



Indicator 22: Influenza Vaccination in the Past Year - All Ages

Internal variable name: outc22_flu_vacc

Section 1: Definition

Definition: During the past 12 months, have you had either a flu shot or a flu vaccine that was sprayed in your nose?

Section 2: Predictive models

	Mixed, demos only	Logit, no area effects	Mixed with area covariates
	b/se	b/se	b/se
Outcome 22: Influenza Vaccination in the Past Year - All Ages			
Non-Hispanic Black vs. Non-Hispanic White	-0.2579** (0.0802)	-0.2190* (0.0857)	-0.2190** (0.0787)
Non-Hispanic Asian vs. Non-Hispanic White	0.2234 (0.1239)	0.1606 (0.1778)	0.1606 (0.1257)
Non-Hispanic Other vs. Non-Hispanic White	-0.3530** (0.1253)	-0.3596* (0.1611)	-0.3596** (0.1240)
Hispanic vs. Non-Hispanic White	-0.2401 (0.1498)	-0.2529 (0.1541)	-0.2529 (0.1499)
Female	0.2750*** (0.0523)	0.2749*** (0.0599)	0.2749*** (0.0533)
Age 18-24 vs. 65+	-1.2769*** (0.1197)	-1.3082*** (0.1363)	-1.3082*** (0.1202)
Age 25-34 vs. 65+	-1.0245*** (0.1009)	-1.0354*** (0.0969)	-1.0354*** (0.0978)
Age 35-44 vs. 65+	-0.9860*** (0.0790)	-0.9991*** (0.0907)	-0.9991*** (0.0796)
Age 45-54 vs. 65+	-0.8400*** (0.0766)	-0.8666*** (0.0814)	-0.8666*** (0.0763)
Age 55-64 vs. 65+	-0.5672*** (0.0682)	-0.5725*** (0.0766)	-0.5725*** (0.0691)
Bladder Cancer Male Rate		0.0073** (0.0023)	0.0073*** (0.0019)
Compound % lacking kitchen or complete plumbing		-0.1032 (0.1061)	-0.1032 (0.0791)
Diabetes Type II hospitalization rate per 1,000		-0.0218 (0.0645)	-0.0218 (0.0557)

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Crude mortality rate of nephritis nephrotic syndrome per 10,000		-0.0456 (0.0448)	-0.0456 (0.0371)
{Compound % lacking kitchen or complete plumbing} interacted with {Crude mortality rate of nephritis nephrotic syndrome per 10,000}		0.0466 (0.0267)	0.0466* (0.0195)
{Compound % lacking kitchen or complete plumbing} interacted with {Diabetes Type II hospitalization rate per 1,000}		-0.0597 (0.0361)	-0.0597* (0.0289)
Intercept	0.4151*** (0.0555)	0.4658** (0.1701)	0.4658*** (0.1316)
Area effect variance	0.0000 (0.0000)		0.0000 (0.0000)

Number of alternative models used to estimate model error = 2.

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Section 3: Results

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE 95% CI
Augusta County	51015	41.8%	(32.9%, 51.4%)	43.3%	(41.2%, 45.4%)
Bath County	51017	61.6%	(25.6%, 88.1%)	50.7%	(31.2%, 70.0%)
Caroline County	51033	56.8%	(34.9%, 76.4%)	51.1%	(46.0%, 56.2%)
Clarke County	51043	38.6%	(18.7%, 63.2%)	44.8%	(42.5%, 47.1%)
Culpeper County	51047	35.7%	(23.2%, 50.5%)	44.7%	(42.7%, 46.7%)
Fauquier County	51061	41.5%	(29.7%, 54.3%)	45.7%	(43.9%, 47.5%)
Frederick County	51069	41.4%	(30.9%, 52.8%)	46.1%	(43.9%, 48.3%)
Highland County	51091	45.1%	(4.3%, 93.7%)	46.1%	(41.2%, 51.0%)
King George County	51099	42.5%	(20.9%, 67.4%)	44.1%	(41.6%, 46.5%)
Madison County	51113	30.8%	(13.8%, 55.2%)	33.0%	(28.6%, 37.7%)
Orange County	51137	58.9%	(41.6%, 74.2%)	43.6%	(41.0%, 46.2%)
Page County	51139	40.8%	(16.8%, 70.1%)	41.7%	(39.2%, 44.2%)
Rappahannock County	51157	65.1%	(36.9%, 85.7%)	46.8%	(41.2%, 52.5%)
Rockbridge County	51163	49.4%	(29.9%, 69.0%)	43.6%	(40.5%, 46.7%)
Rockingham County	51165	51.0%	(39.4%, 62.5%)	41.4%	(39.4%, 43.4%)
Shenandoah County	51171	22.5%	(13.5%, 35.1%)	41.7%	(39.7%, 43.8%)
Spotsylvania County	51177	42.2%	(30.6%, 54.8%)	45.1%	(43.2%, 47.0%)
Stafford County	51179	41.1%	(31.8%, 51.1%)	43.5%	(41.4%, 45.6%)
Warren County	51187	49.2%	(30.3%, 68.3%)	43.4%	(41.1%, 45.6%)
Buena Vista City	51530	0.0%	(-0.0%, 89.6%)	41.9%	(38.3%, 45.6%)
Fredericksburg City	51630	48.3%	(26.6%, 70.7%)	40.8%	(37.5%, 44.1%)
Harrisonburg City	51660	34.5%	(10.5%, 70.3%)	43.6%	(41.3%, 46.0%)
Lexington City	51678	0.0%	(0.0%, 99.4%)	53.9%	(48.3%, 59.5%)
Staunton City	51790	21.9%	(6.8%, 60.7%)	38.1%	(32.0%, 44.6%)
Waynesboro City	51820	70.1%	(39.3%, 89.5%)	57.6%	(51.4%, 63.6%)
Winchester City	51840	42.9%	(21.1%, 68.0%)	39.3%	(36.5%, 42.1%)

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County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE 95% CI
Albemarle County	51003	49.6%	(39.3%, 60.0%)	44.1%	(42.2%, 46.1%)
Alleghany County	51005	43.1%	(26.4%, 61.6%)	40.7%	(37.6%, 43.8%)
Amherst County	51009	50.5%	(29.7%, 71.1%)	45.5%	(42.6%, 48.3%)
Appomattox County	51011	57.1%	(33.2%, 78.1%)	56.8%	(51.2%, 62.2%)
Arlington City	51013	43.2%	(34.0%, 53.0%)	43.4%	(40.9%, 45.9%)
Bedford County	51019	46.1%	(34.0%, 58.8%)	47.7%	(45.5%, 49.9%)
Botetourt County	51023	52.8%	(37.9%, 67.2%)	46.2%	(44.2%, 48.3%)
Campbell County	51031	31.6%	(19.3%, 47.2%)	41.1%	(37.8%, 44.4%)
Craig County	51045	56.8%	(9.9%, 94.0%)	63.8%	(54.7%, 72.0%)
Fairfax County	51059	46.6%	(40.7%, 52.7%)	45.9%	(43.8%, 48.0%)
Fluvanna County	51065	53.5%	(29.9%, 75.5%)	47.7%	(44.4%, 50.9%)
Greene County	51079	39.8%	(19.0%, 65.1%)	43.9%	(41.5%, 46.3%)
Loudoun County	51107	38.8%	(31.6%, 46.5%)	45.4%	(43.1%, 47.9%)
Louisa County	51109	52.0%	(33.6%, 69.9%)	46.9%	(43.7%, 50.1%)
Nelson County	51125	39.3%	(21.7%, 60.1%)	47.9%	(43.8%, 52.1%)
Prince William County	51153	44.6%	(37.2%, 52.3%)	42.1%	(40.0%, 44.2%)
Roanoke County	51161	41.8%	(32.9%, 51.4%)	48.9%	(47.1%, 50.8%)
Alexandria City	51510	43.0%	(32.1%, 54.5%)	43.1%	(40.8%, 45.4%)
Charlottesville City	51540	59.0%	(31.4%, 81.9%)	55.6%	(49.1%, 62.0%)
Covington City	51580	0.0%	(0.0%, 99.4%)	57.4%	(33.7%, 78.1%)
Fairfax City	51600	50.5%	(39.5%, 61.5%)	47.2%	(44.8%, 49.7%)
Falls Church City	51610	48.0%	(7.1%, 91.8%)	46.7%	(43.7%, 49.7%)
Lynchburg City	51680	43.6%	(28.9%, 59.5%)	43.8%	(40.0%, 47.7%)
Manassas City	51683	81.4%	(47.4%, 95.5%)	40.5%	(37.5%, 43.7%)
Manassas Park City	51685	18.1%	(0.4%, 97.5%)	41.5%	(37.3%, 45.8%)
Salem City	51775	30.2%	(9.3%, 64.5%)	48.1%	(44.3%, 52.0%)

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County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE 95% CI
Bland County	51021	60.2%	(22.9%, 88.5%)	46.6%	(43.4%, 49.9%)
Buchanan County	51027	43.8%	(28.8%, 59.9%)	44.2%	(40.0%, 48.6%)
Carroll County	51035	42.8%	(27.5%, 59.7%)	46.7%	(42.3%, 51.0%)
Dickenson County	51051	53.3%	(35.1%, 70.6%)	42.3%	(39.9%, 44.8%)
Floyd County	51063	41.1%	(22.3%, 62.8%)	44.2%	(42.0%, 46.4%)
Franklin County	51067	54.3%	(37.5%, 70.2%)	43.9%	(41.4%, 46.4%)
Giles County	51071	36.3%	(17.8%, 59.9%)	43.7%	(38.2%, 49.4%)
Grayson County	51077	32.1%	(14.3%, 57.2%)	45.7%	(41.3%, 50.2%)
Henry County	51089	40.3%	(29.0%, 52.7%)	42.6%	(40.1%, 45.1%)
Lee County	51105	39.4%	(22.0%, 59.9%)	33.0%	(28.7%, 37.7%)
Montgomery County	51121	45.4%	(34.1%, 57.1%)	44.7%	(42.3%, 47.3%)
Patrick County	51141	33.9%	(19.0%, 52.9%)	42.2%	(40.0%, 44.6%)
Pittsylvania County	51143	46.4%	(36.3%, 56.8%)	42.5%	(39.0%, 46.0%)
Pulaski County	51155	52.0%	(36.4%, 67.1%)	44.4%	(40.9%, 48.1%)
Russell County	51167	45.0%	(28.3%, 62.8%)	42.9%	(40.1%, 45.8%)
Scott County	51169	45.2%	(31.2%, 60.0%)	46.7%	(39.5%, 54.0%)
Smyth County	51173	37.1%	(20.9%, 56.9%)	47.3%	(45.0%, 49.7%)
Tazewell County	51185	46.2%	(33.0%, 59.9%)	44.6%	(42.7%, 46.6%)
Washington County	51191	41.5%	(29.1%, 55.2%)	48.2%	(45.7%, 50.7%)
Wise County	51195	44.8%	(32.0%, 58.4%)	38.6%	(36.1%, 41.2%)
Wythe County	51197	43.1%	(28.0%, 59.7%)	49.8%	(45.2%, 54.5%)
Bristol City	51520	51.1%	(18.9%, 82.4%)	46.7%	(41.3%, 52.3%)
Danville City	51590	22.8%	(11.3%, 40.6%)	37.3%	(34.3%, 40.4%)
Galax City	51640	41.9%	(6.3%, 88.5%)	45.3%	(42.5%, 48.2%)
Martinsville City	51690	0.0%	(0.0%, 53.2%)	42.8%	(33.3%, 52.9%)
Norton City	51720	48.4%	(7.9%, 91.2%)	11.6%	(5.7%, 22.4%)
Radford City	51750	0.0%	(0.0%, 56.8%)	46.6%	(42.9%, 50.3%)
Roanoke City	51770	39.0%	(29.5%, 49.5%)	42.9%	(39.9%, 45.9%)

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Amelia County	51007	34.7%	(16.7%, 58.6%)	37.2%	(33.4%, 41.2%)
Brunswick County	51025	29.3%	(14.4%, 50.4%)	39.4%	(32.4%, 46.8%)
Buckingham County	51029	34.2%	(16.2%, 58.3%)	30.1%	(25.8%, 34.7%)
Charles City County	51036	45.6%	(17.3%, 77.0%)	39.7%	(37.7%, 41.8%)
Charlotte County	51037	47.5%	(21.1%, 75.4%)	41.7%	(37.0%, 46.5%)
Chesterfield County	51041	45.3%	(38.4%, 52.3%)	43.0%	(41.6%, 44.5%)
Cumberland County	51049	51.0%	(24.9%, 76.6%)	34.2%	(30.3%, 38.4%)
Dinwiddie County	51053	42.7%	(24.7%, 62.9%)	43.6%	(40.6%, 46.7%)
Goochland County	51075	45.1%	(23.8%, 68.5%)	48.8%	(45.9%, 51.7%)
Greensville County	51081	38.3%	(14.5%, 69.4%)	41.8%	(36.7%, 47.1%)
Halifax County	51083	41.4%	(27.3%, 57.1%)	41.0%	(38.0%, 44.0%)
Hanover County	51085	45.7%	(36.1%, 55.7%)	46.3%	(44.5%, 48.2%)
Henrico County	51087	40.8%	(34.5%, 47.4%)	42.3%	(40.8%, 43.8%)
Lunenburg County	51111	39.0%	(15.1%, 69.8%)	39.8%	(37.4%, 42.1%)
Mecklenburg County	51117	26.2%	(16.7%, 38.6%)	35.8%	(32.7%, 39.1%)
New Kent County	51127	56.7%	(32.5%, 78.0%)	49.7%	(45.4%, 53.9%)
Nottoway County	51135	37.6%	(17.2%, 63.7%)	36.6%	(33.9%, 39.4%)
Powhatan County	51145	72.3%	(43.8%, 89.8%)	55.9%	(51.3%, 60.4%)
Prince Edward County	51147	32.3%	(17.1%, 52.5%)	37.1%	(33.8%, 40.5%)
Prince George County	51149	51.3%	(33.1%, 69.2%)	44.6%	(42.0%, 47.3%)
Surry County	51181	20.2%	(3.9%, 60.9%)	38.2%	(34.2%, 42.4%)
Sussex County	51183	44.6%	(20.3%, 71.8%)	40.8%	(38.1%, 43.6%)
Colonial Heights City	51570	15.9%	(4.3%, 54.4%)	38.5%	(34.9%, 42.3%)
Emporia City	51595	27.0%	(2.7%, 82.9%)	33.6%	(25.0%, 43.4%)
Hopewell City	51670	28.0%	(12.5%, 51.4%)	23.7%	(18.1%, 30.3%)
Petersburg City	51730	23.1%	(11.8%, 40.4%)	28.6%	(24.2%, 33.3%)
Richmond City	51760	31.6%	(24.7%, 39.5%)	30.6%	(28.1%, 33.4%)

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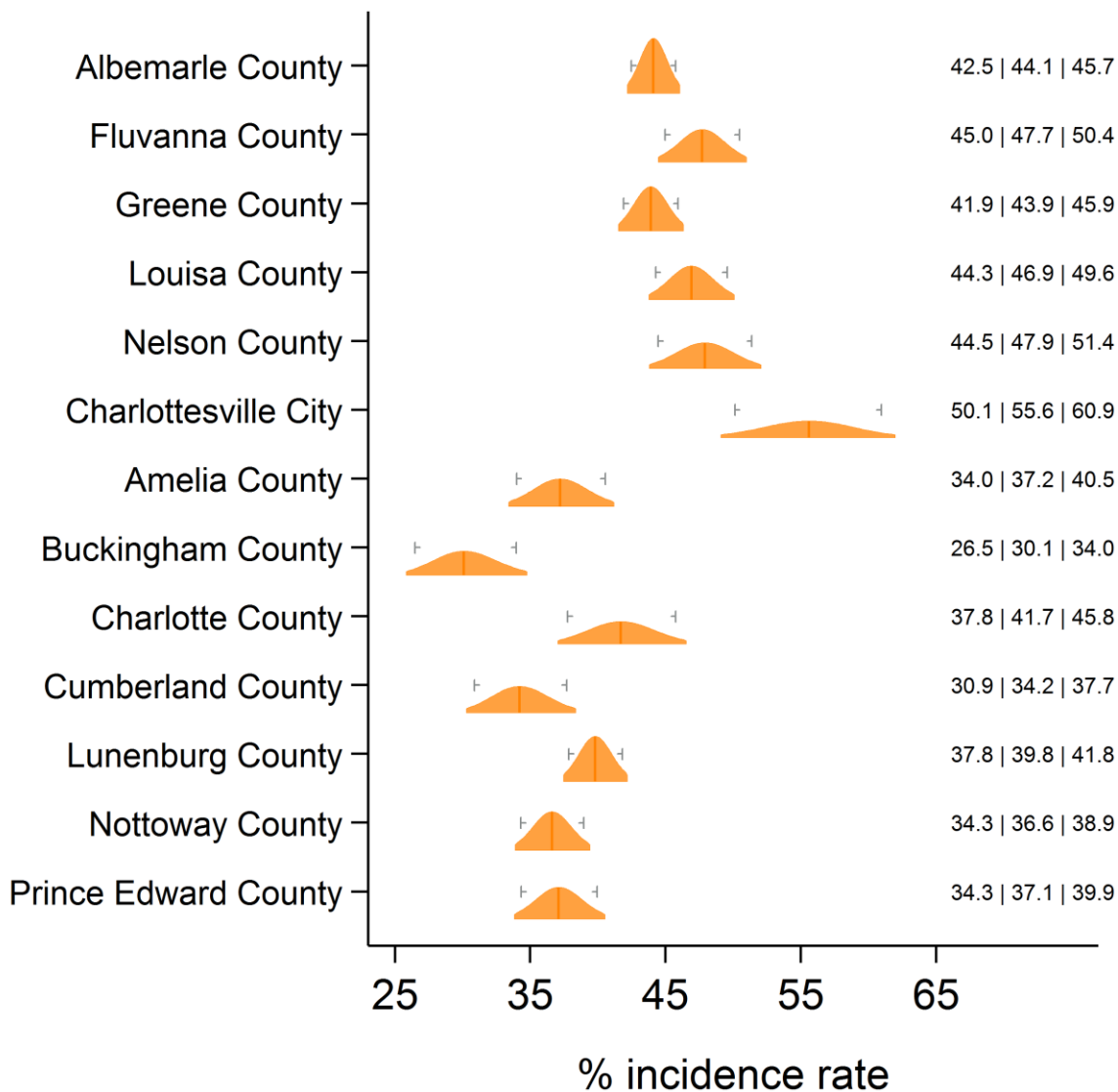


County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE 95% CI
Accomack County	51001	50.7%	(32.0%, 69.2%)	49.1%	(44.2%, 54.1%)
Essex County	51057	58.6%	(29.0%, 83.0%)	42.9%	(38.8%, 47.1%)
Gloucester County	51073	46.2%	(29.0%, 64.3%)	47.5%	(45.7%, 49.3%)
Isle of Wight County	51093	58.4%	(42.4%, 72.9%)	43.0%	(41.0%, 45.0%)
James City County	51095	38.3%	(26.6%, 51.6%)	47.0%	(44.9%, 49.0%)
King and Queen County	51097	42.1%	(9.4%, 83.5%)	50.1%	(46.3%, 54.0%)
King William County	51101	46.7%	(23.7%, 71.1%)	48.5%	(44.7%, 52.3%)
Lancaster County	51103	71.7%	(46.9%, 87.9%)	53.6%	(47.2%, 59.9%)
Mathews County	51115	41.0%	(21.2%, 64.3%)	48.1%	(43.7%, 52.5%)
Middlesex County	51119	49.4%	(12.9%, 86.5%)	46.5%	(40.5%, 52.6%)
Northampton County	51131	41.0%	(23.5%, 61.1%)	41.8%	(37.6%, 46.0%)
Northumberland County	51133	55.9%	(31.8%, 77.6%)	41.7%	(36.2%, 47.4%)
Richmond County	51159	30.1%	(16.6%, 48.3%)	43.5%	(40.7%, 46.3%)
Southampton County	51175	20.0%	(8.5%, 40.2%)	33.5%	(29.9%, 37.3%)
Westmoreland County	51193	38.2%	(17.9%, 63.6%)	44.3%	(42.1%, 46.6%)
York County	51199	45.2%	(31.9%, 59.2%)	47.0%	(44.7%, 49.4%)
Chesapeake City	51550	46.7%	(39.1%, 54.5%)	44.1%	(42.2%, 46.0%)
Franklin City	51620	41.2%	(23.8%, 61.2%)	28.0%	(22.4%, 34.4%)
Hampton City	51650	44.9%	(36.3%, 53.9%)	42.4%	(40.0%, 44.9%)
Newport News City	51700	39.0%	(29.5%, 49.3%)	40.7%	(38.4%, 42.9%)
Norfolk City	51710	44.8%	(36.4%, 53.5%)	38.6%	(36.4%, 40.7%)
Poquoson City	51735	40.4%	(7.4%, 85.2%)	54.6%	(49.3%, 59.8%)
Portsmouth City	51740	50.2%	(38.3%, 62.1%)	41.5%	(38.3%, 44.8%)
Suffolk City	51800	53.5%	(40.9%, 65.7%)	45.4%	(43.1%, 47.8%)
Virginia Beach City	51810	45.4%	(38.5%, 52.4%)	45.7%	(44.0%, 47.5%)
Williamsburg City	51830	66.7%	(22.3%, 93.4%)	62.5%	(55.8%, 68.8%)



Section 4: Graphical representation

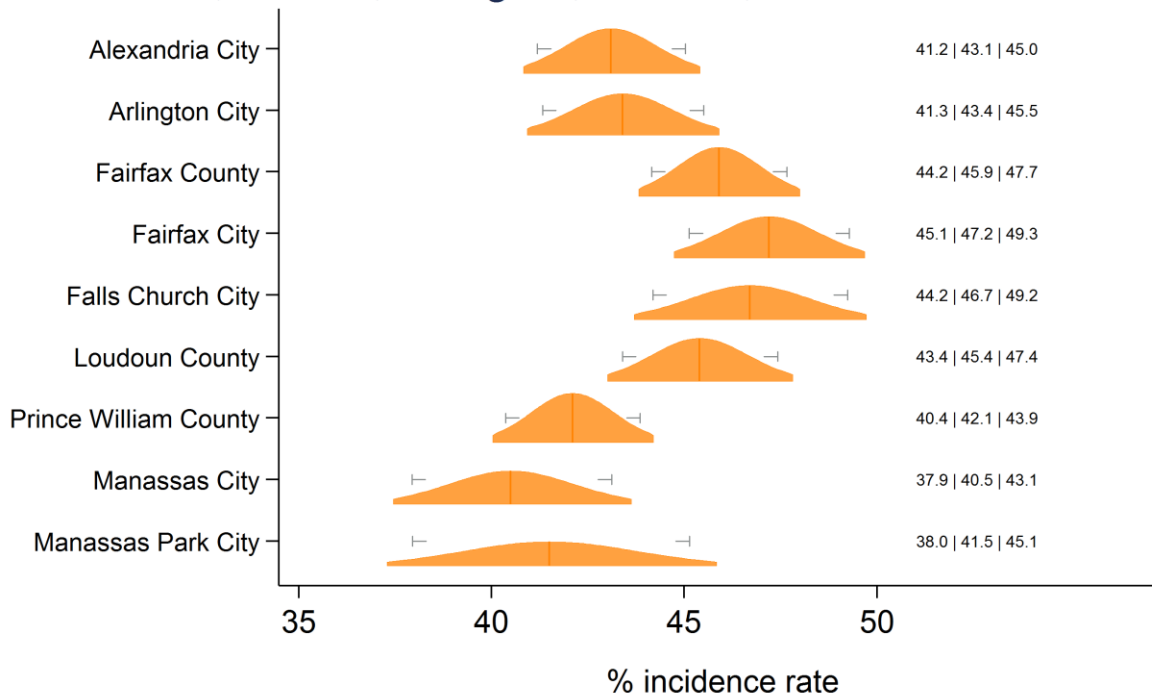
Flu shot/vaccine past 12 months Thomas Jefferson and Piedmont HDs



Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval



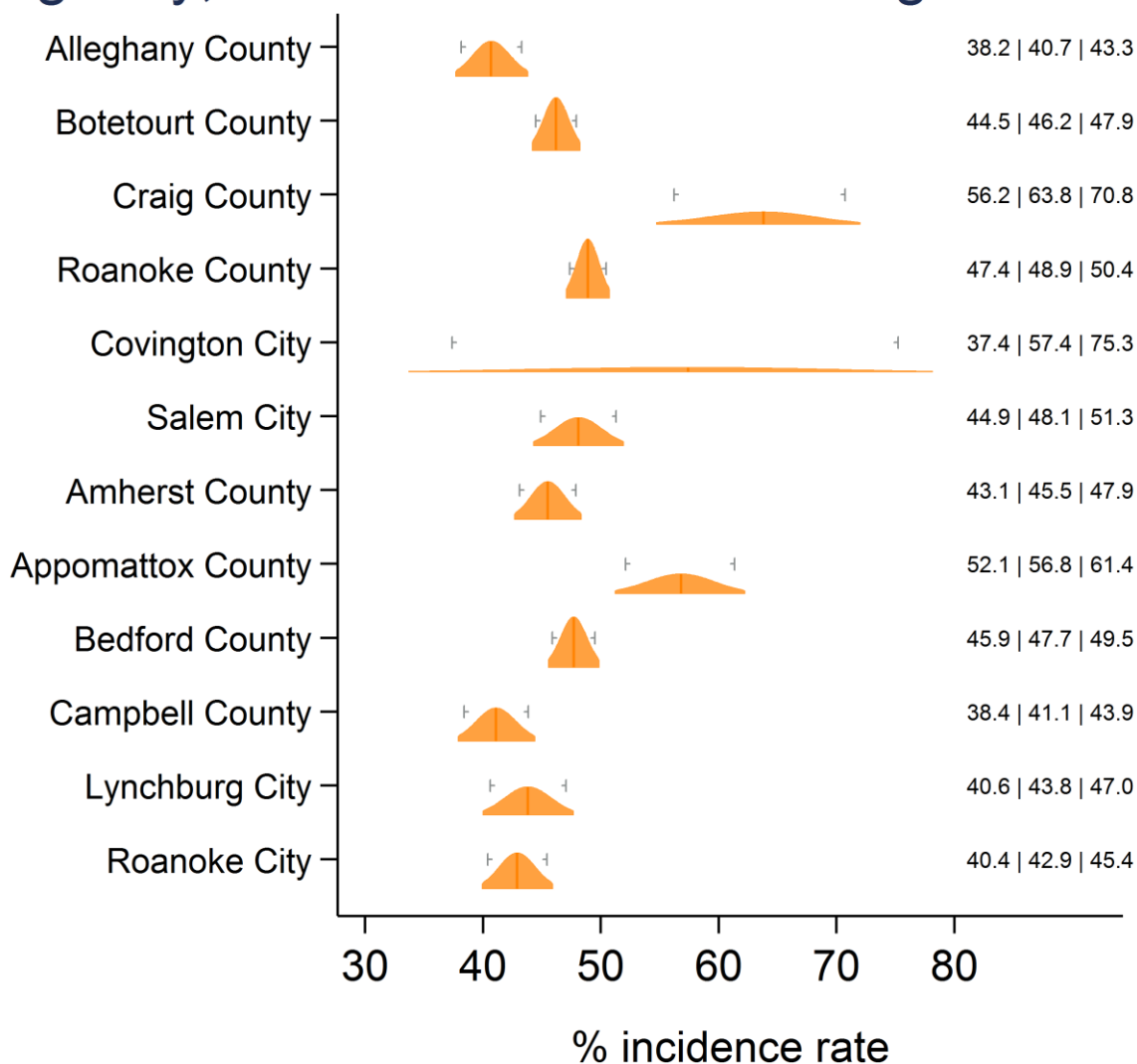
Flu shot/vaccine past 12 months Alexandria, Fairfax, Arlington, Loudon, Prince William HDs



Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval



Flu shot/vaccine past 12 months Alleghany, Roanoke and Central Virginia HDs

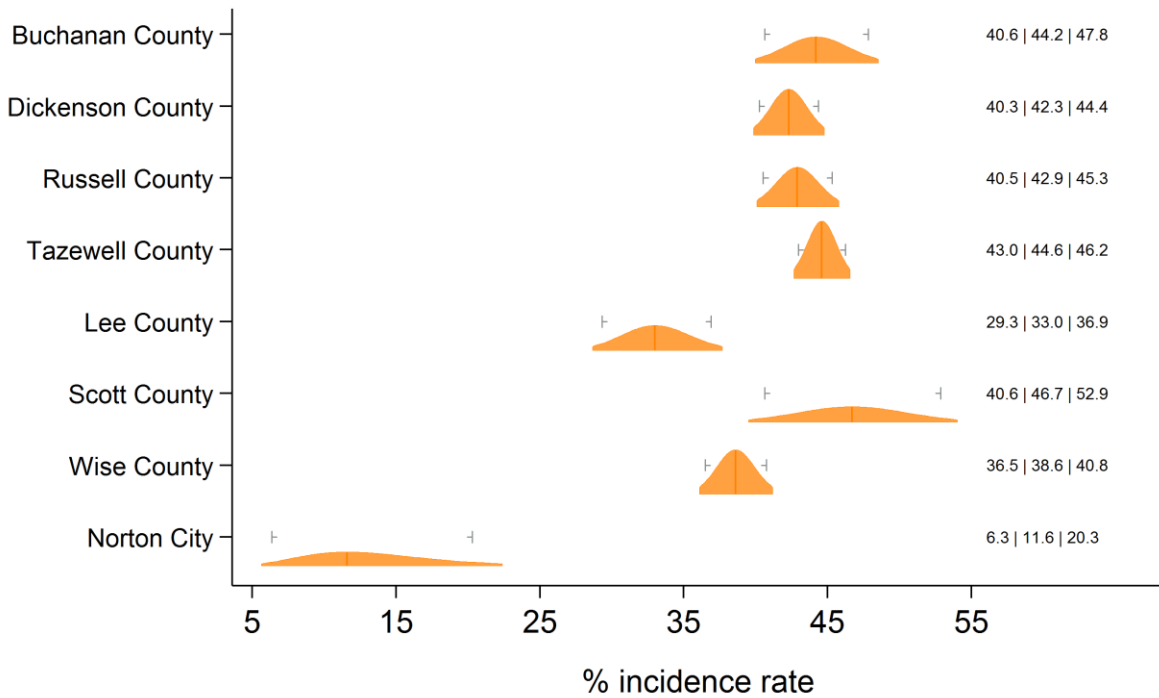


Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval

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Flu shot/vaccine past 12 months
Cumberland Plateau and Lenowisco HDs

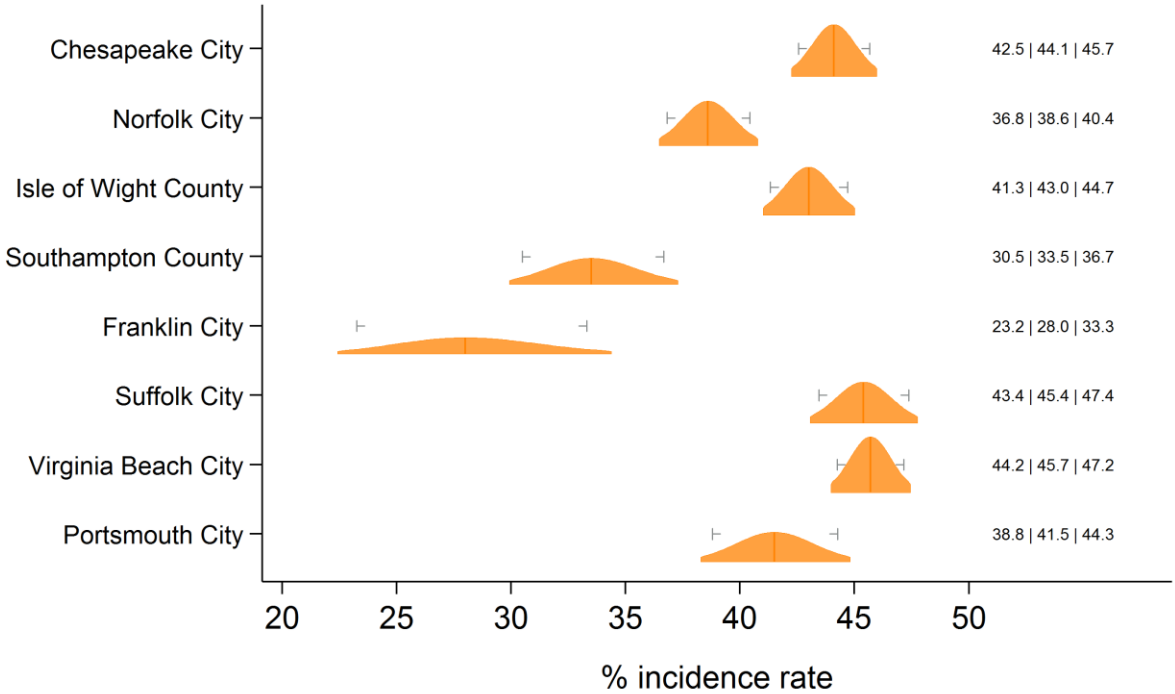


Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval

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Flu shot/vaccine past 12 months
Norfolk, Portsmouth, Chesapeake, VA Beach, W. Tidewater HDs

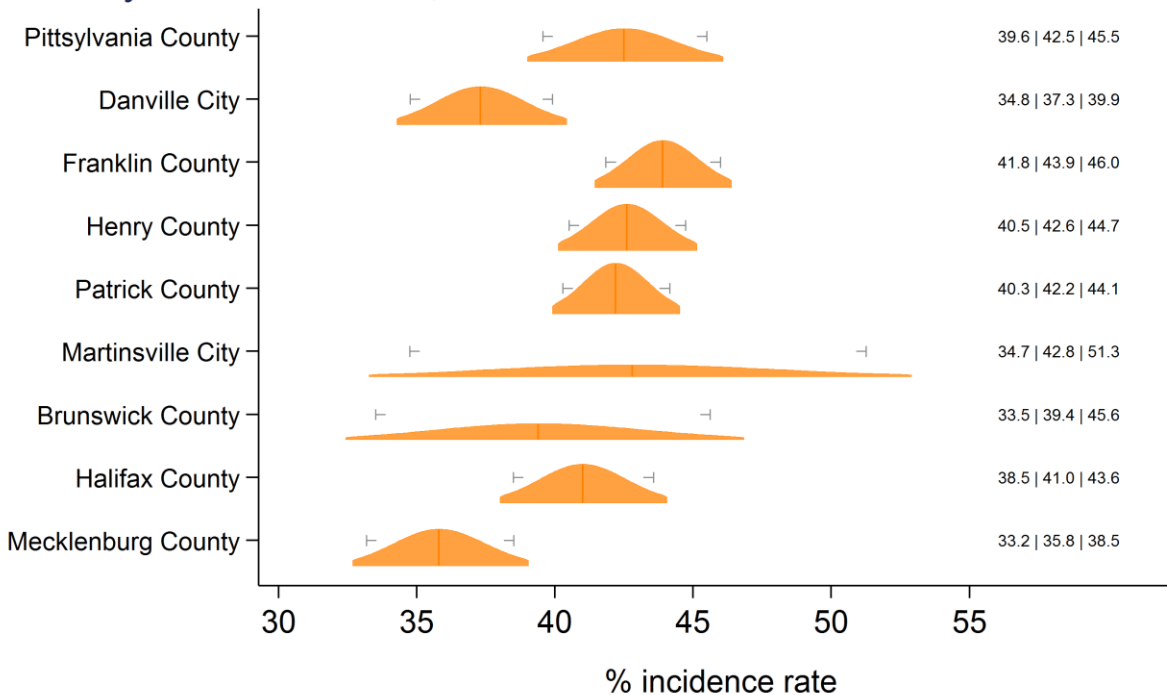


Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval

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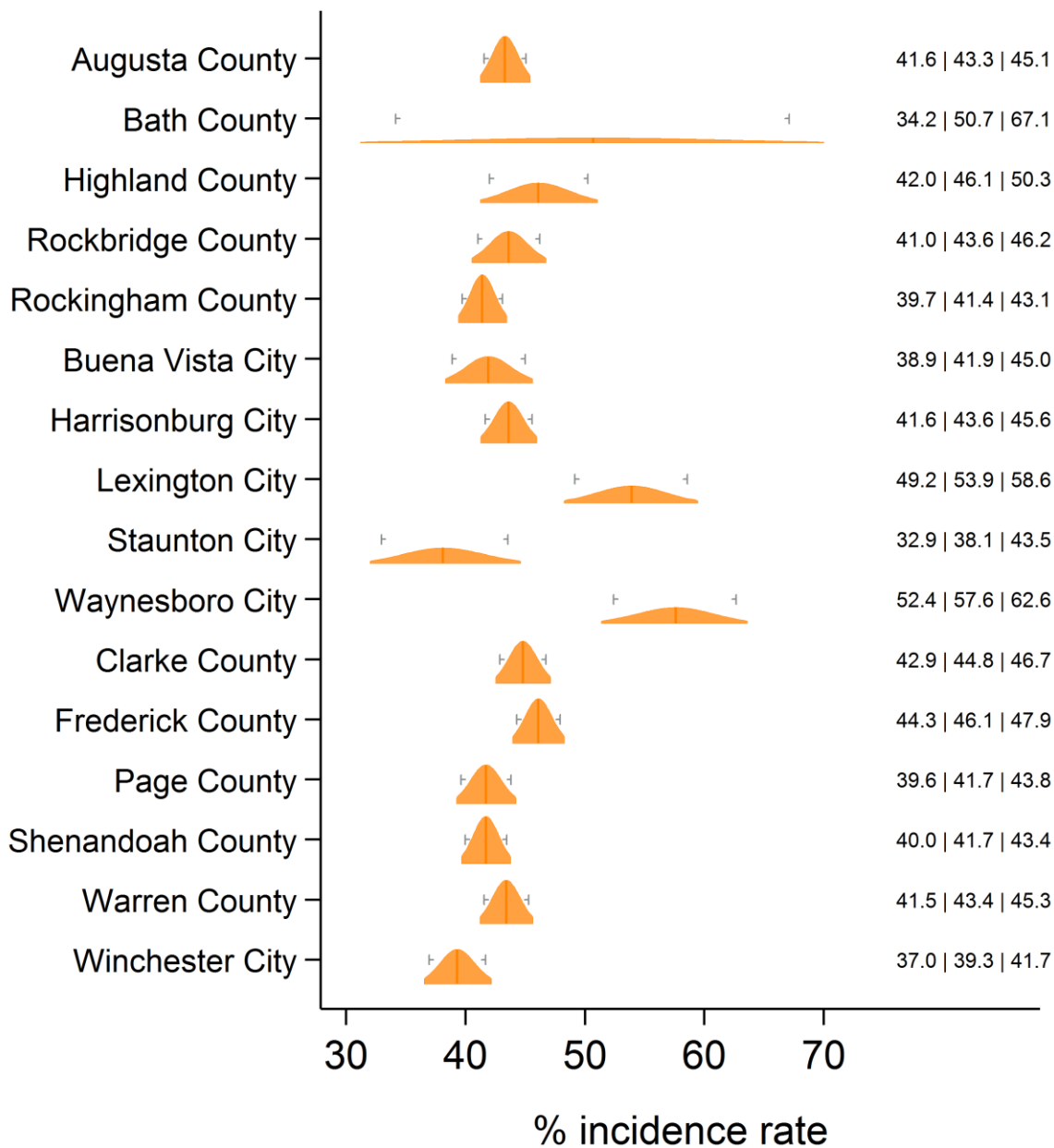
Flu shot/vaccine past 12 months Pittsylvania/Danville, Southside and West Piedmont HDs



Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval



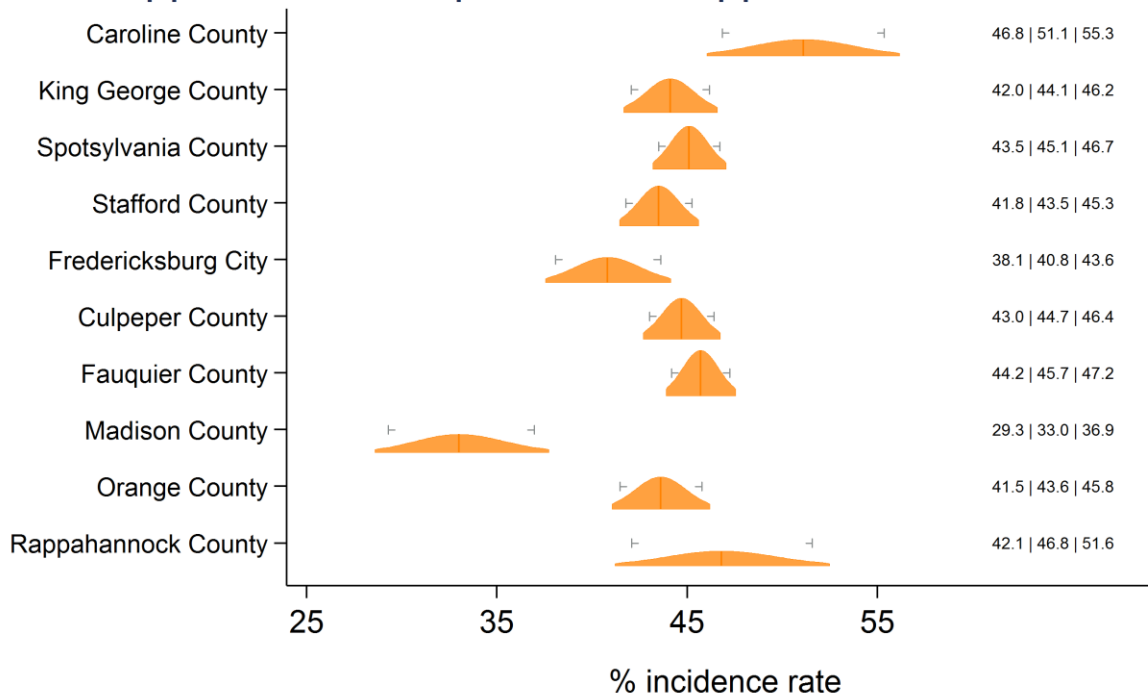
Flu shot/vaccine past 12 months Central Shenandoah and Lord Fairfax HDs



Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval



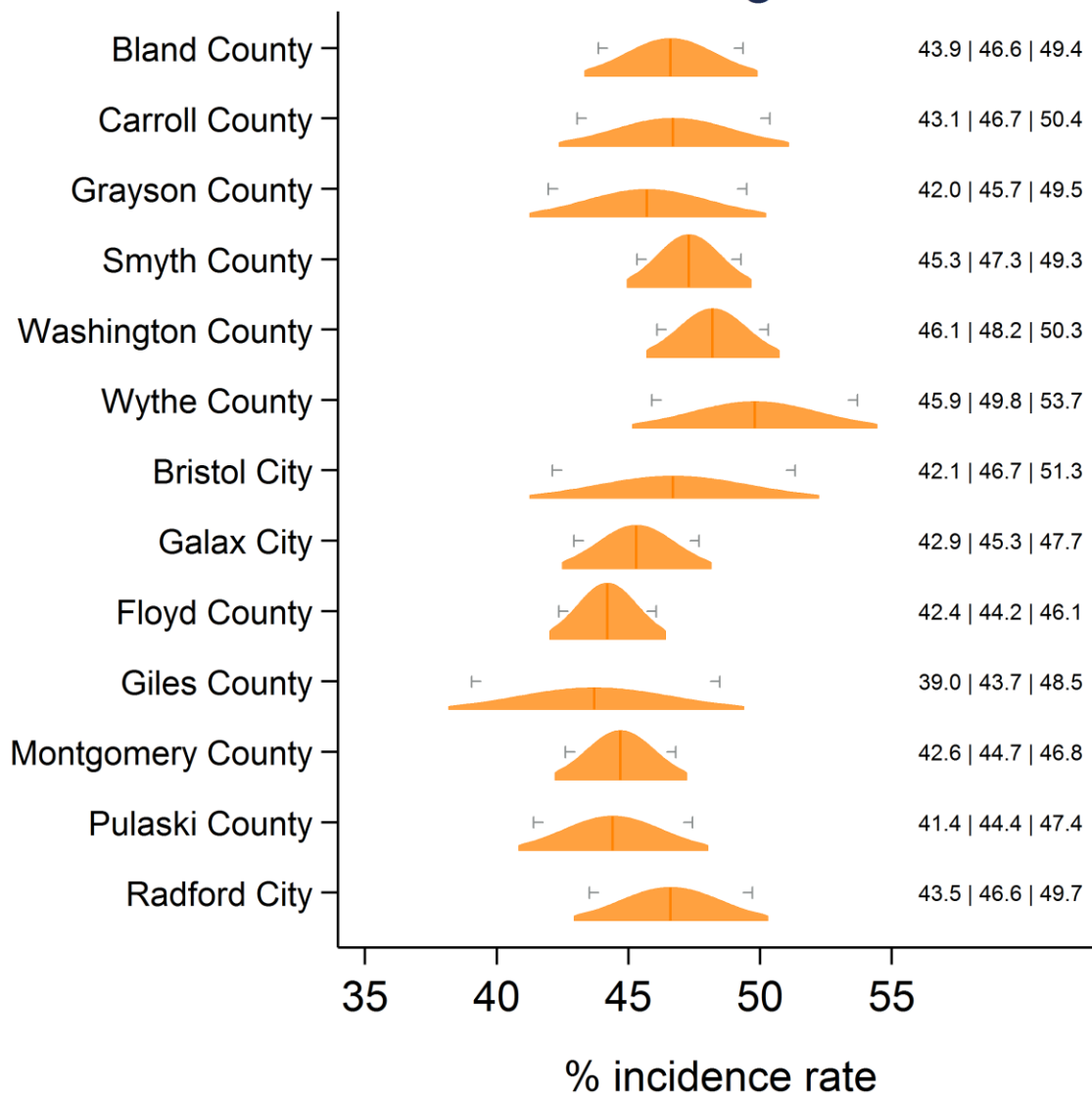
Flu shot/vaccine past 12 months Rappahannock/Rapidan and Rappahannock HDs



Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval



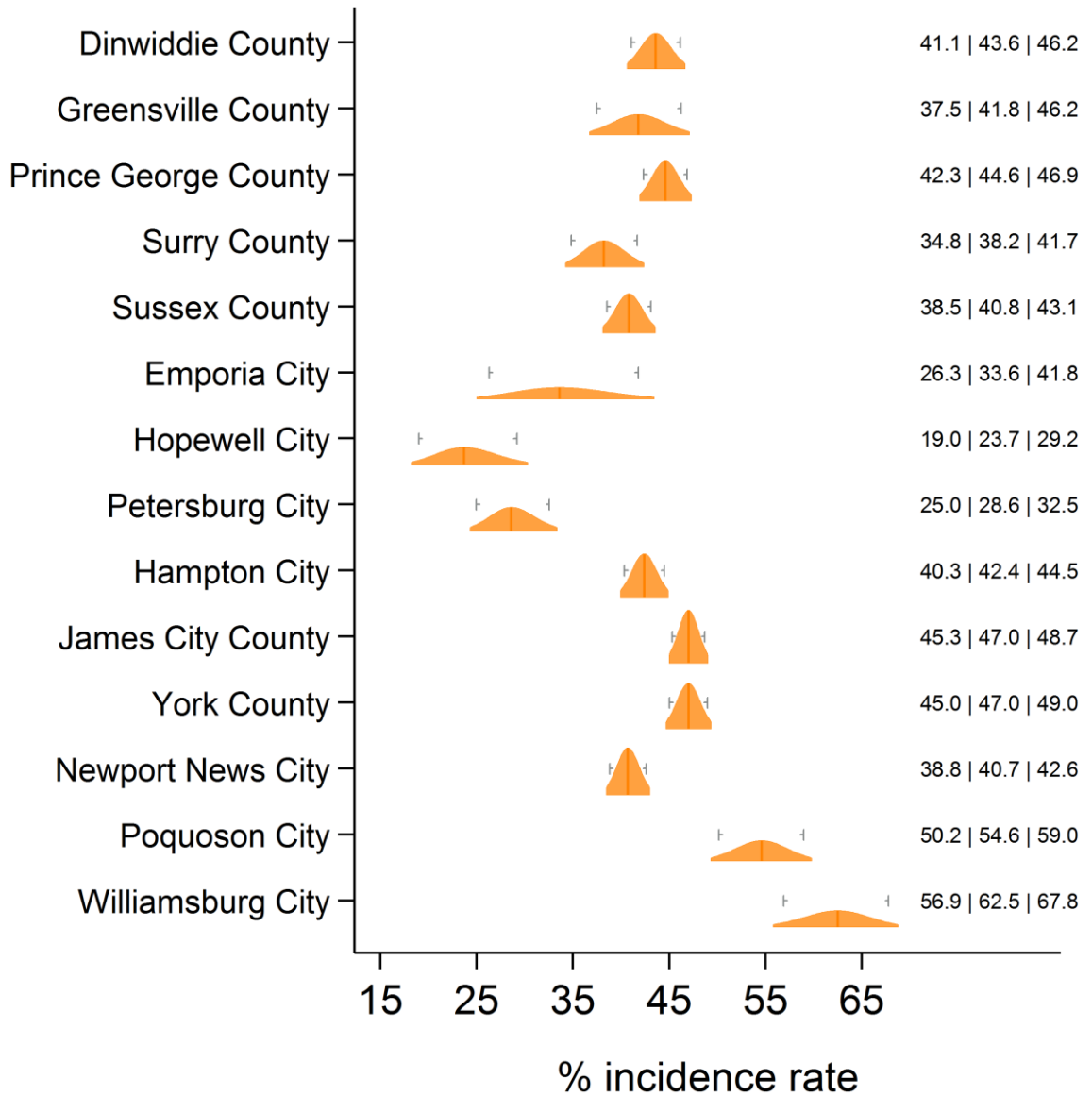
Flu shot/vaccine past 12 months New River and Mount Rogers HDs



Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval



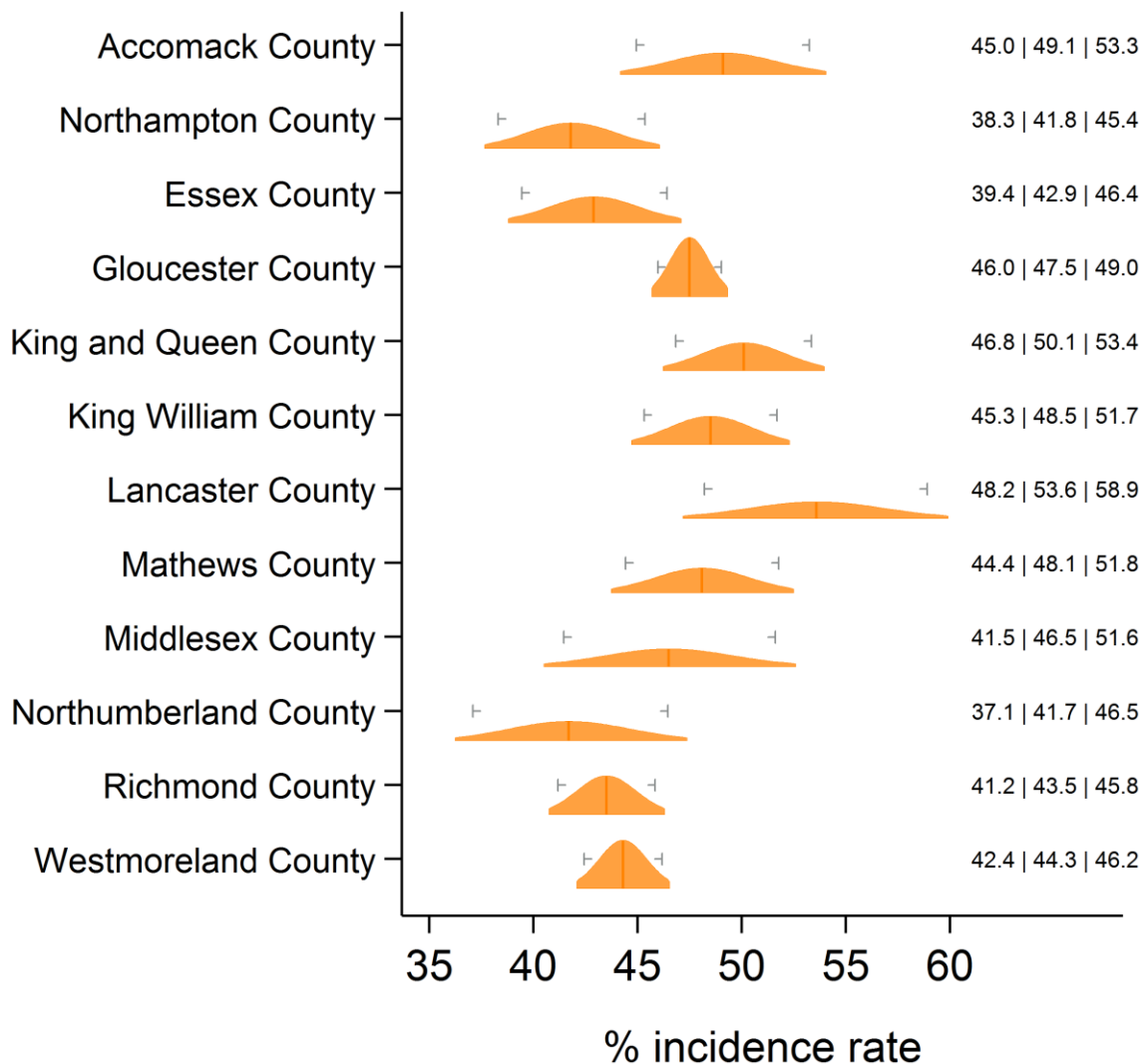
Flu shot/vaccine past 12 months Crater, Peninsula and Hampton HDs



Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval



Flu shot/vaccine past 12 months Eastern Shore and Three Rivers HDs

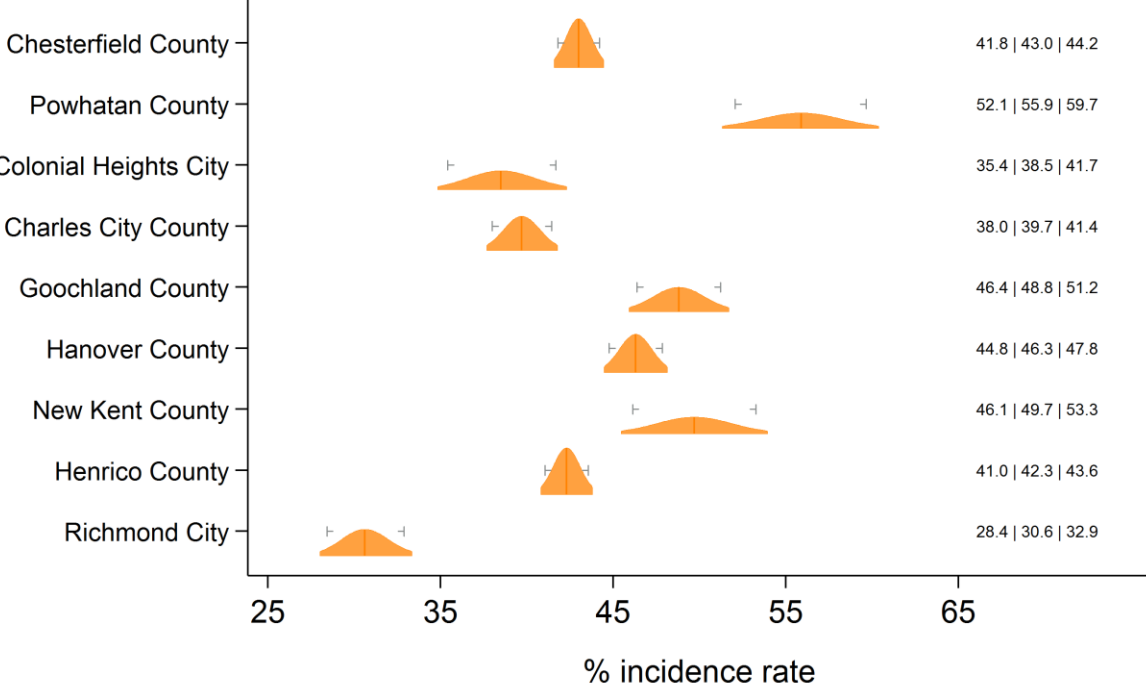


Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval

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Flu shot/vaccine past 12 months
Chesterfield, Chickahominy, Henrico and Richmond HDs



Text at right: 1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Gray markers: 90% confidence interval



Section 5: Additional diagnostics

Direct estimate is inside the 95% SAE Wilson CI: 45 areas.

Direct estimate is outside the 95% SAE Wilson CI: 88 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: 123 areas.

SAE Wilson 95% CI partially overlaps with the 95% direct Wilson CI: 10 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: 128 areas.

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

Direct standard error is zero: 5 areas.

Proportion of SAE variance due to ACS sampling error: min = 0.18%; med = 14.65%; max = 49.95%.

Proportion of SAE variance to sampling error in regression coefficient estimates: min = 50.04%; med = 84.87%; max = 99.54%.

Proportion of SAE variance due to model selection: min = 0.00%; med = 0.14%; max = 20.57%.