

Indicator 21: Ever had Chronic Obstructive Pulmonary Disease or COPD, emphysema or chronic bronchitis

Internal variable name: outc21_copd

Definition: (Ever told) you have Chronic Obstructive Pulmonary Disease or COPD, emphysema or chronic bronchitis?

Predictive models

	Mixed, demos only	Logit, no area effects	Mixed with area covariates
	b/se	b/se	b/se
Outcome 21: Ever had Chronic Obstructive Pulmonary Disease or COPD, emphysema or			
NH Black vs. NH White	-0.1816 (0.1453)	-0.1689 (0.1679)	-0.1689 (0.1389)
NH Asian vs. NH White	-0.8610 (0.4404)	-0.7356 (0.6063)	-0.7356 (0.4342)
NH Other vs. NH White	-0.0356 (0.2499)	0.0025 (0.2457)	0.0025 (0.2548)
Hispanic vs. NH White	-0.4798 (0.4261)	-0.3784 (0.3658)	-0.3784 (0.4262)
Female	0.2260 (0.1296)	0.2213 (0.1154)	0.2213 (0.1301)
Age 18-34 vs. 65+	-1.6870*** (0.3091)	-1.6603*** (0.2320)	-1.6603*** (0.3072)
Age 35-44 vs. 65+	-0.8561*** (0.2446)	-0.8189*** (0.2299)	-0.8189** (0.2486)
Age 45-54 vs. 65+	-0.6341*** (0.1867)	-0.6250*** (0.1633)	-0.6250** (0.1881)
Age 55-64 vs. 65+	-0.0911 (0.1101)	-0.0771 (0.1178)	-0.0771 (0.1096)
VA BRFSS 2014 SAE outc4_health_cover		79.3228** (24.8101)	79.3228*** (17.4766)
% HHs with children receiving SSI, cash transfers, SNAP		0.0550** (0.0184)	0.0550** (0.0173)
% nonwhite students		-0.0083*** (0.0023)	-0.0083*** (0.0018)
Average daily PM2.5, County Rankings/EPA		1.4641*** (0.4285)	1.4641*** (0.2583)
o.VA BRFSS 2014 SAE outc4_health_cover		0.0000 (.)	
c.CHR_pm25#c.VA14SAE_outc4_health_cover		-9.1234** (2.7939)	-9.1234*** (1.8848)
o.% HHs with children receiving SSI, cash transfers,		0.0000	

SNAP		(.)	
c.ACS_pct_welfare#c.VA14SAE_outc4_health_cover		-0.0861 (0.1158)	-0.0861 (0.1150)
Intercept	-1.9885*** (0.0974)	-15.4301*** (3.8497)	-15.4301*** (2.4189)
Area effect variance	0.1330* (0.0628)		0.0000 (0.0000)

Number of alternative models used to estimate model error = 8.

Results

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Augusta County	51015	8.9%	(3.8%, 19.6%)	9.3%	(7.9%, 11.1%)
Bath County	51017	0.0%	(0.0%, 37.3%)	12.1%	(9.5%, 15.4%)
Caroline County	51033	14.2%	(5.3%, 42.4%)	12.4%	(11.1%, 13.9%)
Clarke County	51043	0.0%	(0.0%, 25.3%)	13.8%	(10.7%, 17.6%)
Culpeper County	51047	5.6%	(1.9%, 15.5%)	8.1%	(7.3%, 9.0%)
Fauquier County	51061	13.0%	(4.7%, 31.1%)	9.5%	(8.0%, 11.2%)
Frederick County	51069	1.3%	(0.8%, 9.8%)	7.4%	(6.0%, 8.9%)
Highland County	51091	15.8%	(2.1%, 62.3%)	3.0%	(1.2%, 7.3%)
King George County	51099	4.4%	(0.7%, 23.4%)	7.9%	(7.0%, 8.8%)
Madison County	51113	9.7%	(1.8%, 38.7%)	11.9%	(10.6%, 13.5%)
Orange County	51137	6.8%	(3.5%, 22.0%)	9.6%	(8.3%, 11.0%)
Page County	51139	16.3%	(3.7%, 49.8%)	13.5%	(11.4%, 15.8%)
Rappahannock County	51157	19.6%	(4.1%, 58.5%)	13.3%	(11.4%, 15.5%)
Rockbridge County	51163	5.4%	(2.3%, 20.1%)	13.2%	(11.3%, 15.4%)
Rockingham County	51165	7.3%	(3.5%, 14.8%)	6.8%	(5.9%, 7.9%)
Shenandoah County	51171	6.3%	(3.4%, 19.2%)	10.4%	(8.9%, 12.1%)
Spotsylvania County	51177	6.3%	(2.7%, 14.0%)	8.4%	(7.4%, 9.6%)
Stafford County	51179	3.4%	(1.7%, 9.1%)	6.3%	(5.3%, 7.4%)
Warren County	51187	14.3%	(6.0%, 30.3%)	13.7%	(11.9%, 15.6%)
Buena Vista City	51530	12.9%	(4.0%, 55.2%)	23.2%	(19.7%, 27.2%)
Fredericksburg City	51630	8.1%	(2.0%, 27.4%)	10.1%	(8.5%, 11.8%)
Harrisonburg City	51660	0.0%	(0.0%, 44.6%)	6.1%	(4.6%, 7.8%)
Lexington City	51678	0.0%	(0.0%, 96.3%)	5.7%	(4.4%, 7.2%)
Staunton City	51790	8.4%	(2.1%, 50.9%)	13.6%	(11.2%, 16.5%)
Waynesboro City	51820	4.1%	(1.6%, 45.3%)	18.1%	(15.0%, 21.8%)
Winchester City	51840	0.0%	(0.0%, 61.5%)	12.1%	(9.8%, 14.9%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Albemarle County	51003	4.8%	(1.8%, 12.4%)	6.1%	(5.3%, 7.0%)
Alleghany County	51005	11.9%	(3.5%, 33.4%)	14.0%	(11.9%, 16.3%)
Amherst County	51009	4.7%	(2.8%, 21.7%)	10.4%	(8.9%, 12.2%)
Appomattox County	51011	14.4%	(5.1%, 34.7%)	12.9%	(11.3%, 14.8%)
Arlington City	51013	2.2%	(1.2%, 6.9%)	3.7%	(2.7%, 5.0%)
Bedford County	51019	14.5%	(8.5%, 23.7%)	11.5%	(9.6%, 13.8%)
Botetourt County	51023	4.6%	(1.0%, 19.7%)	10.7%	(8.3%, 13.7%)
Campbell County	51031	5.5%	(2.3%, 12.6%)	6.5%	(5.1%, 8.2%)
Craig County	51045	16.8%	(1.9%, 67.9%)	14.5%	(12.2%, 17.2%)
Fairfax County	51059	3.1%	(2.1%, 4.7%)	4.1%	(3.6%, 4.7%)
Fluvanna County	51065	12.5%	(3.4%, 36.5%)	8.0%	(6.2%, 10.1%)
Greene County	51079	8.3%	(3.3%, 42.4%)	7.4%	(5.9%, 9.1%)
Loudoun County	51107	5.2%	(2.1%, 12.1%)	8.1%	(6.2%, 10.5%)
Louisa County	51109	3.5%	(2.1%, 16.9%)	10.9%	(9.7%, 12.2%)
Nelson County	51125	3.9%	(1.5%, 32.6%)	10.1%	(8.6%, 11.7%)
Prince William County	51153	5.0%	(3.1%, 7.9%)	6.1%	(5.2%, 7.0%)
Roanoke County	51161	6.9%	(4.4%, 13.7%)	9.0%	(7.9%, 10.4%)
Alexandria City	51510	7.1%	(3.4%, 14.4%)	5.4%	(4.2%, 6.9%)
Charlottesville City	51540	7.6%	(2.4%, 21.6%)	8.1%	(7.0%, 9.3%)
Covington City	51580	0.0%	(0.0%, 96.4%)	18.2%	(14.3%, 23.0%)
Fairfax City	51600	2.4%	(1.1%, 10.5%)	3.7%	(2.8%, 4.8%)
Falls Church City	51610	0.0%	(0.0%, 25.6%)	2.2%	(1.2%, 4.2%)
Lynchburg City	51680	8.8%	(5.2%, 18.3%)	9.2%	(7.7%, 10.9%)
Manassas City	51683	3.2%	(1.5%, 36.0%)	6.0%	(4.8%, 7.5%)
Manassas Park City	51685	0.0%	(0.0%, 76.5%)	3.9%	(3.0%, 5.1%)
Salem City	51775	0.0%	(0.0%, 42.2%)	8.7%	(7.3%, 10.3%)

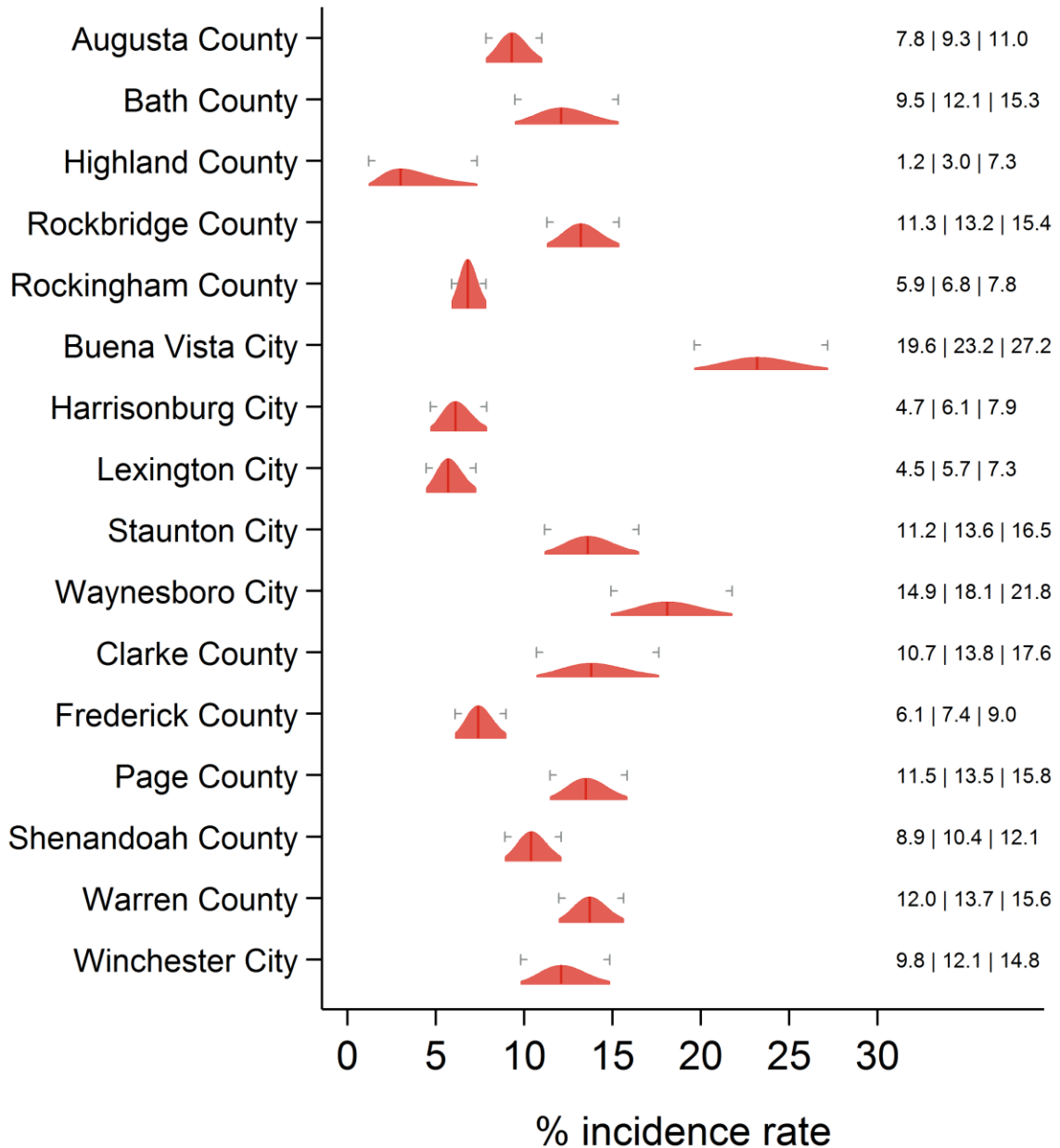
County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Bland County	51021	22.9%	(7.2%, 53.2%)	18.9%	(15.8%, 22.5%)
Buchanan County	51027	26.3%	(10.2%, 53.0%)	33.5%	(26.8%, 40.9%)
Carroll County	51035	5.2%	(1.2%, 20.4%)	11.4%	(8.8%, 14.7%)
Dickenson County	51051	12.1%	(3.6%, 33.8%)	18.2%	(15.5%, 21.1%)
Floyd County	51063	0.7%	(0.5%, 17.9%)	9.3%	(6.4%, 13.5%)
Franklin County	51067	15.2%	(4.0%, 43.6%)	15.8%	(13.7%, 18.1%)
Giles County	51071	11.0%	(3.8%, 28.1%)	7.5%	(6.3%, 8.9%)
Grayson County	51077	10.3%	(3.1%, 29.4%)	19.1%	(12.4%, 28.2%)
Henry County	51089	6.6%	(3.2%, 18.5%)	15.4%	(11.3%, 20.7%)
Lee County	51105	12.4%	(6.2%, 39.4%)	16.6%	(10.7%, 24.8%)
Montgomery County	51121	9.1%	(4.9%, 16.1%)	7.5%	(6.5%, 8.7%)
Patrick County	51141	7.3%	(1.6%, 28.3%)	16.0%	(13.4%, 19.0%)
Pittsylvania County	51143	14.2%	(7.9%, 24.2%)	11.0%	(9.2%, 13.0%)
Pulaski County	51155	8.1%	(2.3%, 24.4%)	11.1%	(9.8%, 12.5%)
Russell County	51167	15.1%	(5.7%, 34.3%)	19.9%	(16.8%, 23.5%)
Scott County	51169	34.1%	(17.4%, 55.9%)	22.1%	(17.4%, 27.6%)
Smyth County	51173	12.4%	(4.2%, 31.0%)	18.4%	(15.7%, 21.4%)
Tazewell County	51185	10.7%	(4.7%, 22.8%)	17.9%	(15.0%, 21.1%)
Washington County	51191	15.7%	(8.7%, 26.9%)	14.7%	(12.4%, 17.4%)
Wise County	51195	26.0%	(15.4%, 40.4%)	28.3%	(22.6%, 34.7%)
Wythe County	51197	11.4%	(4.2%, 27.7%)	12.4%	(10.4%, 14.7%)
Bristol City	51520	0.0%	(-0.0%, 67.4%)	11.1%	(4.1%, 26.5%)
Danville City	51590	2.6%	(1.4%, 21.5%)	20.2%	(15.6%, 25.9%)
Galax City	51640	40.0%	(3.7%, 92.1%)	23.1%	(18.2%, 28.9%)
Martinsville City	51690	28.8%	(3.6%, 81.3%)	10.8%	(6.7%, 17.0%)
Norton City	51720	4.8%	(1.4%, 62.9%)	17.5%	(10.2%, 28.4%)
Radford City	51750	10.9%	(3.6%, 51.0%)	9.5%	(7.0%, 12.8%)
Roanoke City	51770	10.9%	(4.8%, 23.0%)	12.0%	(9.9%, 14.4%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Amelia County	51007	3.4%	(2.1%, 32.9%)	10.2%	(9.0%, 11.5%)
Brunswick County	51025	23.3%	(8.7%, 49.0%)	16.2%	(10.7%, 23.9%)
Buckingham County	51029	8.7%	(2.9%, 23.3%)	13.0%	(11.0%, 15.2%)
Charles City County	51036	0.0%	(0.0%, 51.5%)	9.2%	(7.7%, 10.9%)
Charlotte County	51037	4.5%	(1.9%, 20.1%)	19.2%	(15.4%, 23.6%)
Chesterfield County	51041	6.3%	(4.1%, 9.6%)	8.0%	(7.2%, 8.9%)
Cumberland County	51049	6.7%	(3.3%, 27.6%)	16.3%	(11.5%, 22.7%)
Dinwiddie County	51053	1.2%	(0.9%, 22.2%)	8.4%	(6.6%, 10.7%)
Goochland County	51075	2.8%	(1.6%, 26.2%)	10.1%	(8.2%, 12.4%)
Greensville County	51081	48.7%	(18.4%, 79.9%)	11.5%	(4.8%, 25.0%)
Halifax County	51083	14.5%	(6.1%, 30.3%)	12.8%	(11.2%, 14.5%)
Hanover County	51085	6.7%	(3.0%, 14.3%)	10.9%	(8.4%, 14.1%)
Henrico County	51087	6.2%	(3.2%, 11.7%)	6.9%	(6.1%, 7.8%)
Lunenburg County	51111	26.2%	(5.6%, 67.7%)	13.4%	(10.7%, 16.8%)
Mecklenburg County	51117	11.3%	(5.6%, 21.6%)	12.6%	(10.6%, 14.8%)
New Kent County	51127	13.9%	(2.6%, 49.7%)	8.2%	(7.1%, 9.4%)
Nottoway County	51135	33.9%	(8.6%, 73.7%)	22.6%	(17.6%, 28.6%)
Powhatan County	51145	13.5%	(3.0%, 44.5%)	6.9%	(5.5%, 8.7%)
Prince Edward County	51147	7.2%	(2.4%, 19.6%)	13.3%	(11.1%, 15.7%)
Prince George County	51149	6.0%	(3.5%, 19.4%)	7.6%	(6.7%, 8.7%)
Surry County	51181	4.3%	(1.7%, 37.4%)	9.2%	(7.6%, 11.1%)
Sussex County	51183	2.5%	(1.5%, 17.6%)	7.2%	(6.0%, 8.7%)
Colonial Heights City	51570	12.2%	(6.5%, 32.8%)	9.3%	(7.9%, 11.0%)
Emporia City	51595	37.1%	(1.4%, 96.5%)	13.9%	(3.3%, 43.6%)
Hopewell City	51670	7.0%	(3.4%, 27.8%)	11.6%	(9.4%, 14.3%)
Petersburg City	51730	20.3%	(7.4%, 44.8%)	15.8%	(11.7%, 20.9%)
Richmond City	51760	4.8%	(2.2%, 10.2%)	8.6%	(5.7%, 12.8%)

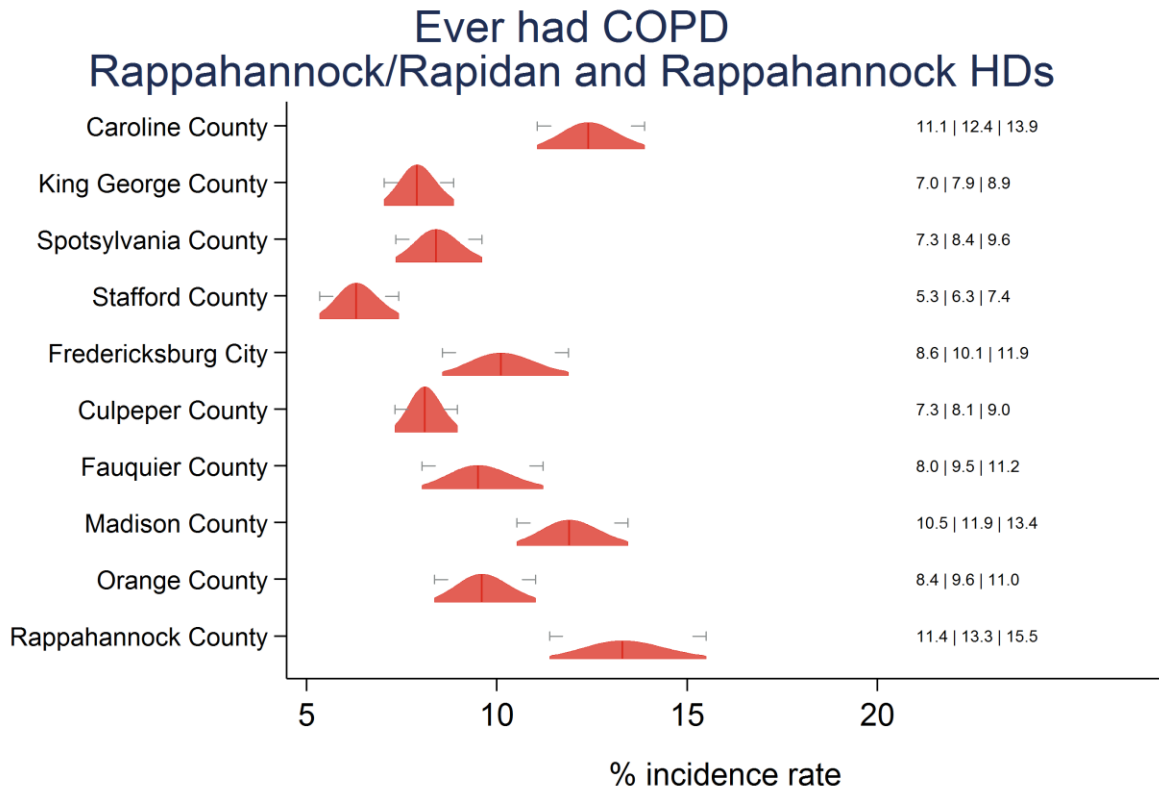
County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Accomack County	51001	16.1%	(6.9%, 33.3%)	15.3%	(10.9%, 21.1%)
Essex County	51057	6.0%	(3.1%, 31.8%)	6.0%	(4.2%, 8.5%)
Gloucester County	51073	6.7%	(2.5%, 16.4%)	7.1%	(5.9%, 8.6%)
Isle of Wight County	51093	2.0%	(0.9%, 18.0%)	9.0%	(8.0%, 10.2%)
James City County	51095	4.2%	(2.3%, 11.8%)	6.0%	(4.7%, 7.6%)
King and Queen County	51097	35.0%	(11.7%, 68.8%)	15.2%	(12.4%, 18.6%)
King William County	51101	15.5%	(3.3%, 49.6%)	9.7%	(8.6%, 10.9%)
Lancaster County	51103	4.1%	(2.1%, 42.0%)	7.0%	(5.7%, 8.5%)
Mathews County	51115	6.0%	(3.0%, 29.8%)	11.2%	(8.5%, 14.7%)
Middlesex County	51119	11.4%	(3.2%, 33.3%)	14.1%	(11.7%, 16.7%)
Northampton County	51131	9.8%	(2.7%, 29.6%)	14.7%	(10.3%, 20.6%)
Northumberland County	51133	9.5%	(2.9%, 27.4%)	7.9%	(5.4%, 11.5%)
Richmond County	51159	15.2%	(2.5%, 55.1%)	14.3%	(11.8%, 17.3%)
Southampton County	51175	0.0%	(0.0%, 31.1%)	13.6%	(11.7%, 15.7%)
Westmoreland County	51193	3.9%	(2.3%, 34.4%)	11.3%	(9.6%, 13.3%)
York County	51199	4.0%	(1.3%, 11.7%)	4.9%	(4.0%, 5.9%)
Chesapeake City	51550	10.2%	(4.5%, 21.3%)	7.7%	(6.8%, 8.7%)
Franklin City	51620	6.0%	(1.0%, 29.9%)	11.9%	(9.3%, 15.0%)
Hampton City	51650	9.1%	(5.4%, 15.2%)	8.5%	(7.0%, 10.3%)
Newport News City	51700	8.1%	(4.6%, 13.9%)	8.3%	(6.8%, 9.9%)
Norfolk City	51710	6.2%	(3.5%, 10.5%)	9.6%	(7.9%, 11.6%)
Poquoson City	51735	15.1%	(1.8%, 63.3%)	4.7%	(3.3%, 6.6%)
Portsmouth City	51740	4.2%	(1.9%, 9.0%)	10.2%	(8.5%, 12.3%)
Suffolk City	51800	8.6%	(3.9%, 17.8%)	8.9%	(7.5%, 10.4%)
Virginia Beach City	51810	4.0%	(3.0%, 6.6%)	5.1%	(4.3%, 6.1%)
Williamsburg City	51830	0.0%	(0.0%, 64.5%)	6.7%	(5.1%, 8.9%)

Graphical representation

Ever had COPD Central Shenandoah and Lord Fairfax HDs

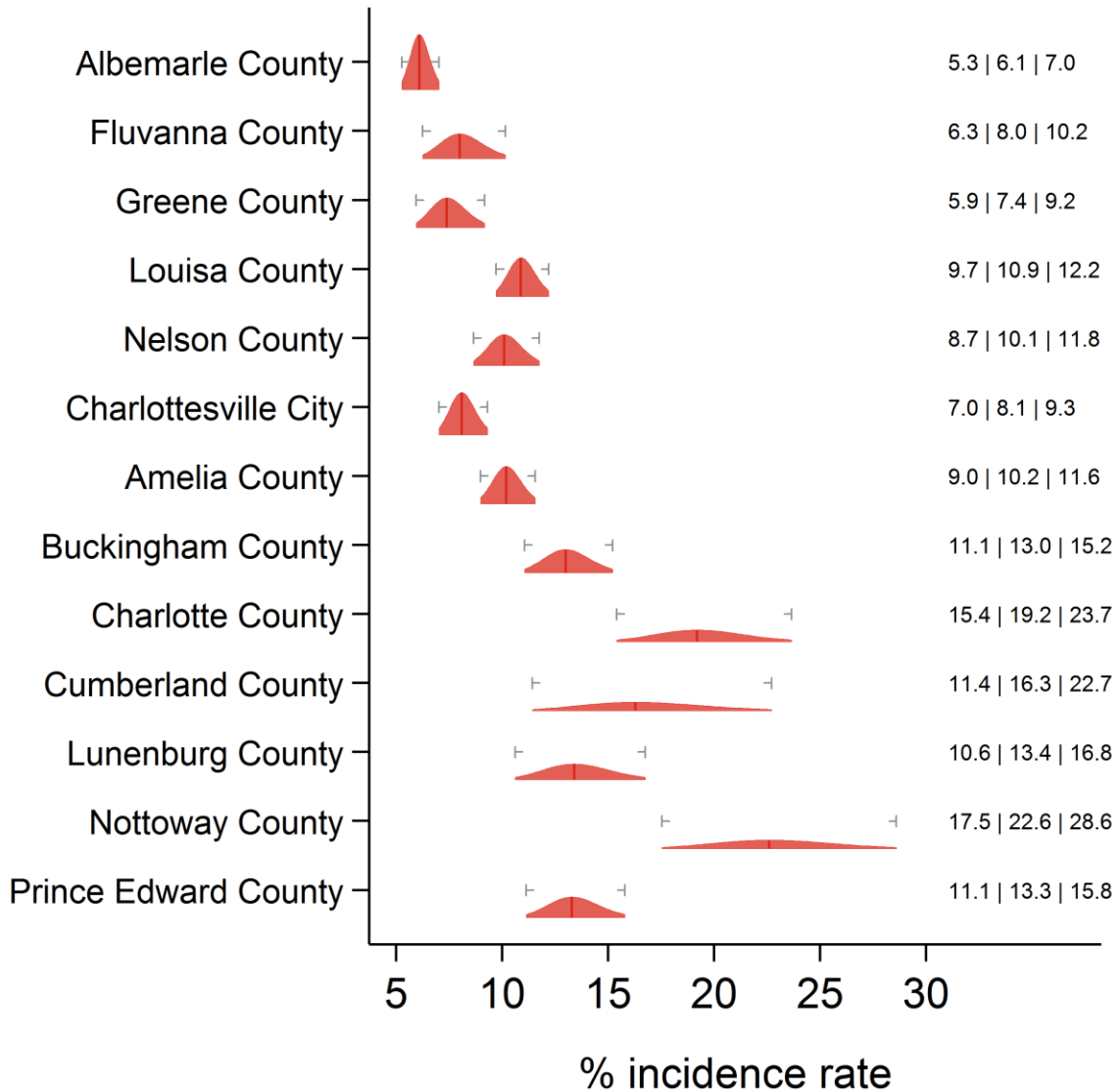


Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval



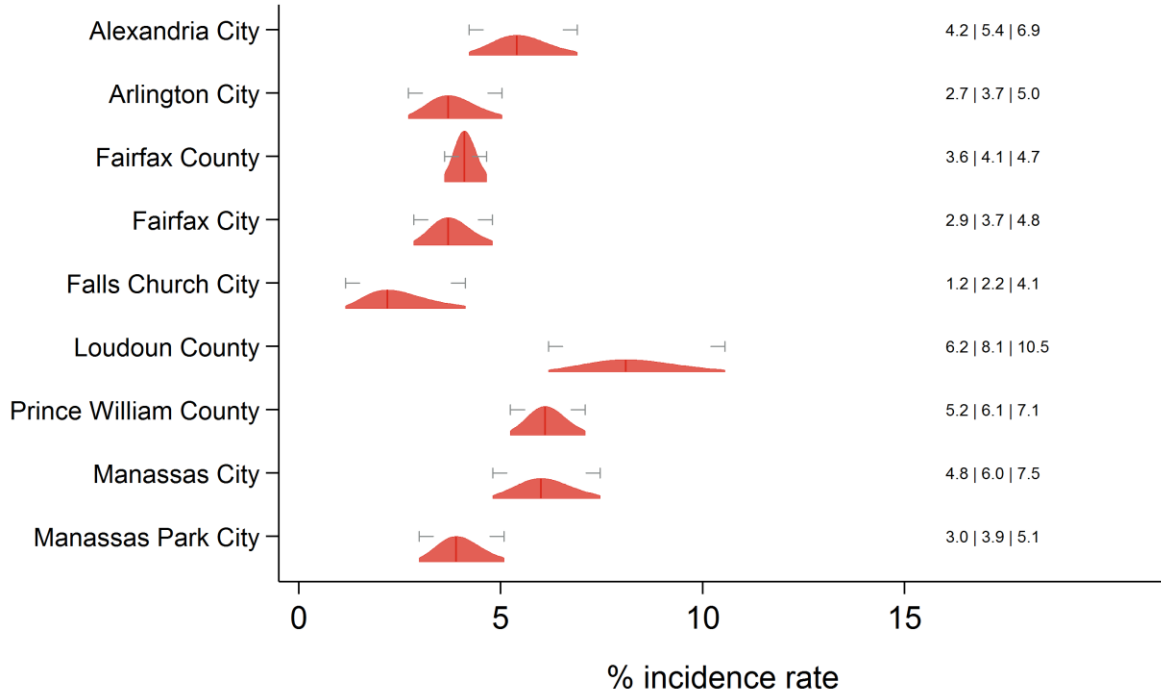
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Ever had COPD Thomas Jefferson and Piedmont HDs



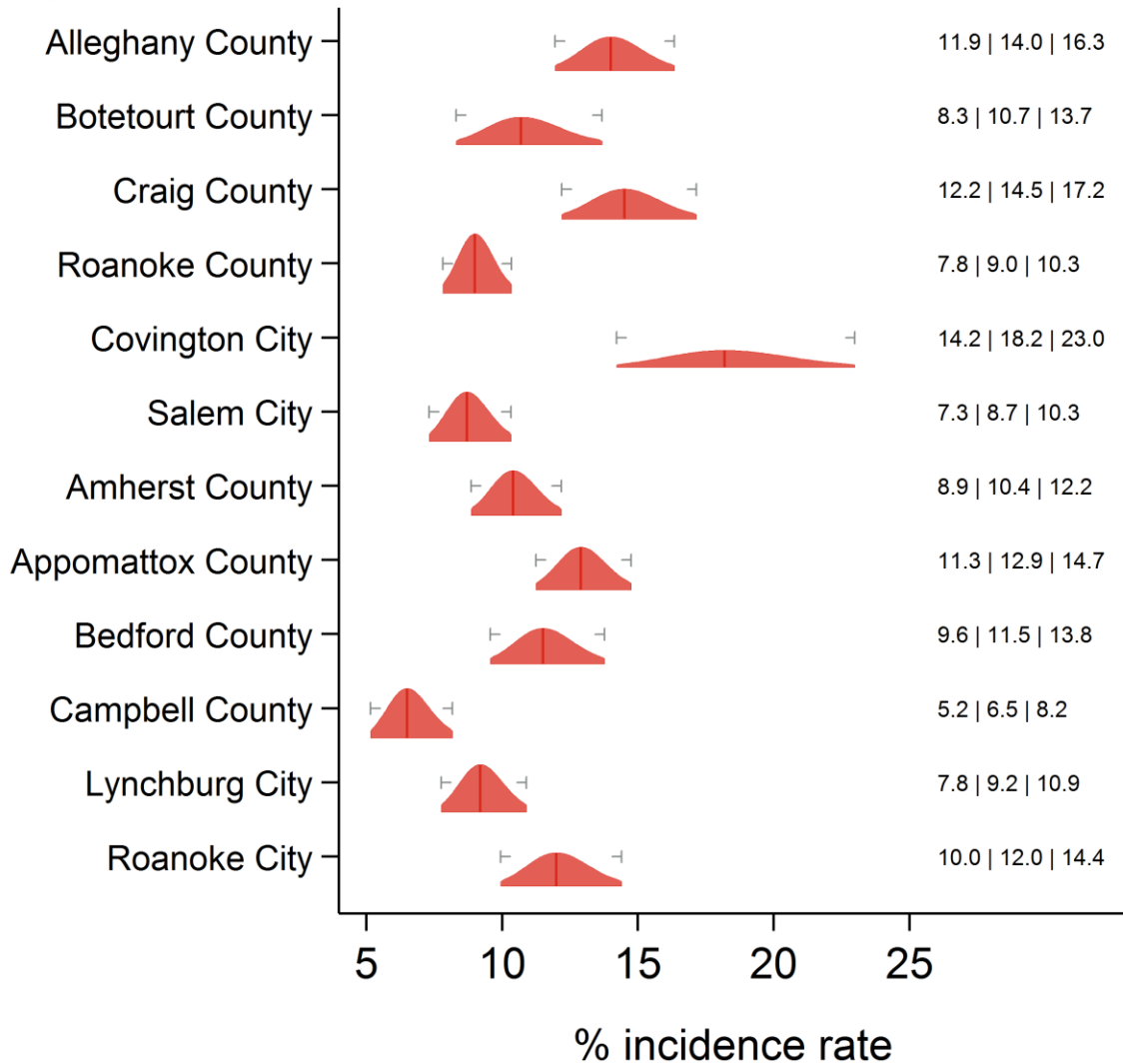
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Ever had COPD Alexandria, Fairfax, Arlington, Loudon, Prince William HDs



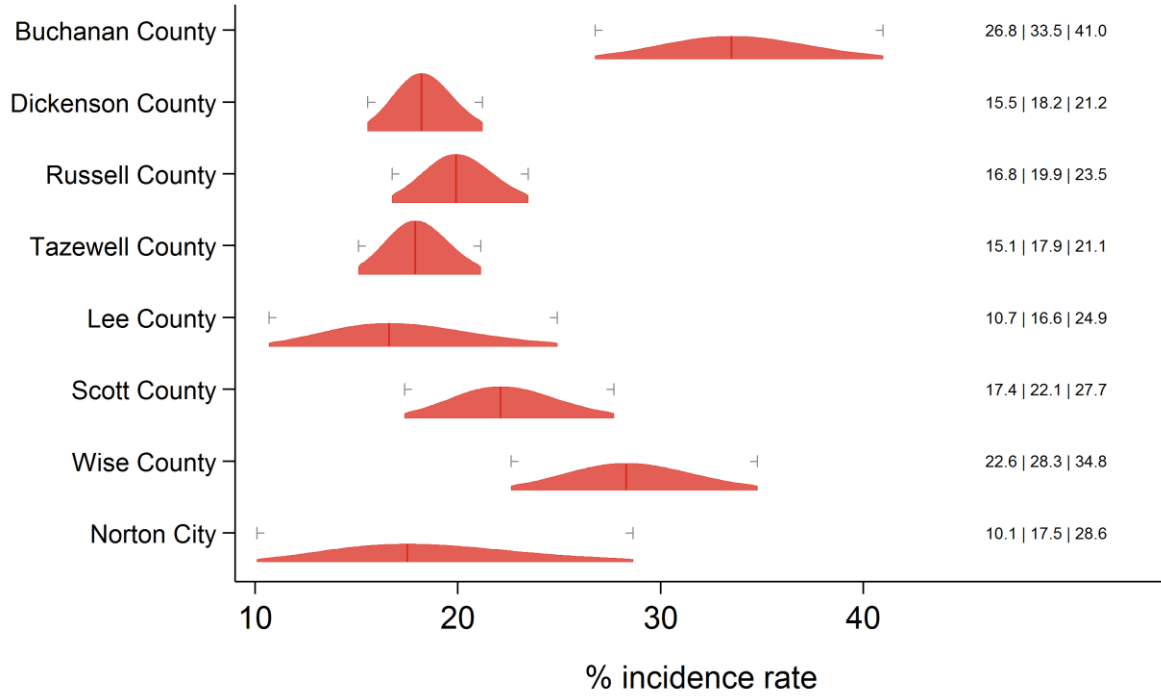
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Ever had COPD Alleghany, Roanoke and Central Virginia HDs



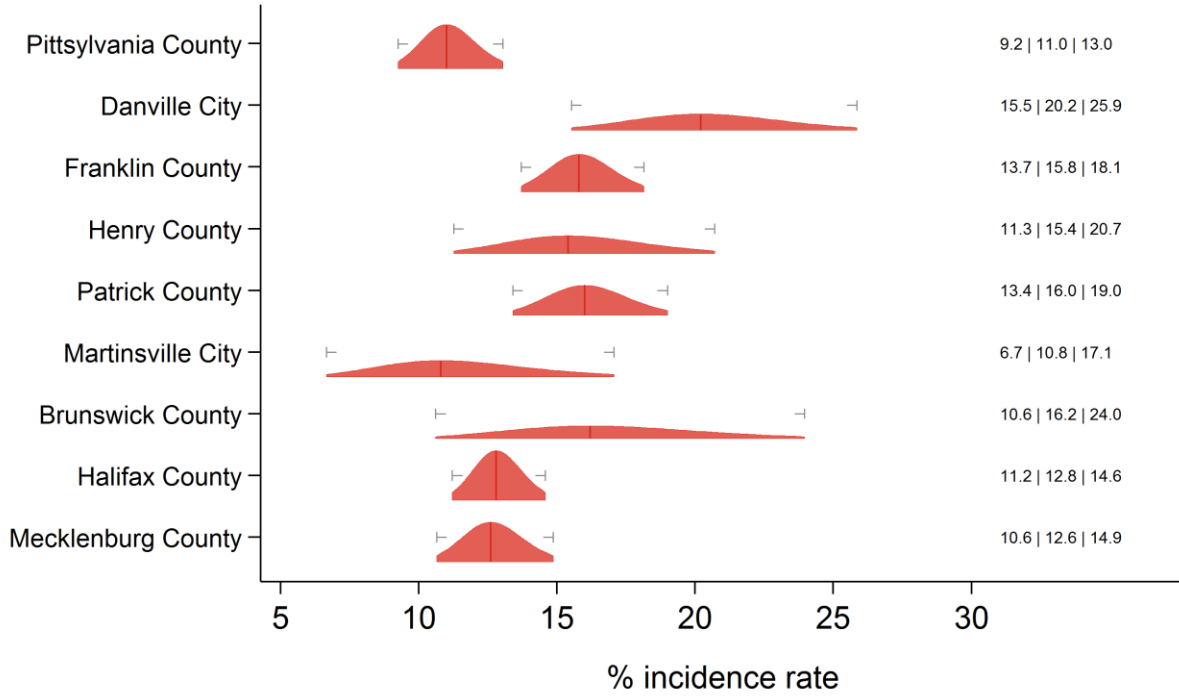
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Ever had COPD Cumberland Plateau and Lenowisco HDs



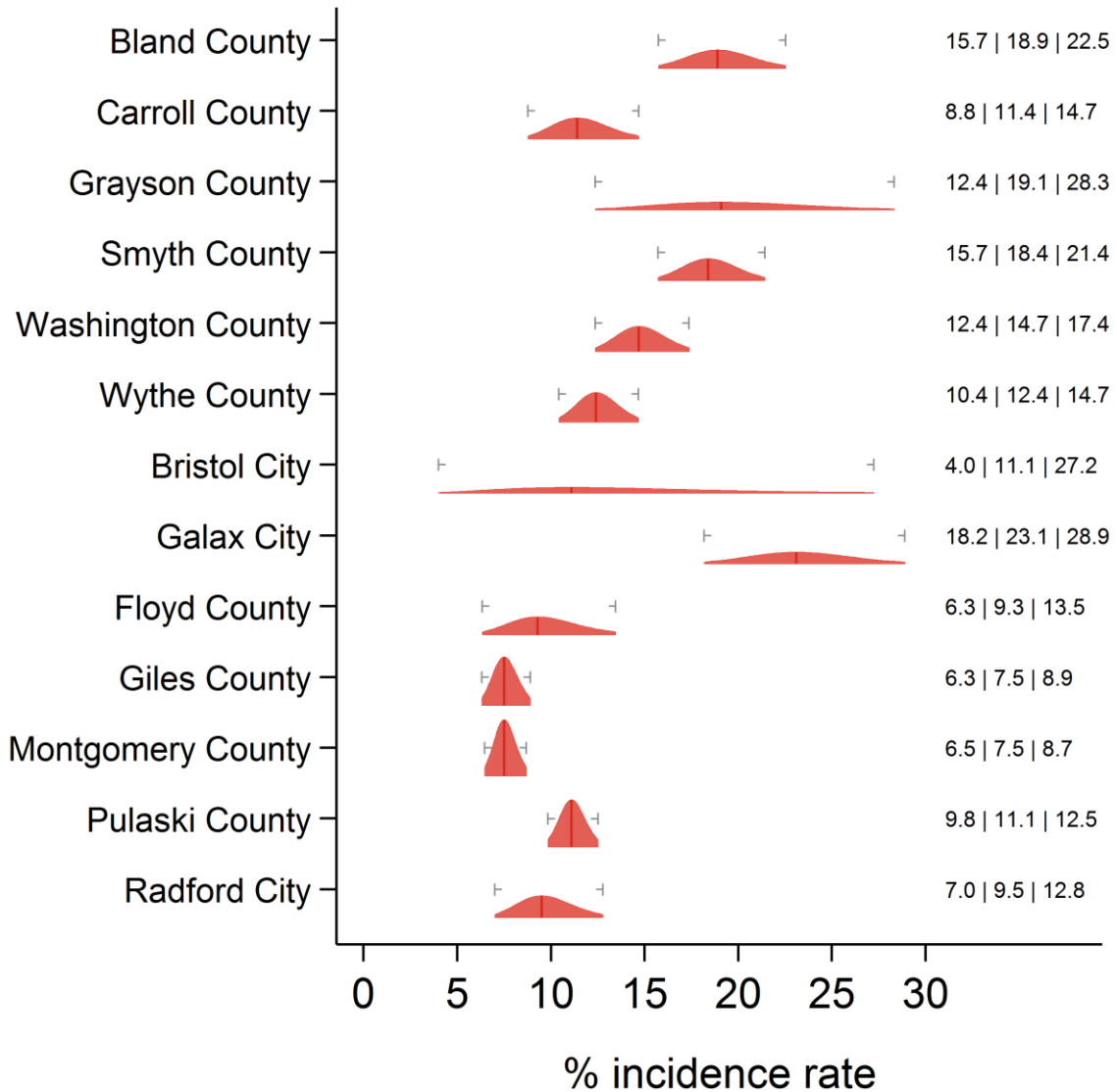
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Ever had COPD Pittsylvania/Danville, Southside and West Piedmont HDs



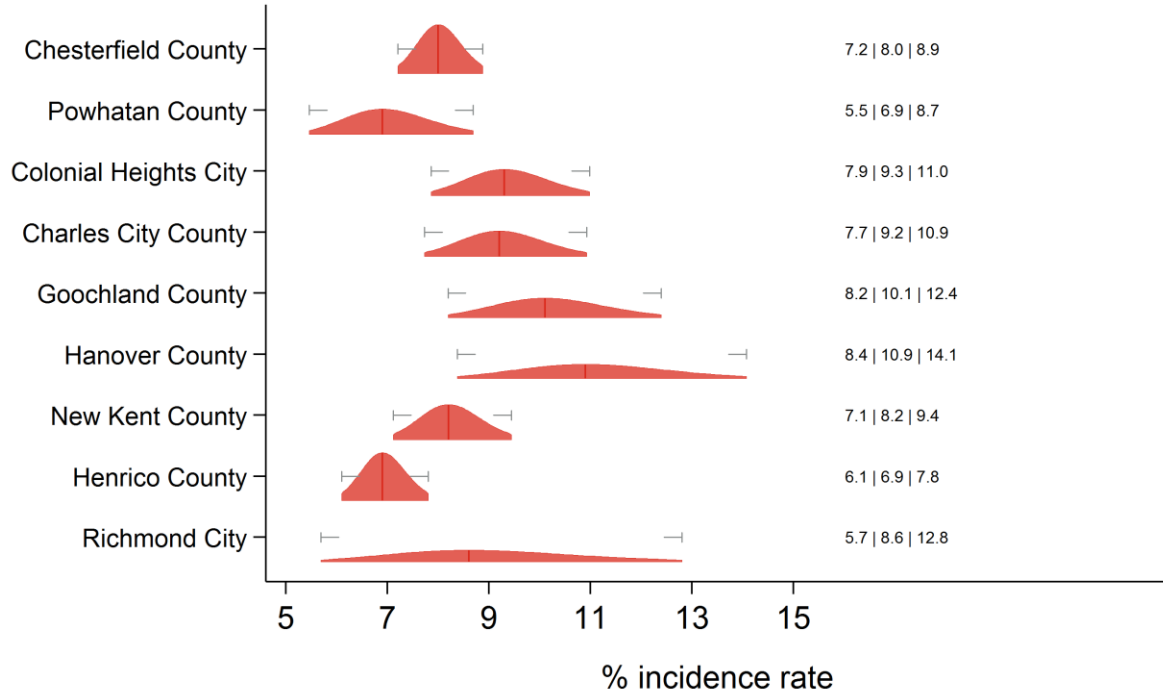
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Ever had COPD New River and Mount Rogers HDs



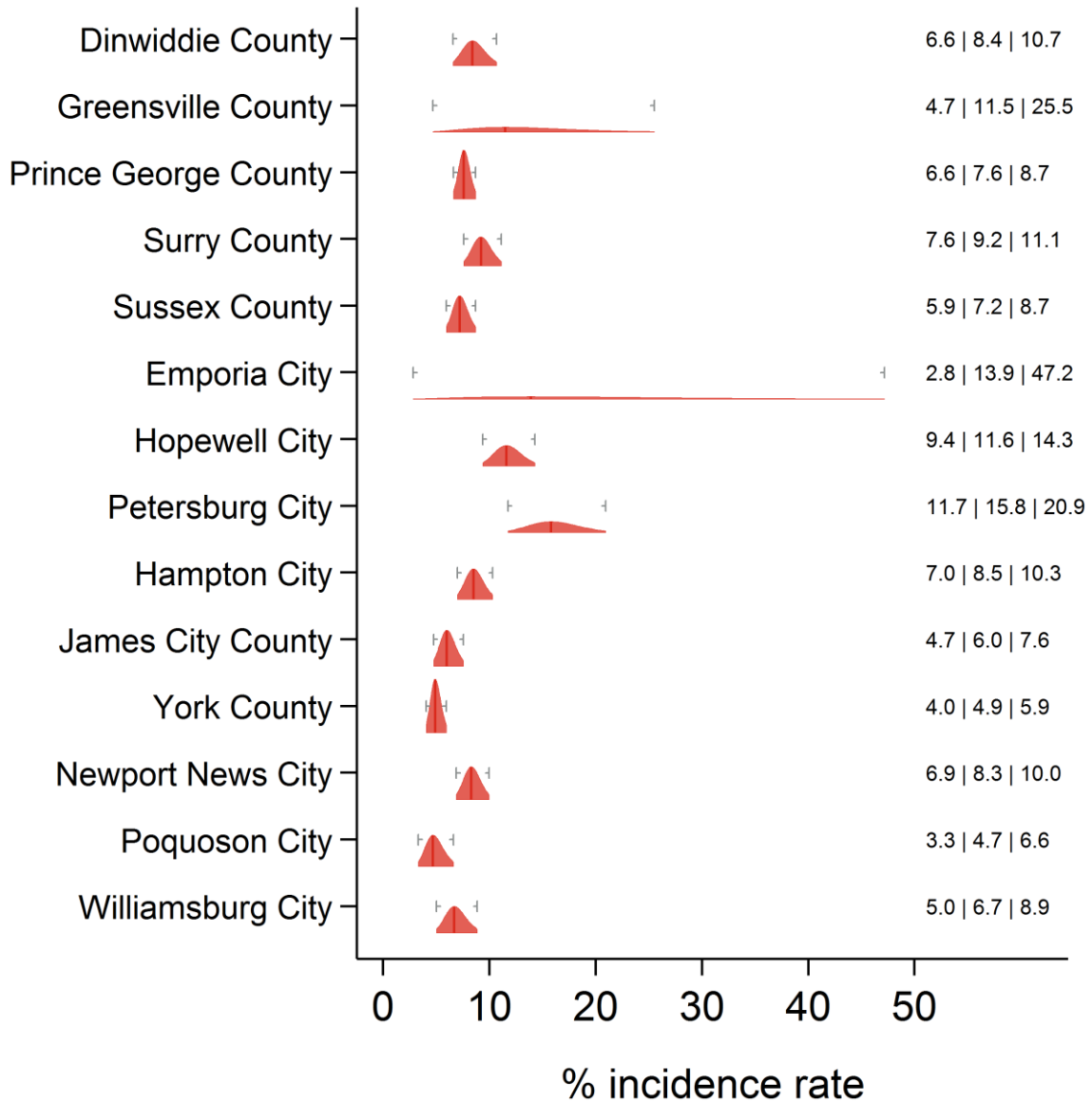
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Ever had COPD Chesterfield, Chickahominy, Henrico and Richmond HDs



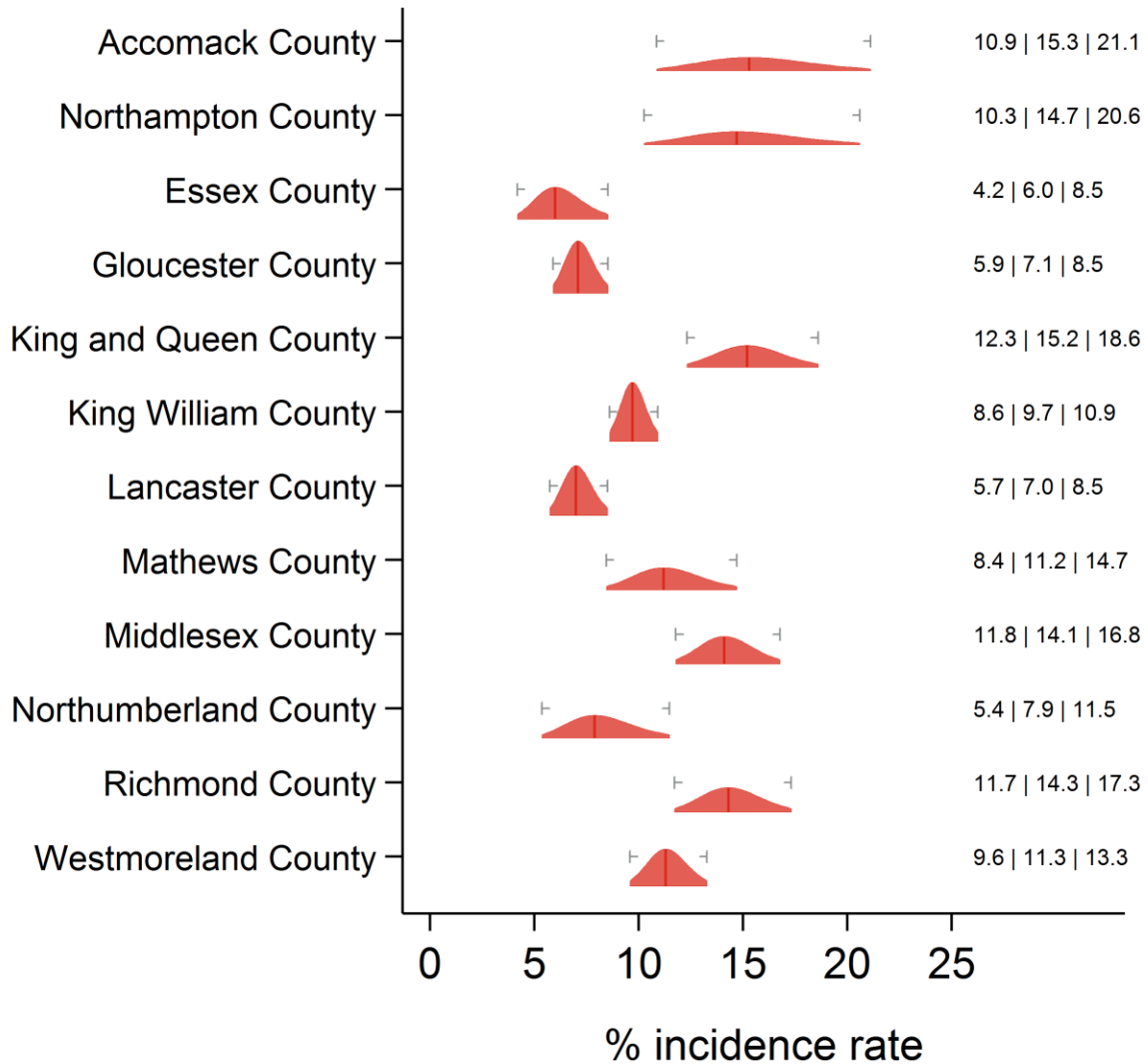
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Ever had COPD Crater, Peninsula and Hampton HDs



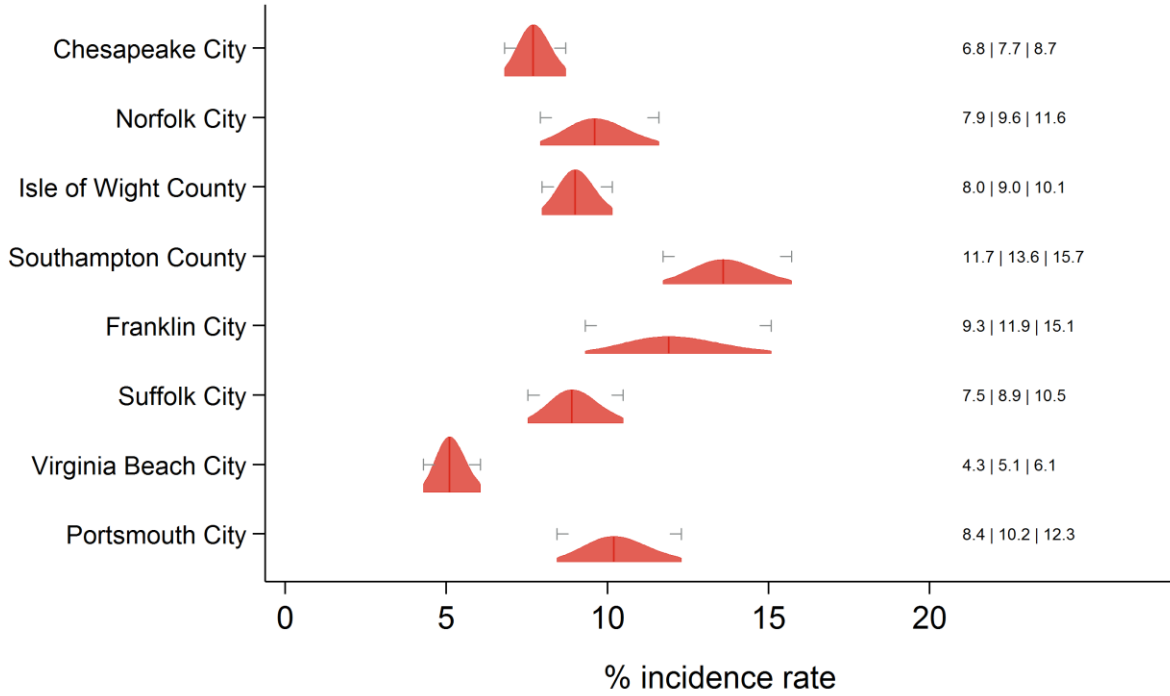
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Ever had COPD 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 had COPD 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: 30 areas.

Direct estimate is outside the 95% SAE Wilson CI: 103 areas.

SAE estimate is inside the 95% direct Wilson CI: 131 areas.

SAE estimate is outside the 95% direct Wilson CI: 2 areas.

SAE Wilson 95% CI is fully inside the 95% direct Wilson CI: 124 areas.

SAE Wilson 95% CI partially overlaps with the 95% direct Wilson CI: 9 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: 117 areas.

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

Direct standard error is zero: 13 areas.

Proportion of SAE variance due to ACS sampling error: min = 0.05%; med = 2.33%; max = 8.75%.

Proportion of SAE variance due to sampling error in regression coefficient estimates: min = 45.91%; med = 92.63%; max = 99.39%.

Proportion of SAE variance due to model selection: min = 0.34%; med = 4.30%; max = 53.98%.

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