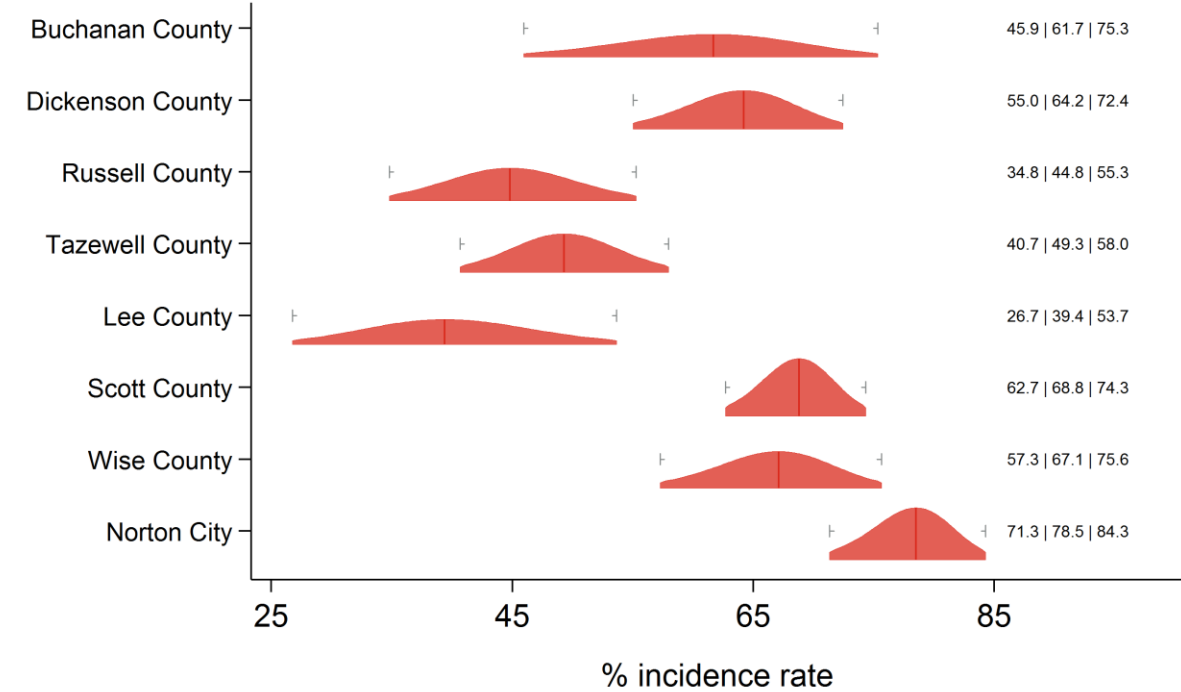


Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Colon Cancer Screening 50+ Alleghany, Roanoke and Central Virginia HDs

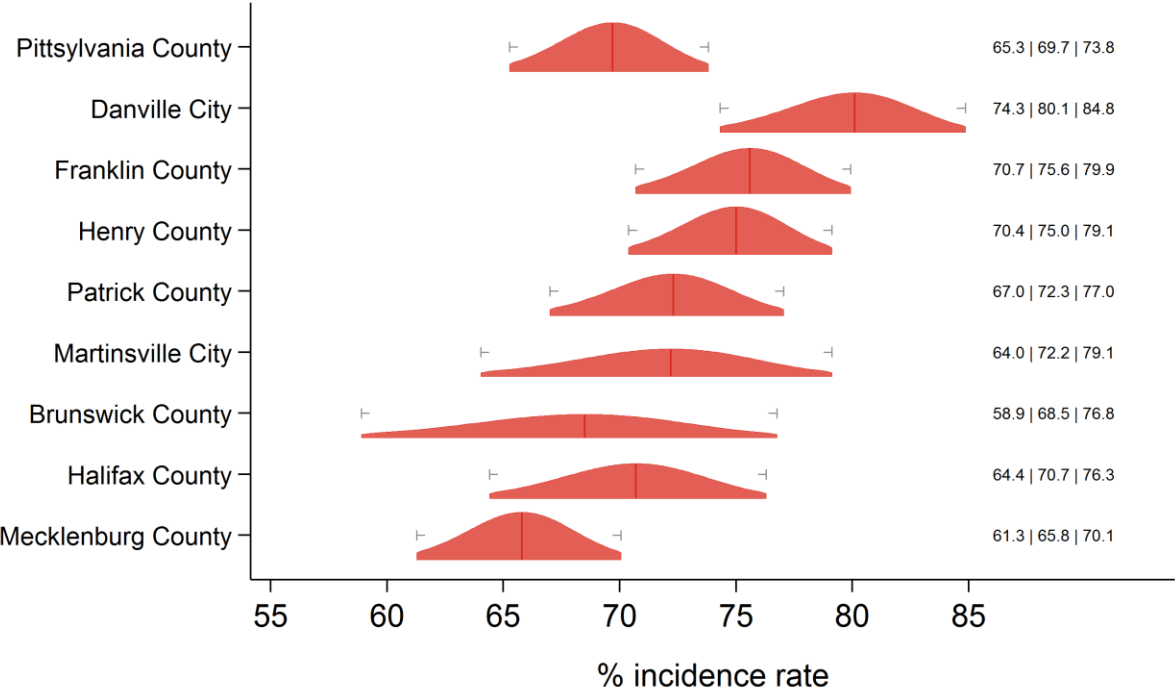


Colon Cancer Screening 50+ Cumberland Plateau and Lenowisco HDs



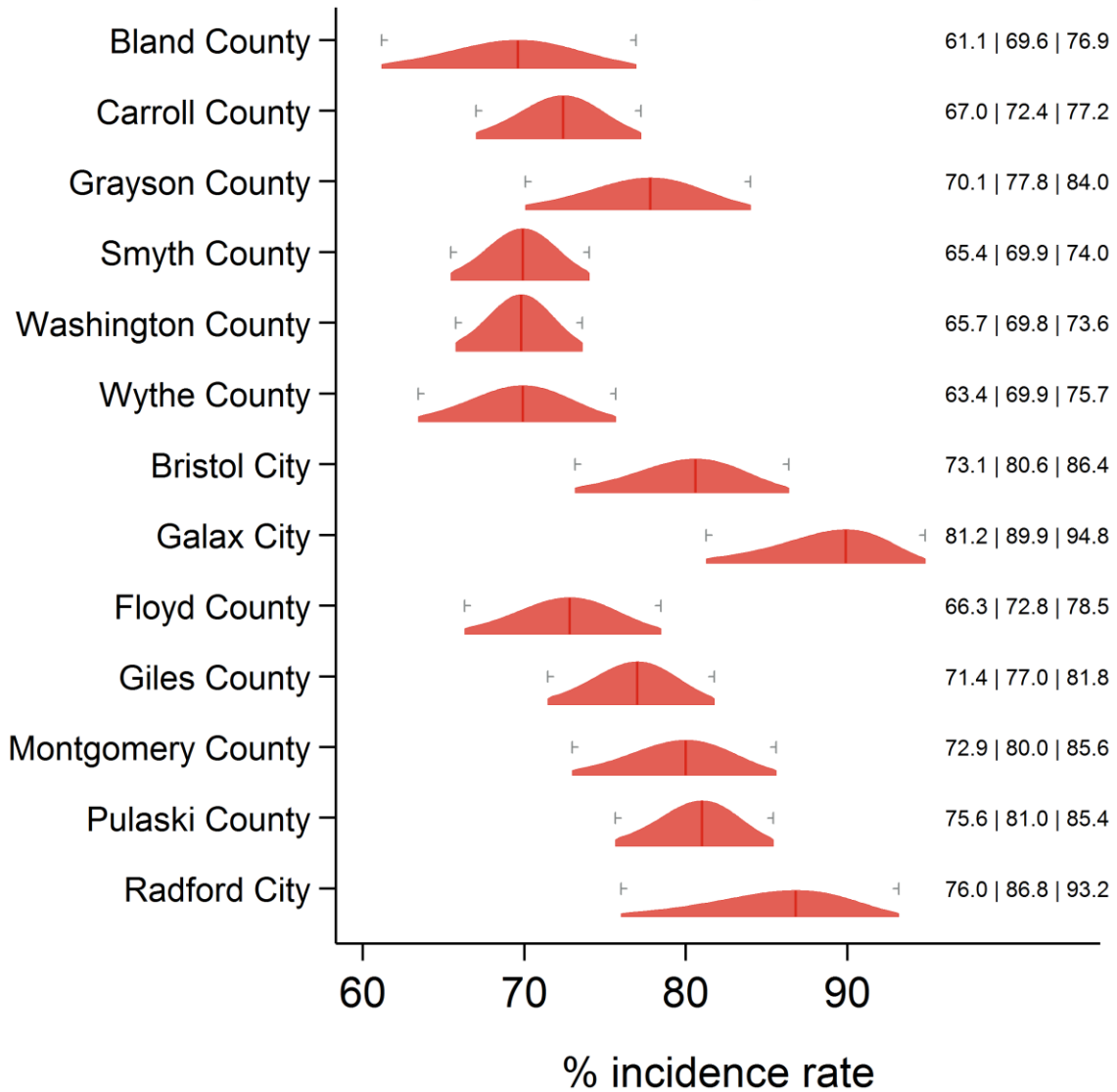
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Colon Cancer Screening 50+ Pittsylvania/Danville, Southside and West Piedmont HDs



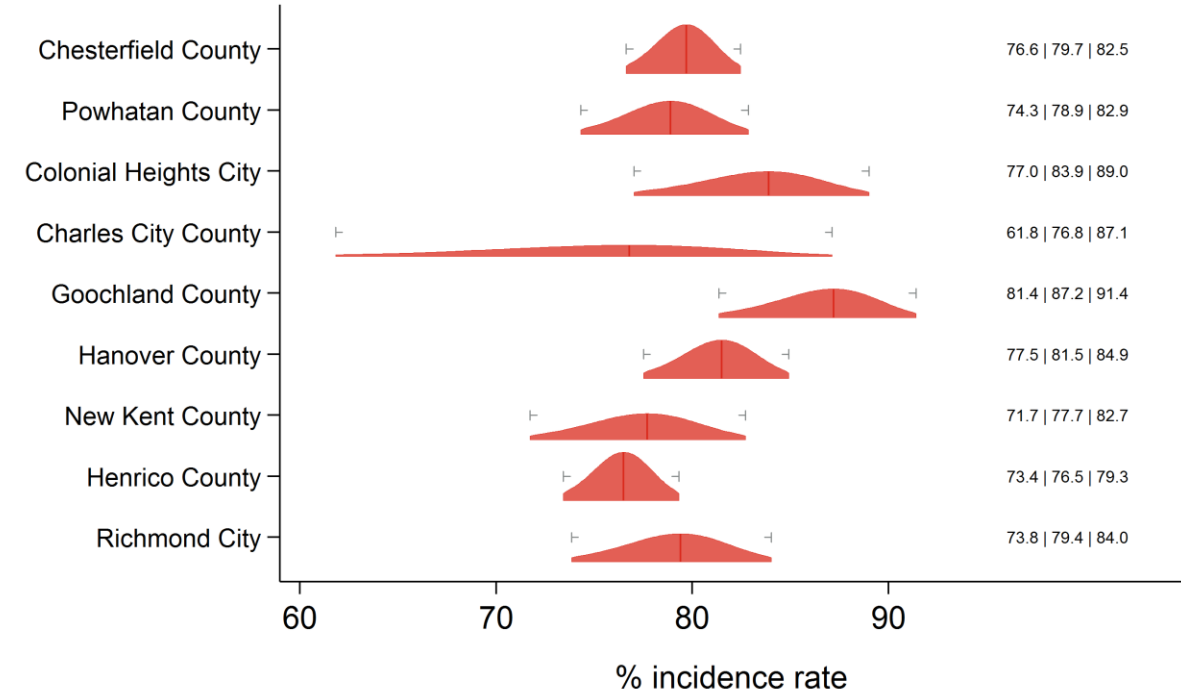
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Colon Cancer Screening 50+ New River and Mount Rogers HDs



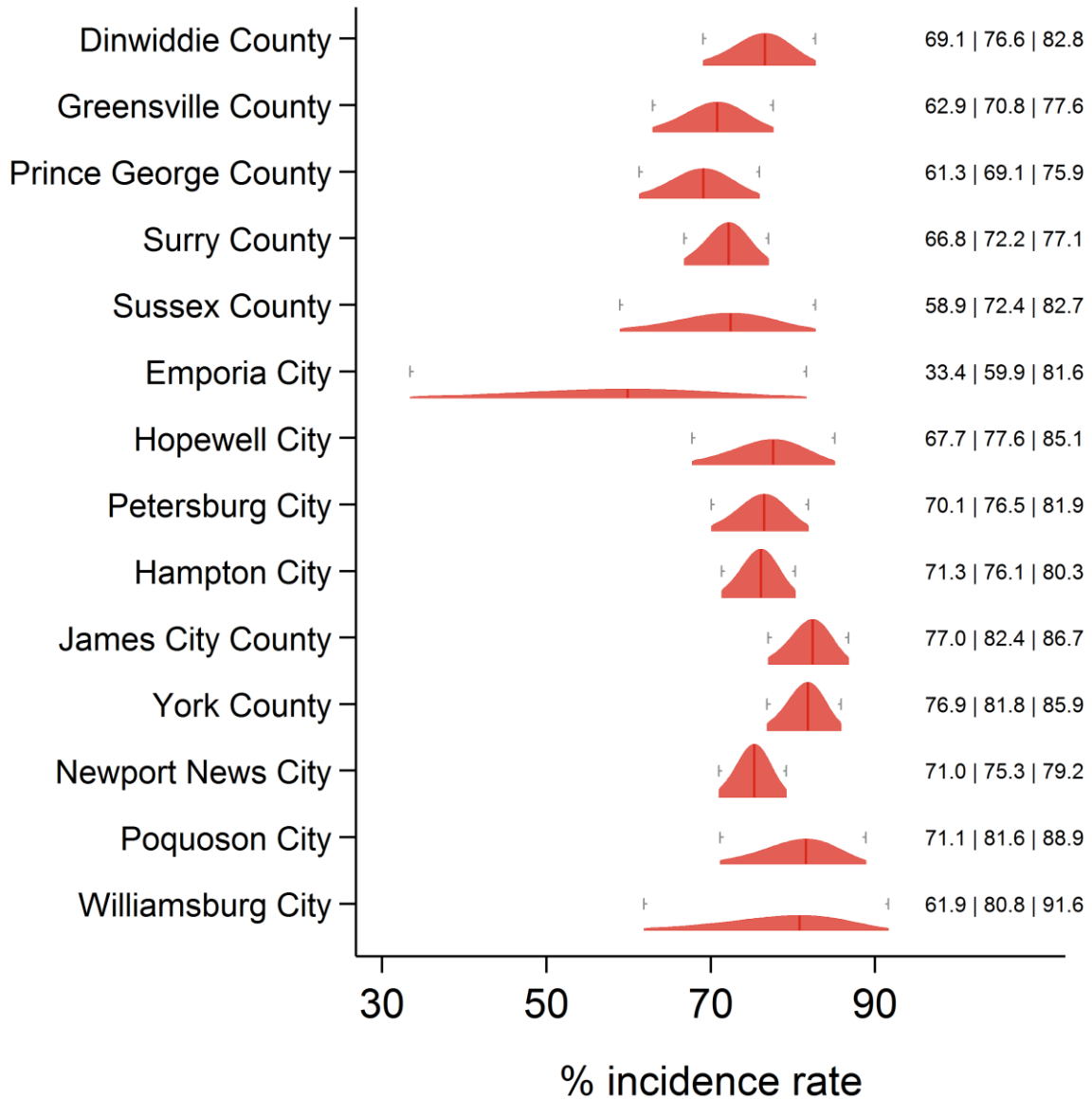
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Colon Cancer Screening 50+ Chesterfield, Chickahominy, Henrico and Richmond HDs



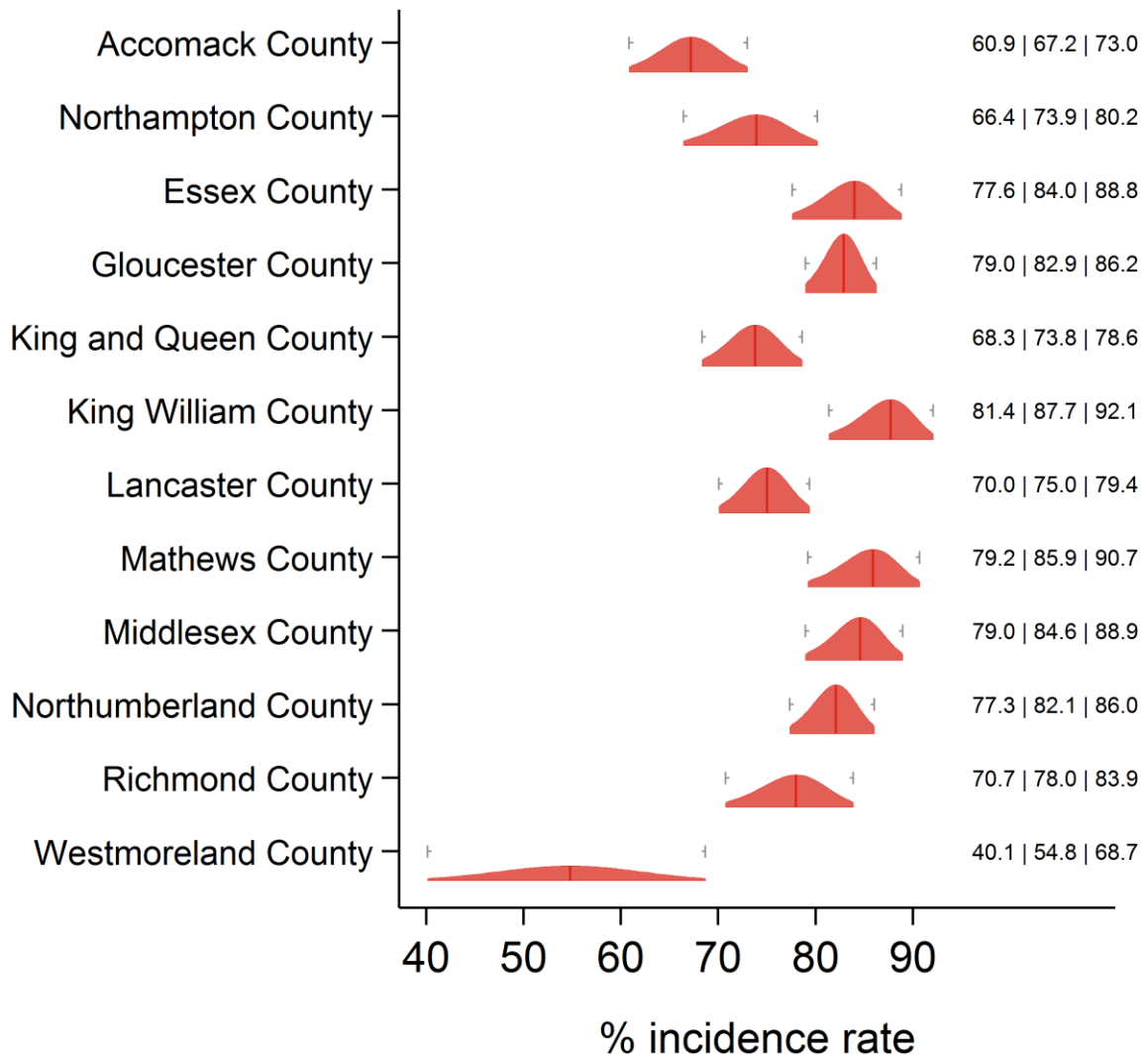
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Colon Cancer Screening 50+ Crater, Peninsula and Hampton HDs



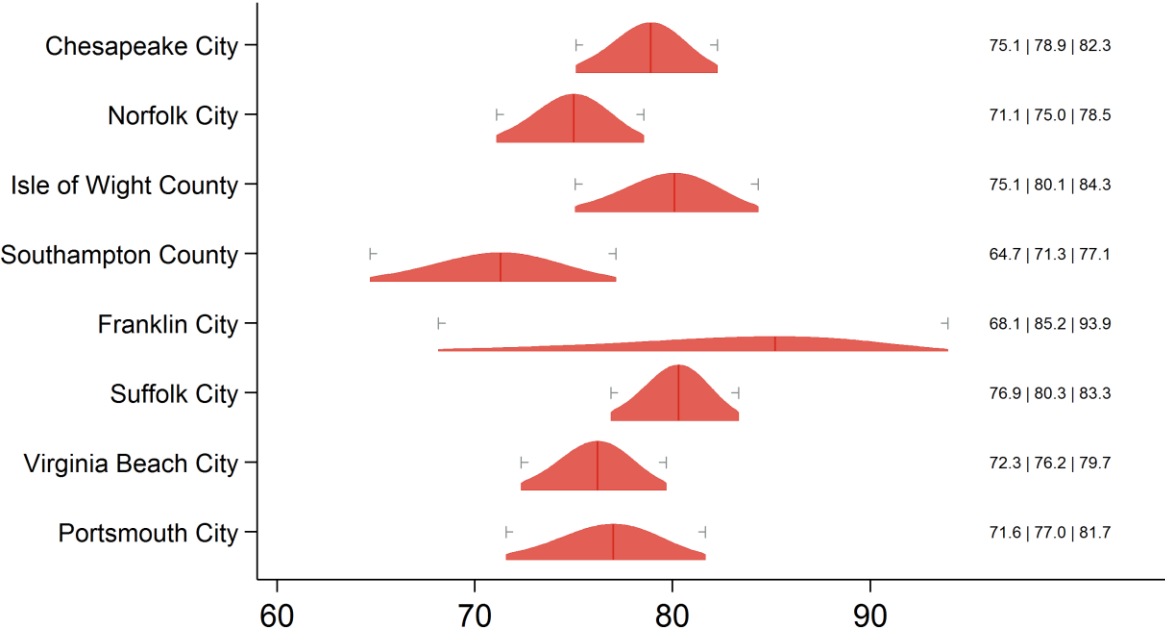
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Colon Cancer Screening 50+ Eastern Shore and Three Rivers HDs



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

Colon Cancer Screening 50+ 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: 53 areas.

Direct estimate is outside the 95% SAE Wilson CI: 80 areas.

SAE estimate is inside the 95% direct Wilson CI: 129 areas.

SAE estimate is outside the 95% direct Wilson CI: 4 areas.

SAE Wilson 95% CI is fully inside the 95% direct Wilson CI: 112 areas.

SAE Wilson 95% CI partially overlaps with the 95% direct Wilson CI: 21 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: 121 areas.

SAE standard error is greater than the (nonzero) direct standard error: 0 areas.

Direct standard error is zero: 12 areas.

Proportion of SAE variance due to ACS sampling error: min = 0.66%; med = 17.45%; max = 57.29%.

Proportion of SAE variance due to sampling error in regression coefficient estimates: min = 40.49%; med = 75.87%; max = 99.03%.

Proportion of SAE variance due to model selection: min = 0.10%; med = 5.19%; max = 36.99%.

Proportion of SAE variance due to area random effects: <identically zero>