

Outcome 1: Binge Drinking

Internal variable name: outc1_binge_drink

Definition: Considering all types of alcoholic beverages, how many times during the past 30 days did you have 5 or more drinks for men or 4 or more drinks for women on an occasion?

Predictive models

	Mixed, demos only	Logit, no area effects	Mixed with area covariates
	b/se	b/se	b/se
Outcome 1: Binge Drinking			
NH Black vs. NH White	-0.5010** (0.1743)	-0.6234*** (0.1352)	-0.6234*** (0.1732)
NH Asian vs. NH White	-1.2276*** (0.2342)	-1.2699*** (0.2715)	-1.2699*** (0.2431)
NH Other vs. NH White	-0.5787** (0.2020)	-0.6045** (0.2145)	-0.6045** (0.2088)
Hispanic vs. NH White	-1.0890*** (0.2538)	-1.1076*** (0.2205)	-1.1076*** (0.2558)
Female	-0.6127*** (0.1014)	-0.5982*** (0.0918)	-0.5982*** (0.0986)
Age 18-34 vs. 65+	2.3228*** (0.1057)	2.2908*** (0.1414)	2.2908*** (0.1059)
Age 35-44 vs. 65+	2.0879*** (0.1592)	2.0521*** (0.1550)	2.0521*** (0.1562)
Age 45-54 vs. 65+	1.5199*** (0.1569)	1.5280*** (0.1518)	1.5280*** (0.1571)
Age 55-64 vs. 65+	1.0102*** (0.1064)	1.0177*** (0.1535)	1.0177*** (0.1068)
% Hispanic among adults 65+		-0.0654* (0.0255)	-0.0654** (0.0209)
VA BRFSS 2014 SAE outc25_tdap_vacc		4.8515** (1.5500)	4.8515*** (1.1884)
% black HH head receiving SNAP		0.0129*** (0.0025)	0.0129*** (0.0021)
Road density per county land area		0.1969 (0.1643)	0.1969* (0.0949)
VA BRFSS 2014 SAE outc19_binge_drink		4.8217*** (1.2566)	4.8217*** (1.0425)
Stomach Female Rate		-0.0147 (0.0154)	-0.0147 (0.0124)
Myeloma Female Rate		0.0408 (0.0245)	0.0408* (0.0179)

Crude mortality rate of Alzheimer's disease per 10K		-0.0462 (0.0493)	-0.0462 (0.0394)
c.MyelomaFemaleRate#c.rate_cod_alzheimersdisease		-0.0073 (0.0069)	-0.0073 (0.0046)
Intercept	-2.8563*** (0.1007)	-7.2538*** (1.8485)	-7.2538*** (1.0602)
Area effect variance	0.0891 (0.0468)		0.0000 (0.0000)

Number of alternative models used to estimate model error = 5.

Results

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Augusta County	51015	8.8%	(3.1%, 22.6%)	11.2%	(9.4%, 13.3%)
Bath County	51017	15.7%	(2.2%, 61.0%)	14.4%	(8.4%, 23.6%)
Caroline County	51033	17.9%	(4.0%, 53.6%)	12.3%	(10.4%, 14.5%)
Clarke County	51043	22.9%	(5.7%, 59.2%)	10.0%	(7.9%, 12.5%)
Culpeper County	51047	18.3%	(8.4%, 35.3%)	11.8%	(10.4%, 13.4%)
Fauquier County	51061	21.1%	(9.8%, 39.6%)	11.3%	(9.5%, 13.3%)
Frederick County	51069	17.3%	(8.7%, 31.6%)	12.5%	(10.5%, 14.7%)
Highland County	51091	0.0%	(0.0%, 53.2%)	8.9%	(3.9%, 19.0%)
King George County	51099	25.8%	(8.5%, 56.5%)	16.7%	(13.7%, 20.2%)
Madison County	51113	6.9%	(1.1%, 33.2%)	7.5%	(5.9%, 9.5%)
Orange County	51137	11.2%	(3.4%, 30.9%)	11.9%	(10.1%, 13.9%)
Page County	51139	5.8%	(0.9%, 28.7%)	6.4%	(5.0%, 8.2%)
Rappahannock County	51157	18.6%	(4.6%, 51.9%)	7.1%	(5.4%, 9.3%)
Rockbridge County	51163	20.9%	(8.6%, 42.7%)	10.7%	(8.8%, 12.9%)
Rockingham County	51165	11.3%	(5.3%, 22.3%)	11.9%	(10.1%, 14.1%)
Shenandoah County	51171	19.7%	(8.0%, 40.8%)	10.8%	(8.8%, 13.2%)
Spotsylvania County	51177	26.1%	(16.1%, 39.4%)	14.6%	(13.1%, 16.2%)
Stafford County	51179	11.1%	(6.1%, 19.3%)	11.6%	(10.0%, 13.3%)
Warren County	51187	12.8%	(4.4%, 31.8%)	9.4%	(8.2%, 10.8%)
Buena Vista City	51530	2.0%	(1.0%, 46.3%)	3.2%	(2.2%, 4.8%)
Fredericksburg City	51630	3.5%	(1.8%, 25.5%)	16.0%	(13.3%, 19.0%)
Harrisonburg City	51660	25.0%	(6.4%, 62.1%)	10.2%	(7.7%, 13.4%)
Lexington City	51678	0.0%	(0.0%, 96.3%)	4.4%	(3.2%, 6.1%)
Staunton City	51790	0.0%	(0.0%, 43.5%)	3.7%	(1.9%, 7.0%)
Waynesboro City	51820	0.0%	(0.0%, 42.1%)	5.0%	(3.9%, 6.4%)
Winchester City	51840	4.7%	(1.4%, 62.7%)	6.1%	(4.7%, 7.9%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Albemarle County	51003	21.6%	(12.9%, 33.7%)	16.9%	(14.1%, 20.2%)
Alleghany County	51005	5.3%	(2.8%, 33.8%)	7.3%	(5.8%, 9.0%)
Amherst County	51009	19.9%	(5.2%, 52.8%)	8.1%	(6.4%, 10.3%)
Appomattox County	51011	13.5%	(4.3%, 35.3%)	8.6%	(7.1%, 10.5%)
Arlington City	51013	23.2%	(15.3%, 33.5%)	18.7%	(15.6%, 22.1%)
Bedford County	51019	17.1%	(9.4%, 29.1%)	11.3%	(9.8%, 13.0%)
Botetourt County	51023	16.5%	(5.6%, 39.8%)	10.0%	(6.7%, 14.8%)
Campbell County	51031	15.7%	(7.7%, 29.3%)	15.0%	(13.0%, 17.2%)
Craig County	51045	0.0%	(0.0%, 68.2%)	7.7%	(4.2%, 13.9%)
Fairfax County	51059	14.7%	(12.2%, 17.6%)	10.1%	(9.4%, 10.9%)
Fluvanna County	51065	7.9%	(2.3%, 24.1%)	11.6%	(10.0%, 13.3%)
Greene County	51079	2.4%	(1.2%, 38.0%)	10.1%	(8.3%, 12.3%)
Loudoun County	51107	13.1%	(8.8%, 19.1%)	11.3%	(10.1%, 12.7%)
Louisa County	51109	22.3%	(10.1%, 42.3%)	12.8%	(11.1%, 14.8%)
Nelson County	51125	30.5%	(9.3%, 65.4%)	13.2%	(9.8%, 17.7%)
Prince William County	51153	14.1%	(9.9%, 19.7%)	10.2%	(8.7%, 12.0%)
Roanoke County	51161	19.5%	(10.2%, 34.1%)	11.6%	(9.9%, 13.5%)
Alexandria City	51510	13.2%	(8.0%, 20.9%)	16.5%	(13.8%, 19.7%)
Charlottesville City	51540	13.9%	(4.2%, 37.4%)	18.1%	(15.6%, 20.9%)
Covington City	51580	0.0%	(0.0%, 87.4%)	6.1%	(4.2%, 8.6%)
Fairfax City	51600	13.5%	(6.9%, 24.7%)	10.9%	(9.1%, 13.1%)
Falls Church City	51610	23.3%	(6.3%, 57.7%)	15.5%	(12.3%, 19.3%)
Lynchburg City	51680	15.0%	(6.9%, 29.6%)	13.5%	(11.5%, 15.7%)
Manassas City	51683	3.5%	(1.5%, 36.4%)	11.3%	(8.2%, 15.2%)
Manassas Park City	51685	0.0%	(0.0%, 76.5%)	5.3%	(2.7%, 10.2%)
Salem City	51775	32.4%	(8.8%, 70.3%)	9.7%	(8.5%, 11.2%)

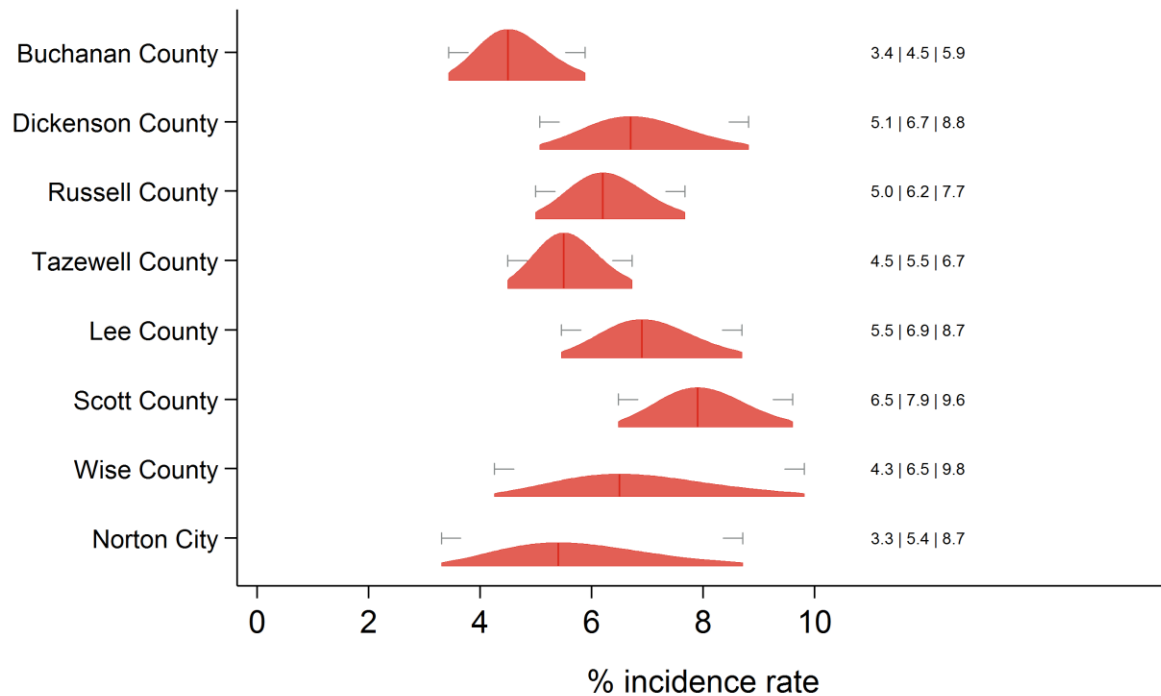
County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Bland County	51021	0.0%	(-0.0%, 27.9%)	5.5%	(4.0%, 7.6%)
Buchanan County	51027	0.9%	(0.6%, 17.3%)	4.5%	(3.4%, 5.8%)
Carroll County	51035	16.4%	(5.9%, 38.0%)	7.1%	(5.1%, 9.8%)
Dickenson County	51051	8.7%	(3.9%, 30.6%)	6.7%	(5.0%, 8.8%)
Floyd County	51063	26.8%	(11.5%, 50.7%)	13.1%	(9.6%, 17.5%)
Franklin County	51067	29.9%	(14.9%, 51.1%)	12.4%	(10.4%, 14.8%)
Giles County	51071	6.9%	(2.8%, 22.0%)	9.9%	(7.9%, 12.4%)
Grayson County	51077	7.6%	(1.5%, 31.2%)	6.3%	(4.1%, 9.7%)
Henry County	51089	6.5%	(1.9%, 19.6%)	6.9%	(5.6%, 8.5%)
Lee County	51105	1.3%	(0.8%, 28.8%)	6.9%	(5.4%, 8.7%)
Montgomery County	51121	16.3%	(8.4%, 29.2%)	19.7%	(14.4%, 26.3%)
Patrick County	51141	12.5%	(3.1%, 38.5%)	5.6%	(4.5%, 6.9%)
Pittsylvania County	51143	10.7%	(5.1%, 21.1%)	8.2%	(7.0%, 9.6%)
Pulaski County	51155	4.9%	(0.8%, 24.6%)	16.2%	(13.5%, 19.3%)
Russell County	51167	6.5%	(1.1%, 31.0%)	6.2%	(5.0%, 7.7%)
Scott County	51169	4.4%	(2.4%, 21.9%)	7.9%	(6.5%, 9.6%)
Smyth County	51173	11.6%	(3.5%, 32.1%)	5.5%	(4.4%, 6.8%)
Tazewell County	51185	6.0%	(1.9%, 17.0%)	5.5%	(4.5%, 6.7%)
Washington County	51191	3.6%	(1.1%, 11.3%)	7.2%	(6.0%, 8.6%)
Wise County	51195	11.7%	(4.6%, 26.7%)	6.5%	(4.3%, 9.8%)
Wythe County	51197	12.4%	(4.1%, 31.9%)	8.7%	(6.7%, 11.4%)
Bristol City	51520	0.0%	(0.0%, 78.6%)	3.3%	(1.8%, 6.1%)
Danville City	51590	8.9%	(2.4%, 28.2%)	8.0%	(6.0%, 10.5%)
Galax City	51640	0.0%	(0.0%, 76.1%)	3.4%	(1.8%, 6.2%)
Martinsville City	51690	28.8%	(3.6%, 81.3%)	6.4%	(4.4%, 9.1%)
Norton City	51720	0.0%	(0.0%, 63.0%)	5.4%	(3.3%, 8.7%)
Radford City	51750	6.5%	(2.0%, 47.5%)	20.1%	(12.2%, 31.4%)
Roanoke City	51770	14.3%	(7.5%, 25.6%)	12.9%	(11.4%, 14.6%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Amelia County	51007	27.4%	(4.7%, 74.2%)	15.2%	(11.6%, 19.7%)
Brunswick County	51025	26.8%	(8.8%, 58.2%)	17.2%	(12.7%, 22.7%)
Buckingham County	51029	15.2%	(5.2%, 36.8%)	9.1%	(7.0%, 11.8%)
Charles City County	51036	0.0%	(0.0%, 58.8%)	17.9%	(10.4%, 29.0%)
Charlotte County	51037	11.1%	(3.6%, 29.3%)	7.3%	(4.5%, 11.8%)
Chesterfield County	51041	17.2%	(11.6%, 24.7%)	13.0%	(11.8%, 14.3%)
Cumberland County	51049	8.5%	(1.3%, 39.0%)	10.8%	(9.1%, 12.8%)
Dinwiddie County	51053	35.6%	(13.9%, 65.4%)	11.5%	(9.8%, 13.6%)
Goochland County	51075	24.3%	(8.3%, 53.2%)	9.6%	(7.7%, 11.8%)
Greensville County	51081	6.3%	(2.0%, 45.3%)	13.6%	(10.4%, 17.6%)
Halifax County	51083	3.2%	(1.8%, 14.7%)	9.7%	(7.9%, 11.9%)
Hanover County	51085	18.2%	(10.2%, 30.5%)	13.3%	(11.6%, 15.1%)
Henrico County	51087	15.1%	(10.0%, 22.2%)	12.5%	(11.2%, 14.0%)
Lunenburg County	51111	9.5%	(2.3%, 31.6%)	9.2%	(7.4%, 11.4%)
Mecklenburg County	51117	8.0%	(3.2%, 18.7%)	8.0%	(6.2%, 10.4%)
New Kent County	51127	18.0%	(5.6%, 44.7%)	10.0%	(8.6%, 11.7%)
Nottoway County	51135	8.1%	(1.6%, 32.1%)	9.5%	(7.8%, 11.6%)
Powhatan County	51145	11.6%	(3.1%, 34.5%)	5.8%	(4.6%, 7.4%)
Prince Edward County	51147	7.0%	(3.9%, 21.8%)	11.7%	(9.7%, 14.2%)
Prince George County	51149	18.8%	(6.1%, 45.1%)	15.6%	(12.5%, 19.2%)
Surry County	51181	18.3%	(5.1%, 48.4%)	13.0%	(10.5%, 15.9%)
Sussex County	51183	9.8%	(3.4%, 25.5%)	13.2%	(10.3%, 16.7%)
Colonial Heights City	51570	8.7%	(2.6%, 25.5%)	8.5%	(7.0%, 10.4%)
Emporia City	51595	100.0%	(8.2%, 100.0%)	29.7%	(15.7%, 48.8%)
Hopewell City	51670	5.6%	(2.9%, 27.0%)	10.8%	(8.9%, 13.1%)
Petersburg City	51730	26.6%	(13.9%, 45.0%)	20.5%	(18.0%, 23.2%)
Richmond City	51760	33.1%	(22.0%, 46.4%)	27.9%	(25.1%, 30.9%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE CI
Accomack County	51001	21.3%	(9.2%, 42.1%)	9.6%	(7.7%, 11.9%)
Essex County	51057	2.9%	(1.6%, 30.0%)	6.7%	(4.0%, 10.8%)
Gloucester County	51073	7.9%	(3.1%, 18.5%)	7.2%	(6.2%, 8.3%)
Isle of Wight County	51093	32.3%	(14.3%, 57.6%)	13.1%	(10.7%, 15.9%)
James City County	51095	8.4%	(4.0%, 16.7%)	11.0%	(9.5%, 12.7%)
King and Queen County	51097	7.1%	(1.9%, 43.4%)	9.5%	(7.0%, 12.8%)
King William County	51101	0.0%	(0.0%, 29.7%)	15.5%	(13.3%, 18.1%)
Lancaster County	51103	10.7%	(1.7%, 45.5%)	7.3%	(4.8%, 11.0%)
Mathews County	51115	14.3%	(2.7%, 49.7%)	8.3%	(5.4%, 12.5%)
Middlesex County	51119	27.7%	(9.9%, 57.2%)	14.8%	(11.5%, 18.8%)
Northampton County	51131	10.6%	(2.6%, 34.3%)	7.4%	(4.8%, 11.1%)
Northumberland County	51133	14.3%	(4.4%, 37.5%)	8.7%	(6.6%, 11.2%)
Richmond County	51159	14.2%	(4.2%, 38.5%)	7.4%	(6.0%, 9.0%)
Southampton County	51175	16.7%	(2.4%, 62.1%)	12.6%	(9.9%, 15.9%)
Westmoreland County	51193	5.2%	(2.8%, 39.7%)	10.8%	(9.1%, 12.9%)
York County	51199	25.9%	(13.8%, 43.3%)	16.4%	(13.9%, 19.2%)
Chesapeake City	51550	22.6%	(14.2%, 34.0%)	14.4%	(12.4%, 16.5%)
Franklin City	51620	18.0%	(5.2%, 46.7%)	14.2%	(8.7%, 22.3%)
Hampton City	51650	20.8%	(13.4%, 30.8%)	15.7%	(13.8%, 17.9%)
Newport News City	51700	25.2%	(16.6%, 36.2%)	18.9%	(17.1%, 20.9%)
Norfolk City	51710	23.4%	(16.6%, 31.9%)	21.6%	(19.5%, 24.0%)
Poquoson City	51735	0.0%	(0.0%, 63.9%)	5.6%	(3.8%, 8.3%)
Portsmouth City	51740	11.9%	(6.0%, 22.3%)	16.2%	(13.5%, 19.2%)
Suffolk City	51800	15.1%	(7.1%, 29.4%)	16.4%	(13.9%, 19.1%)
Virginia Beach City	51810	19.5%	(14.0%, 26.4%)	16.9%	(15.5%, 18.3%)
Williamsburg City	51830	3.8%	(1.1%, 66.1%)	10.7%	(7.8%, 14.5%)

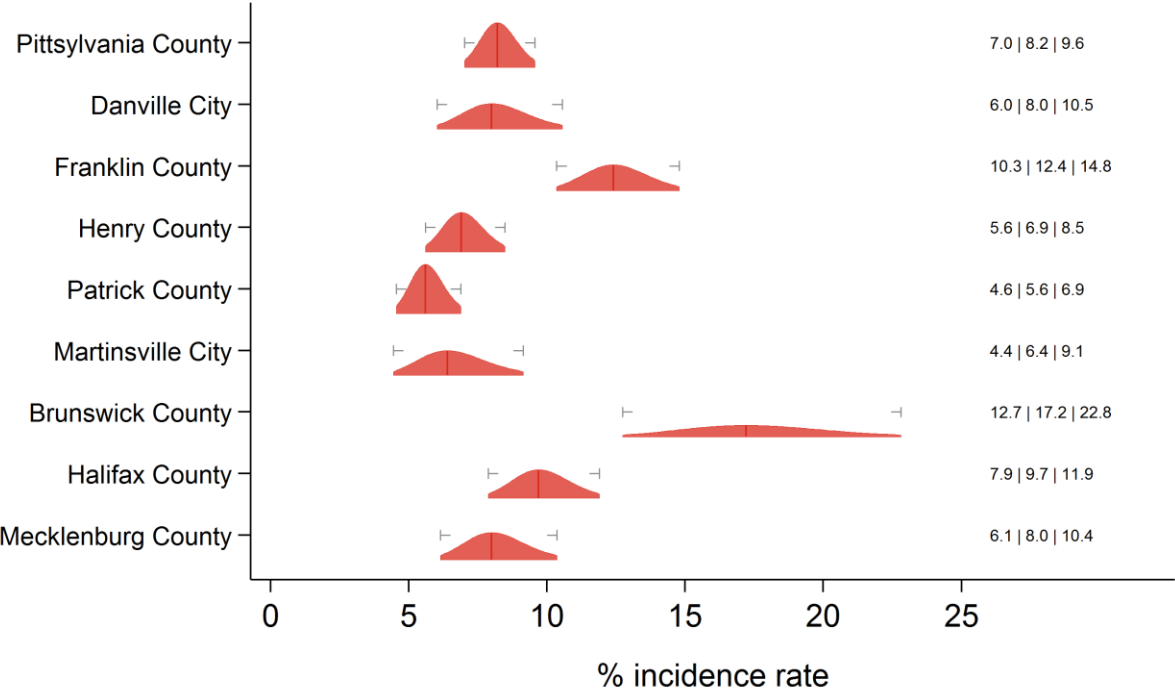
Graphical representation

Binge Drinking Cumberland Plateau and Lenowisco HDs



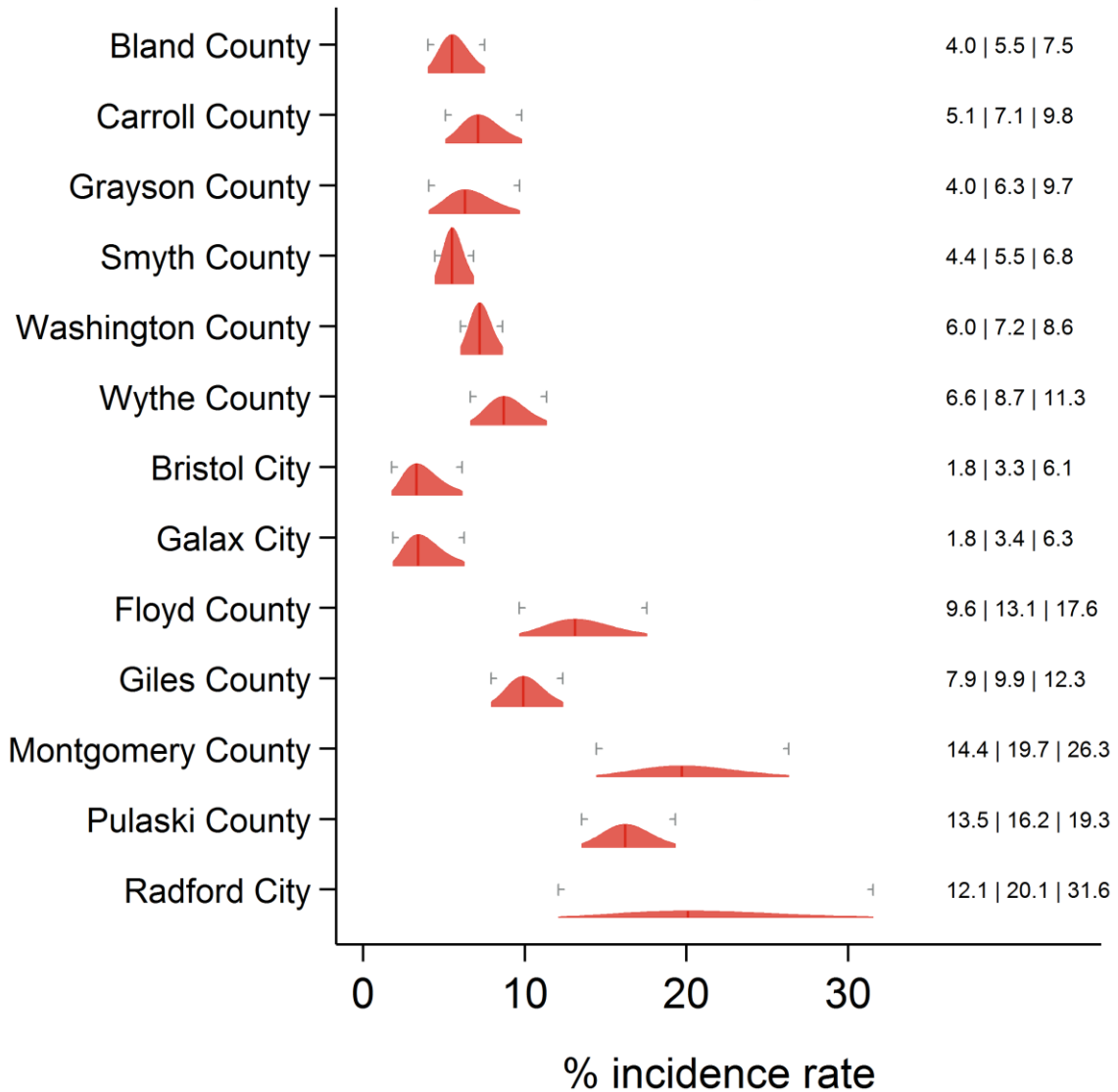
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Binge Drinking 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

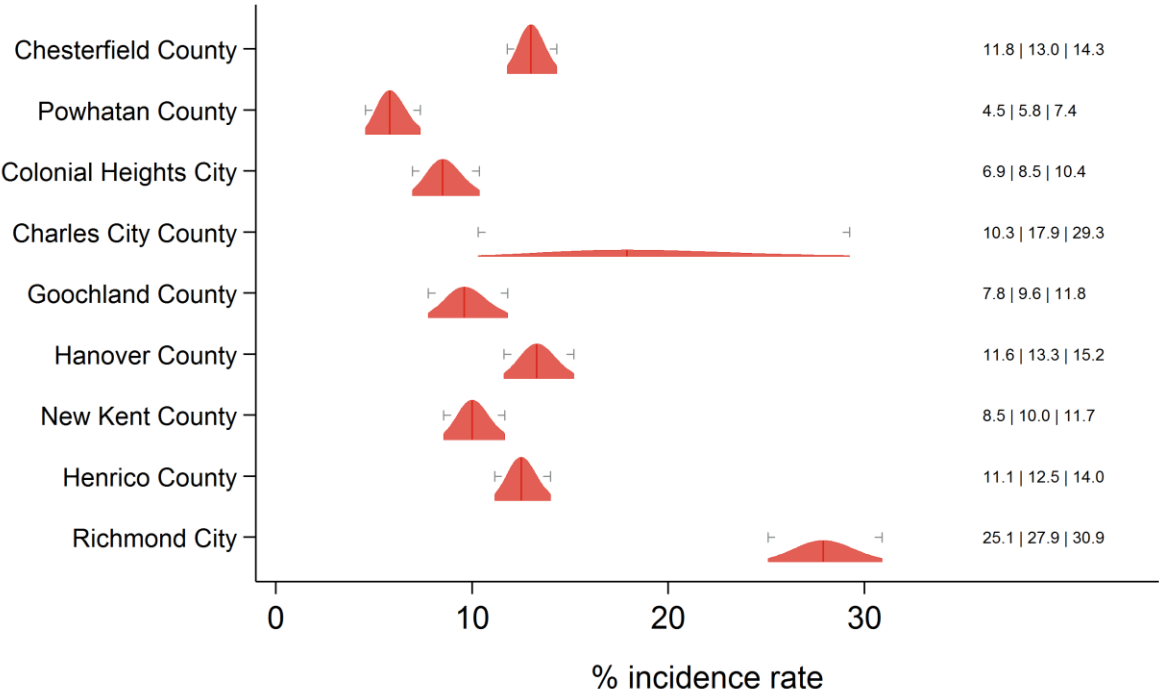
Binge Drinking New River and Mount Rogers HDs



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

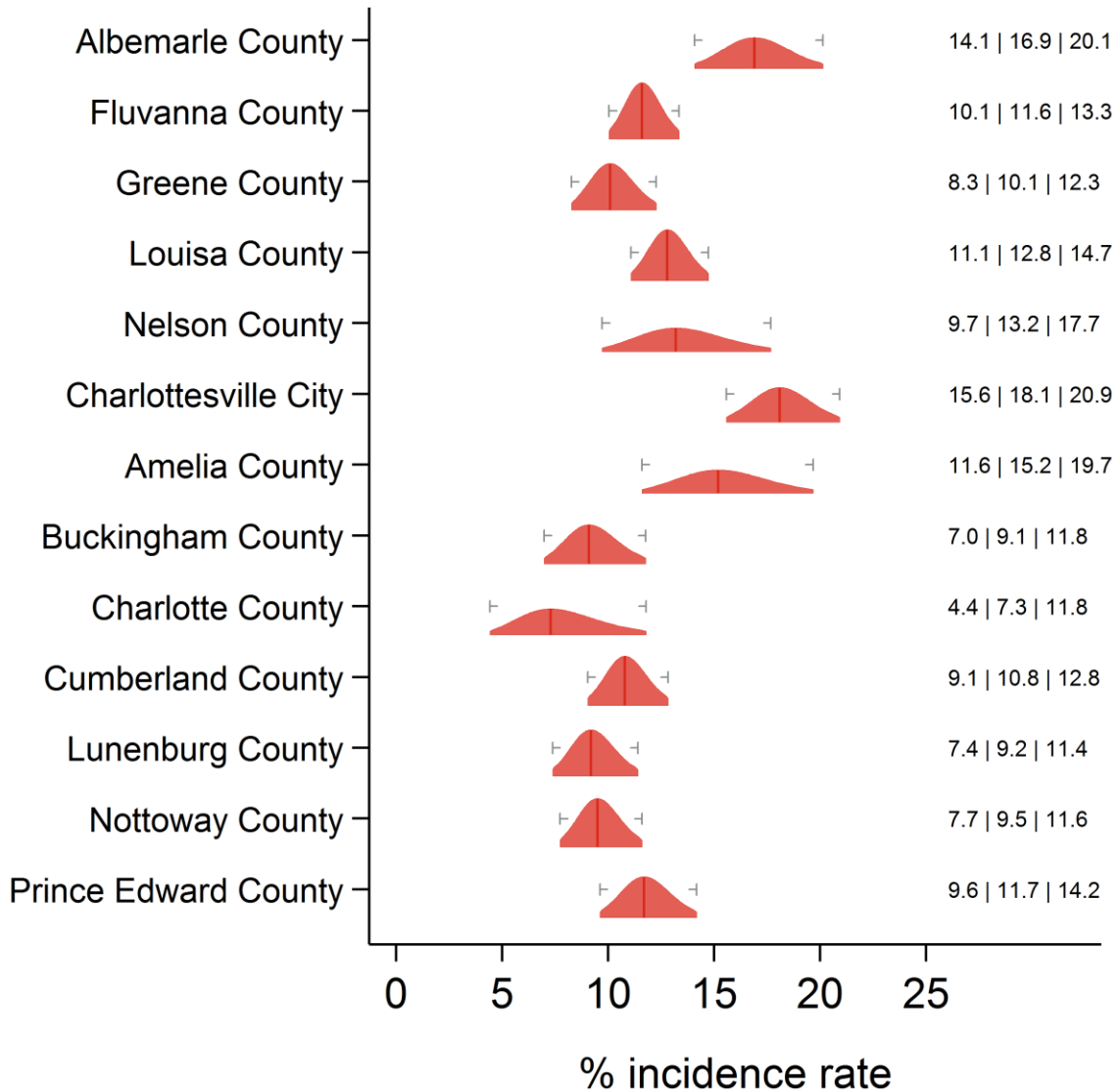
Binge Drinking

Chesterfield, Chickahominy, Henrico and Richmond HDs



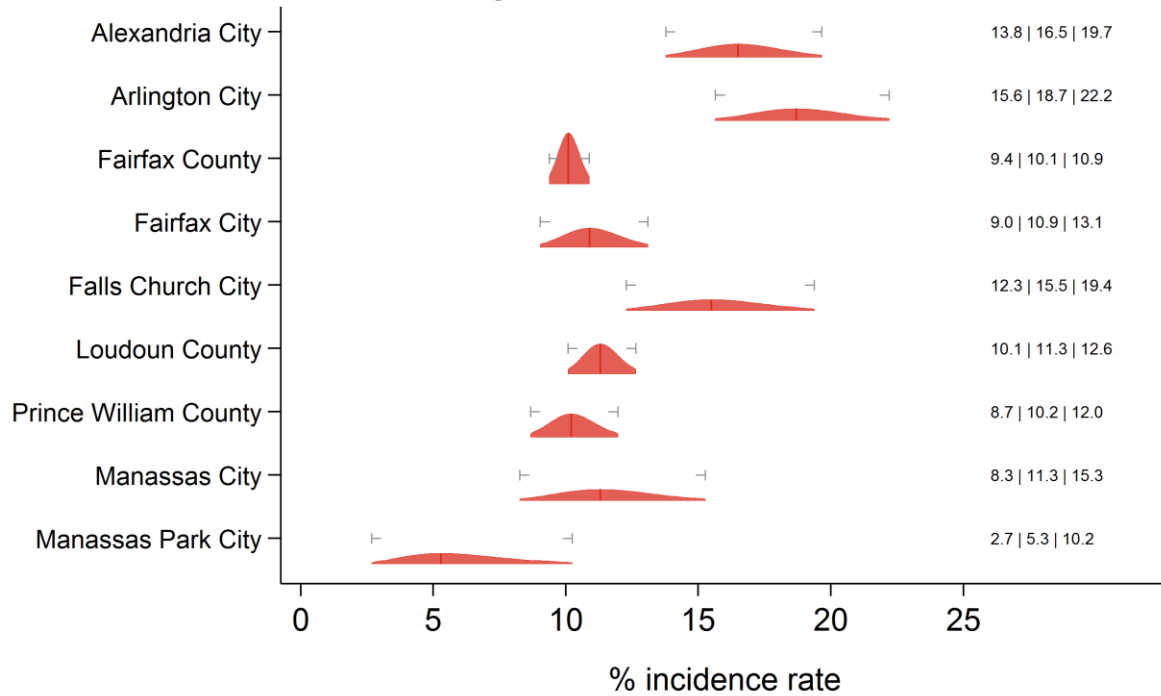
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Binge Drinking Thomas Jefferson and Piedmont HDs



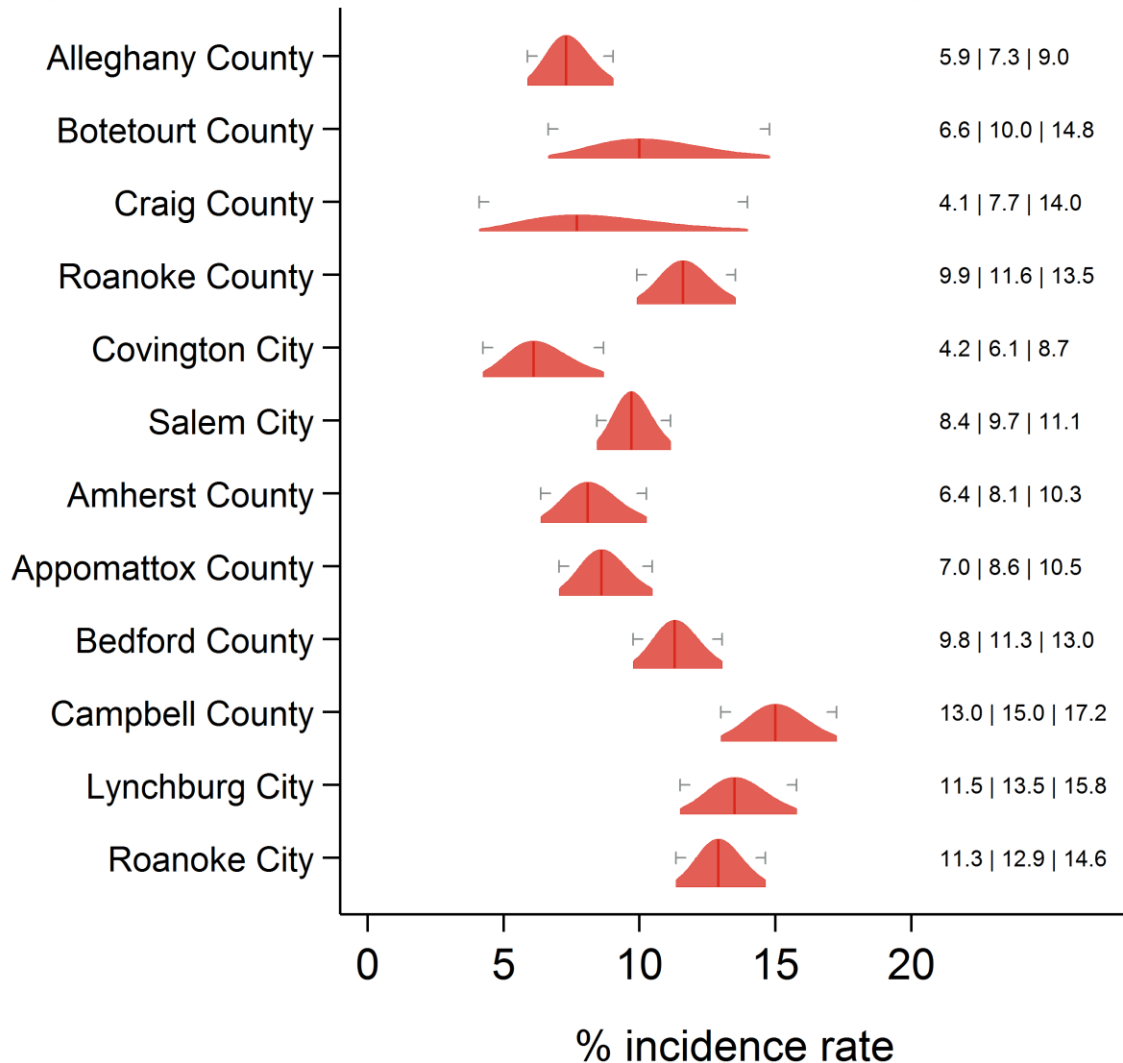
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Binge Drinking Alexandria, Fairfax, Arlington, Loudon, Prince William HDs



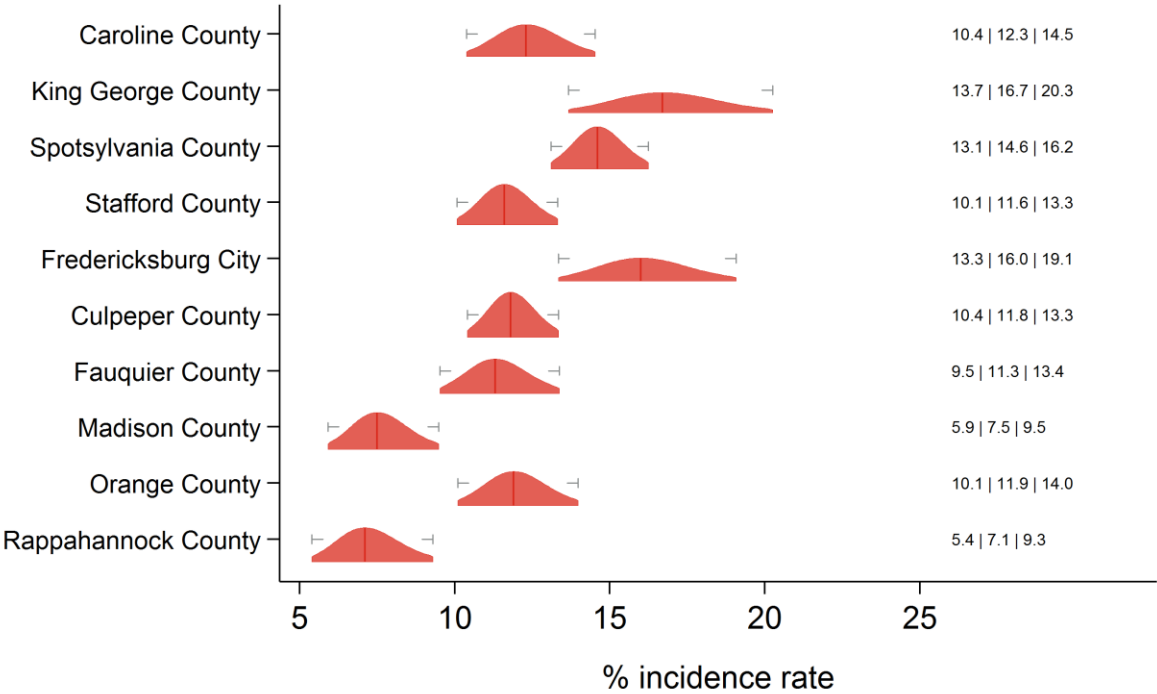
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Binge Drinking Alleghany, Roanoke and Central Virginia HDs



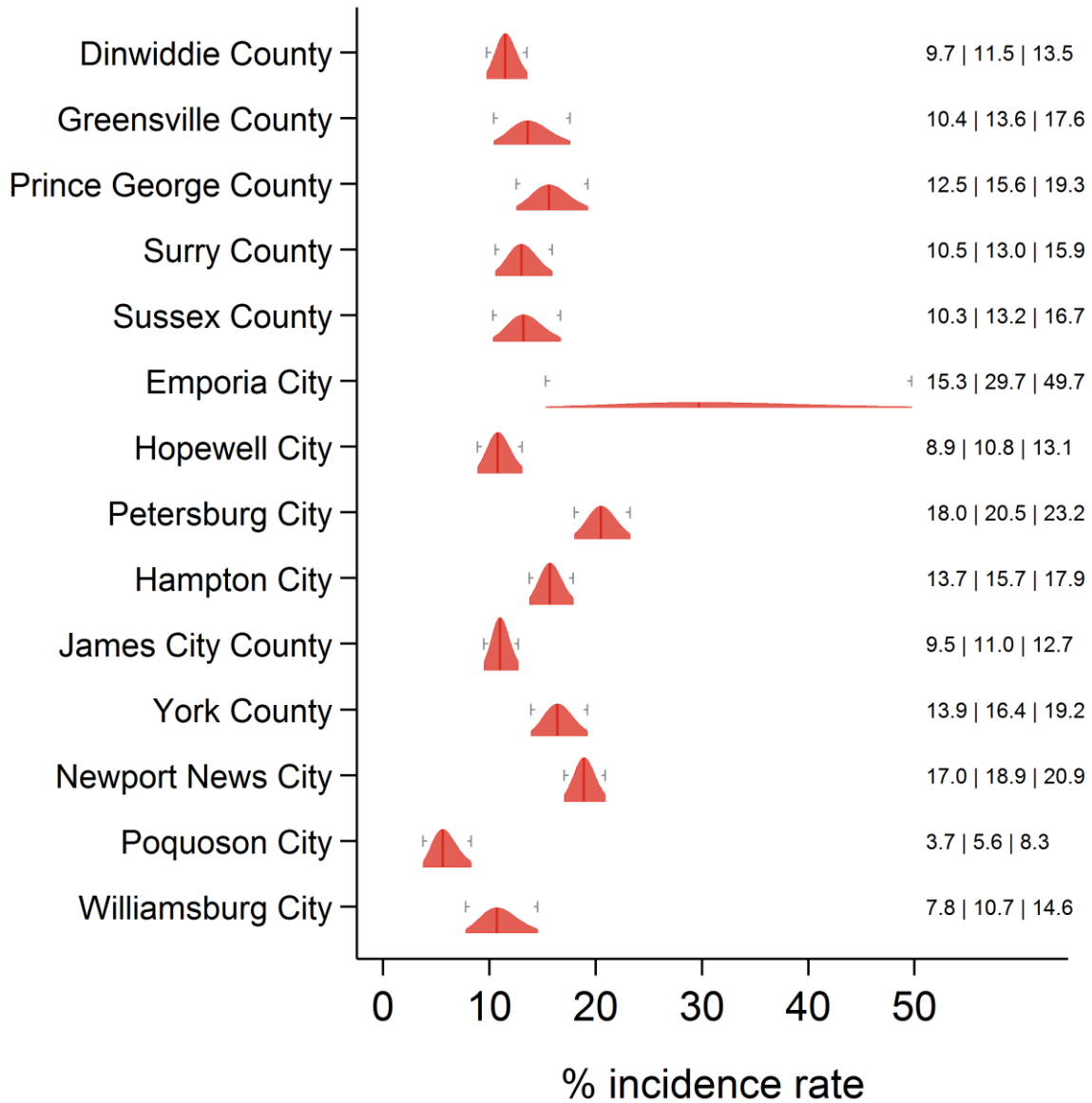
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Binge Drinking Rappahannock/Rapidan and Rappahannock HDs



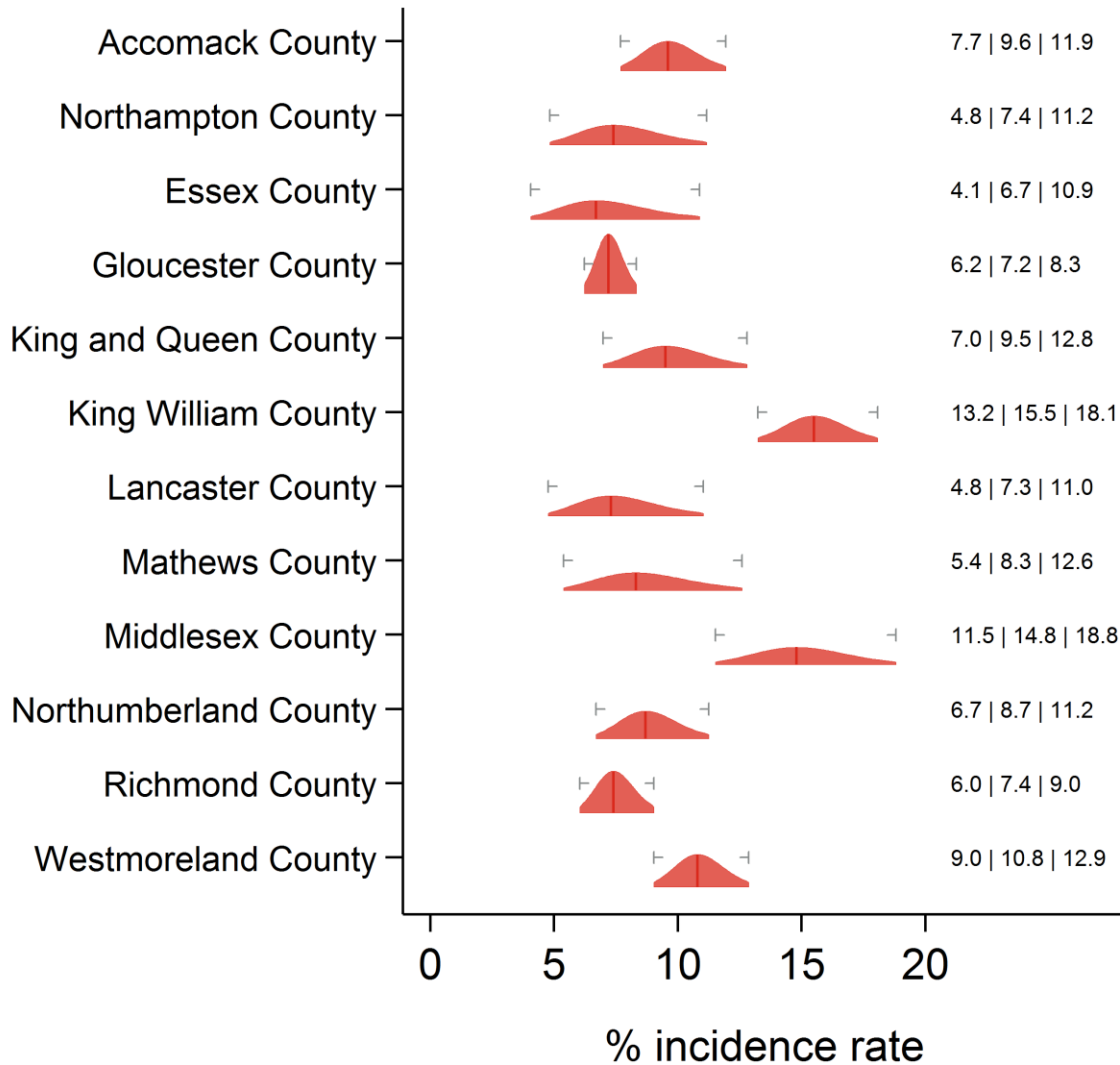
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Binge Drinking Crater, Peninsula and Hampton HDs



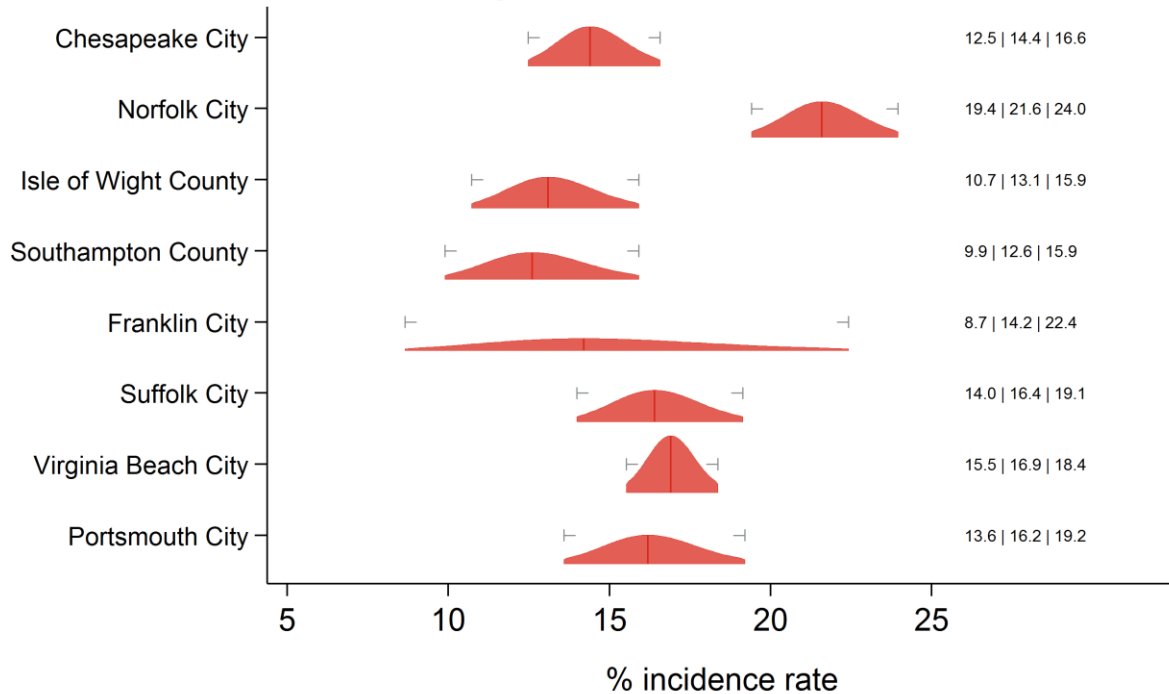
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Binge Drinking Eastern Shore and Three Rivers HDs



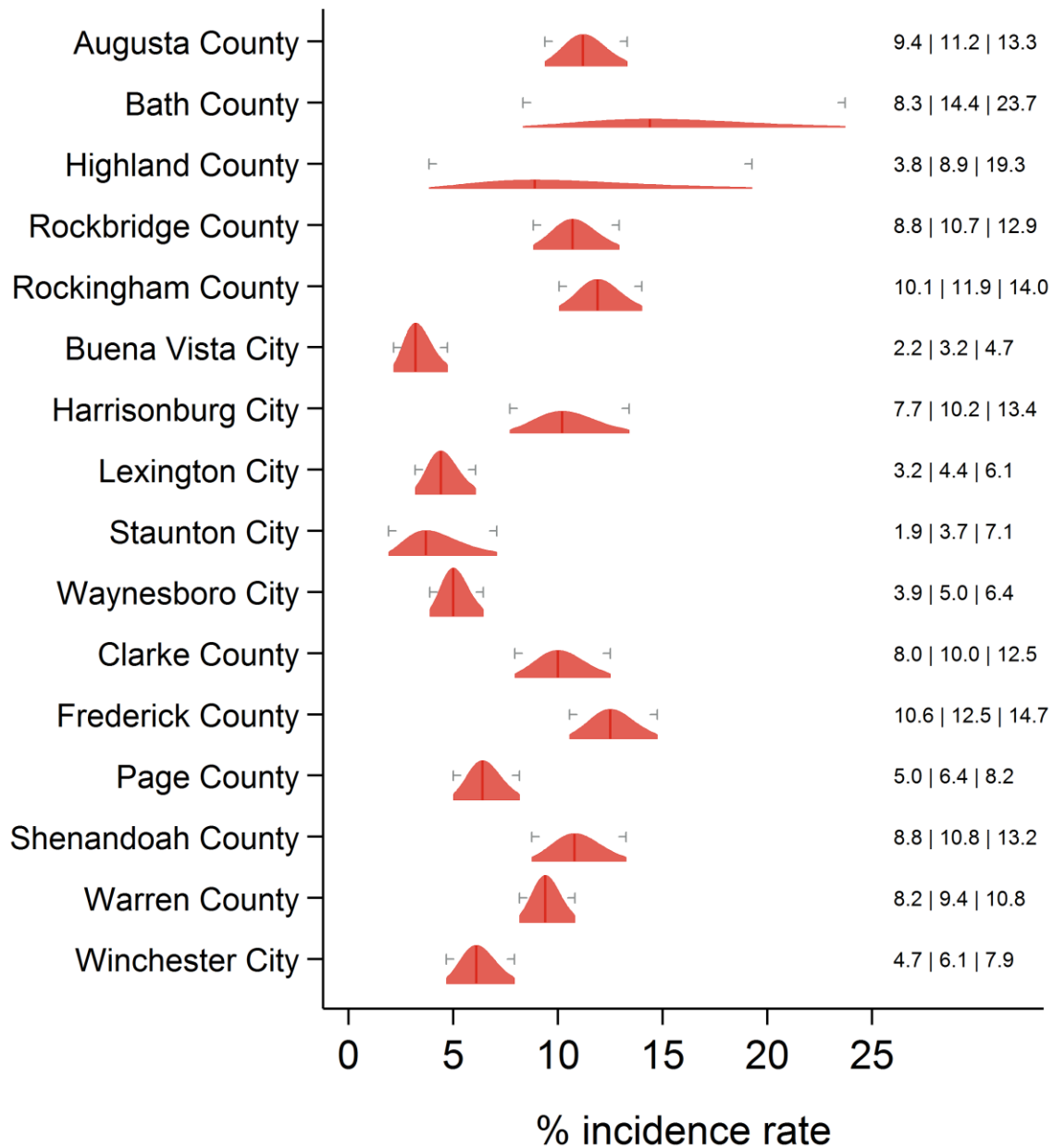
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
Gray markers: 95% confidence interval

Binge Drinking 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

Binge Drinking Central Shenandoah and Lord Fairfax 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: 128 areas.

SAE estimate is outside the 95% direct Wilson CI: 5 areas.

SAE Wilson 95% CI is fully inside the 95% direct Wilson CI: 118 areas.

SAE Wilson 95% CI partially overlaps with the 95% direct Wilson CI: 15 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: 118 areas.

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

Direct standard error is zero: 15 areas.

Proportion of SAE variance due to ACS sampling error: min = 0.35%; med = 4.83%; max = 18.30%.

Proportion of SAE variance due to sampling error in regression coefficient estimates: min = 53.72%; med = 90.80%; max = 97.61%.

Proportion of SAE variance due to model selection: min = 0.21%; med = 2.89%; max = 45.79%.

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