Indicator 23: Pneumonia Vaccination - All Ages

Internal variable name: outc23_pneum_vacc

Section 1: Definitions

Definition: A pneumonia shot or pneumococcal vaccine is usually given only once or twice in a person´s lifetime and is different from the flu shot. Have you ever had a pneumonia shot?

Section 2: Predictive models

	Mixed, demos only	Logit, no area effects	Mixed with area covariates
	b/se	b/se	b/se
Outcome 23: Pneumonia Vaccination - All Ages			
Non-Hispanic Black vs. Non-Hispanic White	-0.0160	-0.0112	-0.0112
	(0.1048)	(0.1037)	(0.1073)
Non-Hispanic Asian vs. Non-Hispanic White	0.2403	0.2743	0.2743
	(0.2223)	(0.2432)	(0.2057)
Non-Hispanic Other vs. Non-Hispanic White	0.3272*	0.3305	0.3305*
	(0.1482)	(0.1955)	(0.1503)
Hispanic vs. Non-Hispanic White	-0.3926*	-0.3634	-0.3634
	(0.1880)	(0.2045)	(0.1898)
Female	-0.1104	-0.1179	-0.1179
	(0.0683)	(0.0711)	(0.0683)
Age 18-24 vs. 65+	-2.1622***	-2.1592***	-2.1592***
	(0.1257)	(0.1569)	(0.1217)
Age 25-34 vs. 65+	-2.5308***	-2.5213***	-2.5213***
	(0.1124)	(0.1279)	(0.1157)
Age 35-44 vs. 65+	-2.6065***	-2.6040***	-2.6040***
	(0.1324)	(0.1238)	(0.1341)
Age 45-54 vs. 65+	-2.2573***	-2.2574***	-2.2574***
	(0.0921)	(0.0967)	(0.0913)
Age 55-64 vs. 65+	-1.6905***	-1.6896***	-1.6896***
	(0.0926)	(0.0835)	(0.0928)
Uterus Cancer Female Rate		0.0104**	0.0104**
		(0.0036)	(0.0032)
Bladder Cancer Male Rate		0.0117***	0.0117***
		(0.0029)	(0.0022)
Pancreas Cancer All Rate		-0.0131	-0.0131*
		(0.0069)	(0.0058)
% families with own children		-0.0053	-0.0053
		(0.0065)	(0.0054)

Lung Cancer All Rate		-0.0062**	-0.0062***
		(0.0022)	(0.0017)
% moved past year, population 1+ years old		-0.0122	-0.0122*
		(0.0080)	(0.0059)
Ovary Cancer Female Rate		-0.0227	-0.0227
		(0.0238)	(0.0193)
% unemployed, civilians 16+ years old		0.0517	0.0517*
		(0.0328)	(0.0255)
{Ovary Cancer Female Rate}		0.0008	0.0008
interacted with {% unemployed, civilians 16+ years old}		(0.0025)	(0.0022)
Intercept	0.9399***	1.0415**	1.0415***
	(0.0664)	(0.3710)	(0.2768)
Area effect variance	0.0026		0.0000
	(0.0121)		(0.0000)

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

Section 3: Results

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE 95% CI
Augusta County	51015	29.3%	(21.7%, 38.3%)	30.0%	(27.7%, 32.5%)
Bath County	51017	35.0%	(9.8%, 72.9%)	24.4%	(18.8%, 31.1%)
Caroline County	51033	45.8%	(25.6%, 67.4%)	43.1%	(37.2%, 49.2%)
Clarke County	51043	42.4%	(20.9%, 67.2%)	29.1%	(26.4%, 32.0%)
Culpeper County	51047	25.1%	(13.8%, 41.2%)	26.0%	(23.4%, 28.8%)
Fauquier County	51061	25.8%	(17.0%, 37.2%)	28.3%	(26.5%, 30.2%)
Frederick County	51069	25.0%	(16.8%, 35.5%)	32.4%	(30.2%, 34.7%)
Highland County	51091	54.9%	(6.3%, 95.7%)	29.3%	(23.0%, 36.5%)
King George County	51099	22.4%	(7.1%, 52.3%)	24.2%	(21.6%, 27.0%)
Madison County	51113	20.1%	(6.4%, 48.3%)	20.6%	(17.0%, 24.8%)
Orange County	51137	32.9%	(18.0%, 52.2%)	28.8%	(25.8%, 31.9%)
Page County	51139	65.0%	(32.9%, 87.6%)	32.7%	(29.0%, 36.6%)
Rappahannock County	51157	34.9%	(13.5%, 64.8%)	31.7%	(27.2%, 36.6%)
Rockbridge County	51163	35.9%	(19.1%, 57.0%)	33.1%	(29.2%, 37.1%)
Rockingham County	51165	29.5%	(20.4%, 40.7%)	31.6%	(29.5%, 33.8%)
Shenandoah County	51171	16.2%	(8.4%, 29.1%)	25.3%	(22.0%, 29.0%)
Spotsylvania County	51177	30.5%	(20.9%, 42.1%)	25.9%	(23.6%, 28.3%)
Stafford County	51179	20.4%	(13.9%, 28.8%)	22.0%	(19.6%, 24.7%)
Warren County	51187	44.0%	(25.5%, 64.3%)	32.4%	(29.8%, 35.0%)
Buena Vista City	51530	26.2%	(0.8%, 96.7%)	35.5%	(27.8%, 44.0%)
Fredericksburg City	51630	22.8%	(10.8%, 46.2%)	24.9%	(21.0%, 29.3%)
Harrisonburg City	51660	32.3%	(8.1%, 72.0%)	17.8%	(14.0%, 22.4%)
Lexington City	51678	0.0%	(0.0%, 99.4%)	10.4%	(4.2%, 23.9%)
Staunton City	51790	66.5%	(27.9%, 91.0%)	36.6%	(32.0%, 41.5%)
Waynesboro City	51820	44.6%	(17.2%, 75.8%)	43.4%	(36.5%, 50.5%)
Winchester City	51840	25.3%	(10.3%, 49.9%)	24.9%	(22.1%, 27.9%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE 95% CI
Albemarle County	51003	23.1%	(15.9%, 32.3%)	25.8%	(23.5%, 28.2%)
Alleghany County	51005	32.8%	(17.4%, 53.1%)	36.1%	(33.2%, 39.0%)
Amherst County	51009	27.8%	(13.9%, 47.9%)	30.9%	(27.6%, 34.4%)
Appomattox County	51011	61.1%	(37.7%, 80.3%)	53.6%	(44.7%, 62.2%)
Arlington City	51013	29.7%	(21.5%, 39.4%)	22.5%	(20.5%, 24.8%)
Bedford County	51019	40.5%	(28.8%, 53.4%)	33.9%	(31.6%, 36.3%)
Botetourt County	51023	42.1%	(27.2%, 58.7%)	33.1%	(30.3%, 36.1%)
Campbell County	51031	36.1%	(22.2%, 52.8%)	36.5%	(33.2%, 39.9%)
Craig County	51045	20.5%	(2.0%, 76.5%)	53.6%	(42.2%, 64.5%)
Fairfax County	51059	27.3%	(22.1%, 33.3%)	26.6%	(24.7%, 28.7%)
Fluvanna County	51065	48.7%	(25.3%, 72.6%)	36.1%	(32.5%, 39.8%)
Greene County	51079	36.7%	(17.0%, 62.0%)	31.5%	(29.1%, 34.1%)
Loudoun County	51107	27.0%	(20.3%, 34.8%)	24.7%	(21.6%, 28.0%)
Louisa County	51109	37.2%	(21.0%, 56.9%)	32.9%	(30.0%, 36.0%)
Nelson County	51125	26.9%	(12.5%, 48.6%)	35.0%	(30.4%, 39.9%)
Prince William County	51153	25.9%	(20.0%, 33.0%)	25.0%	(22.5%, 27.7%)
Roanoke County	51161	32.2%	(24.3%, 41.2%)	32.6%	(30.3%, 34.9%)
Alexandria City	51510	24.5%	(15.1%, 37.1%)	26.1%	(23.5%, 28.8%)
Charlottesville City	51540	10.6%	(3.7%, 45.7%)	25.9%	(19.9%, 33.0%)
Covington City	51580	.%	(.%, .%)	34.6%	(24.7%, 46.0%)
Fairfax City	51600	33.8%	(22.6%, 47.2%)	33.4%	(30.0%, 37.1%)
Falls Church City	51610	16.3%	(2.7%, 57.7%)	20.2%	(15.1%, 26.5%)
Lynchburg City	51680	30.1%	(16.5%, 48.5%)	35.0%	(31.1%, 39.1%)
Manassas City	51683	40.0%	(15.5%, 70.9%)	27.9%	(24.6%, 31.6%)
Manassas Park City	51685	0.0%	(-0.0%, 96.8%)	21.2%	(17.0%, 26.1%)
Salem City	51775	27.0%	(8.2%, 60.3%)	23.6%	(19.9%, 27.7%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE 95% CI
Bland County	51021	39.7%	(11.5%, 76.8%)	32.9%	(29.3%, 36.6%)
Buchanan County	51027	32.9%	(19.3%, 50.3%)	32.9%	(29.5%, 36.4%)
Carroll County	51035	46.2%	(30.0%, 63.3%)	38.2%	(34.8%, 41.8%)
Dickenson County	51051	56.5%	(37.9%, 73.5%)	41.8%	(35.6%, 48.3%)
Floyd County	51063	38.7%	(20.5%, 60.7%)	31.9%	(28.9%, 35.2%)
Franklin County	51067	51.3%	(33.6%, 68.8%)	38.2%	(34.8%, 41.6%)
Giles County	51071	55.7%	(30.7%, 78.2%)	37.4%	(33.0%, 41.9%)
Grayson County	51077	34.2%	(16.3%, 58.0%)	35.4%	(32.3%, 38.5%)
Henry County	51089	36.3%	(25.4%, 48.9%)	32.8%	(28.9%, 37.0%)
Lee County	51105	25.2%	(12.0%, 45.5%)	30.1%	(27.2%, 33.2%)
Montgomery County	51121	34.1%	(24.0%, 45.9%)	31.0%	(26.7%, 35.7%)
Patrick County	51141	36.7%	(19.5%, 58.0%)	40.2%	(35.6%, 45.0%)
Pittsylvania County	51143	33.1%	(24.5%, 42.9%)	34.9%	(31.9%, 38.1%)
Pulaski County	51155	36.1%	(23.4%, 51.0%)	32.0%	(28.7%, 35.5%)
Russell County	51167	29.4%	(16.8%, 46.2%)	30.1%	(27.0%, 33.3%)
Scott County	51169	46.4%	(31.8%, 61.7%)	33.6%	(29.9%, 37.5%)
Smyth County	51173	14.5%	(8.6%, 29.8%)	30.5%	(28.0%, 33.0%)
Tazewell County	51185	45.5%	(32.4%, 59.3%)	37.0%	(33.5%, 40.7%)
Washington County	51191	36.8%	(24.6%, 51.1%)	30.6%	(28.3%, 32.9%)
Wise County	51195	32.8%	(22.4%, 45.2%)	33.3%	(30.2%, 36.6%)
Wythe County	51197	38.0%	(23.9%, 54.4%)	45.3%	(39.3%, 51.6%)
Bristol City	51520	39.6%	(11.3%, 77.2%)	32.3%	(25.4%, 40.1%)
Danville City	51590	31.9%	(16.8%, 52.0%)	38.2%	(34.1%, 42.5%)
Galax City	51640	17.8%	(2.3%, 78.9%)	27.1%	(21.5%, 33.6%)
Martinsville City	51690	2.9%	(1.0%, 59.8%)	33.5%	(28.9%, 38.5%)
Norton City	51720	48.4%	(7.9%, 91.2%)	24.5%	(20.2%, 29.3%)
Radford City	51750	2.7%	(1.1%, 58.0%)	10.8%	(6.6%, 17.1%)
Roanoke City	51770	35.2%	(26.0%, 45.6%)	26.6%	(23.6%, 29.8%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE 95% CI
Amelia County	51007	29.9%	(13.1%, 54.6%)	29.3%	(23.9%, 35.3%)
Brunswick County	51025	40.6%	(20.6%, 64.3%)	34.5%	(31.0%, 38.1%)
Buckingham County	51029	32.6%	(15.7%, 55.7%)	27.1%	(22.1%, 32.7%)
Charles City County	51036	65.7%	(29.8%, 89.6%)	43.0%	(37.8%, 48.4%)
Charlotte County	51037	36.3%	(13.5%, 67.5%)	37.1%	(29.3%, 45.6%)
Chesterfield County	51041	33.9%	(27.3%, 41.1%)	27.9%	(26.3%, 29.6%)
Cumberland County	51049	32.6%	(14.4%, 58.2%)	35.3%	(32.6%, 38.2%)
Dinwiddie County	51053	42.6%	(22.6%, 65.4%)	37.8%	(34.4%, 41.4%)
Goochland County	51075	34.3%	(14.8%, 61.1%)	35.0%	(30.5%, 39.8%)
Greensville County	51081	10.6%	(3.1%, 47.6%)	30.9%	(27.4%, 34.7%)
Halifax County	51083	30.7%	(19.5%, 44.8%)	40.6%	(36.7%, 44.6%)
Hanover County	51085	24.3%	(16.9%, 33.6%)	26.2%	(23.6%, 29.0%)
Henrico County	51087	25.5%	(20.2%, 31.6%)	27.2%	(25.5%, 29.0%)
Lunenburg County	51111	51.4%	(21.5%, 80.3%)	33.1%	(28.9%, 37.6%)
Mecklenburg County	51117	44.0%	(27.9%, 61.5%)	33.8%	(30.6%, 37.1%)
New Kent County	51127	21.9%	(9.2%, 43.6%)	23.9%	(20.4%, 27.8%)
Nottoway County	51135	47.8%	(23.6%, 73.0%)	30.1%	(20.0%, 42.6%)
Powhatan County	51145	35.5%	(11.0%, 71.2%)	36.3%	(32.6%, 40.1%)
Prince Edward County	51147	49.8%	(27.7%, 71.9%)	36.4%	(33.1%, 39.8%)
Prince George County	51149	26.7%	(15.0%, 42.8%)	27.1%	(23.4%, 31.2%)
Surry County	51181	16.3%	(2.7%, 57.6%)	20.6%	(13.7%, 29.8%)
Sussex County	51183	14.0%	(5.0%, 33.6%)	21.3%	(18.0%, 25.0%)
Colonial Heights City	51570	53.8%	(18.8%, 85.4%)	38.1%	(34.6%, 41.8%)
Emporia City	51595	100.0%	(22.7%, 100.0%)	30.3%	(19.4%, 44.0%)
Hopewell City	51670	44.7%	(19.6%, 72.8%)	38.4%	(32.9%, 44.2%)
Petersburg City	51730	33.1%	(18.6%, 51.6%)	30.9%	(26.9%, 35.3%)
Richmond City	51760	27.0%	(20.4%, 34.9%)	25.5%	(23.1%, 28.2%)

County name	County FIPS	Direct estimate	Direct 95% CI	SAE composite	SAE 95% CI
Accomack County	51001	42.6%	(25.5%, 61.7%)	32.9%	(29.0%, 37.2%)
Essex County	51057	61.1%	(29.6%, 85.4%)	29.1%	(25.3%, 33.3%)
Gloucester County	51073	23.4%	(12.2%, 40.3%)	32.6%	(28.7%, 36.7%)
Isle of Wight County	51093	42.6%	(27.1%, 59.6%)	30.6%	(28.1%, 33.3%)
James City County	51095	39.9%	(27.2%, 54.1%)	34.0%	(30.9%, 37.3%)
King and Queen County	51097	38.6%	(8.5%, 81.0%)	31.1%	(27.6%, 34.8%)
King William County	51101	47.3%	(24.1%, 71.7%)	39.5%	(34.8%, 44.5%)
Lancaster County	51103	54.8%	(26.7%, 80.2%)	44.7%	(40.2%, 49.3%)
Mathews County	51115	35.6%	(17.8%, 58.5%)	47.5%	(40.3%, 54.9%)
Middlesex County	51119	22.4%	(5.8%, 57.3%)	31.4%	(27.8%, 35.3%)
Northampton County	51131	31.4%	(17.2%, 50.2%)	42.3%	(37.4%, 47.4%)
Northumberland County	51133	54.8%	(29.9%, 77.5%)	45.3%	(39.1%, 51.6%)
Richmond County	51159	22.3%	(10.4%, 41.5%)	33.8%	(28.5%, 39.5%)
Southampton County	51175	16.8%	(6.3%, 37.8%)	21.4%	(18.5%, 24.7%)
Westmoreland County	51193	35.8%	(16.2%, 61.7%)	37.5%	(33.7%, 41.5%)
York County	51199	32.9%	(20.8%, 47.7%)	29.6%	(26.8%, 32.5%)
Chesapeake City	51550	36.1%	(28.7%, 44.3%)	27.0%	(24.9%, 29.2%)
Franklin City	51620	30.7%	(16.5%, 49.7%)	27.0%	(22.3%, 32.2%)
Hampton City	51650	29.7%	(21.8%, 39.0%)	31.8%	(28.9%, 34.8%)
Newport News City	51700	24.6%	(17.4%, 33.6%)	26.0%	(23.6%, 28.5%)
Norfolk City	51710	26.1%	(19.8%, 33.5%)	25.3%	(22.6%, 28.1%)
Poquoson City	51735	63.5%	(16.6%, 93.8%)	52.4%	(44.0%, 60.7%)
Portsmouth City	51740	41.9%	(30.3%, 54.4%)	32.1%	(29.6%, 34.8%)
Suffolk City	51800	39.0%	(28.1%, 51.2%)	37.0%	(34.1%, 40.0%)
Virginia Beach City	51810	25.0%	(19.6%, 31.4%)	24.9%	(22.9%, 27.0%)
Williamsburg City	51830	67.6%	(21.7%, 94.0%)	37.4%	(26.5%, 49.8%)

Section 4: Graphical representation

Lifetime pneumonia shot/vaccine
Central Shenandoah and Lord Fairfax HDs
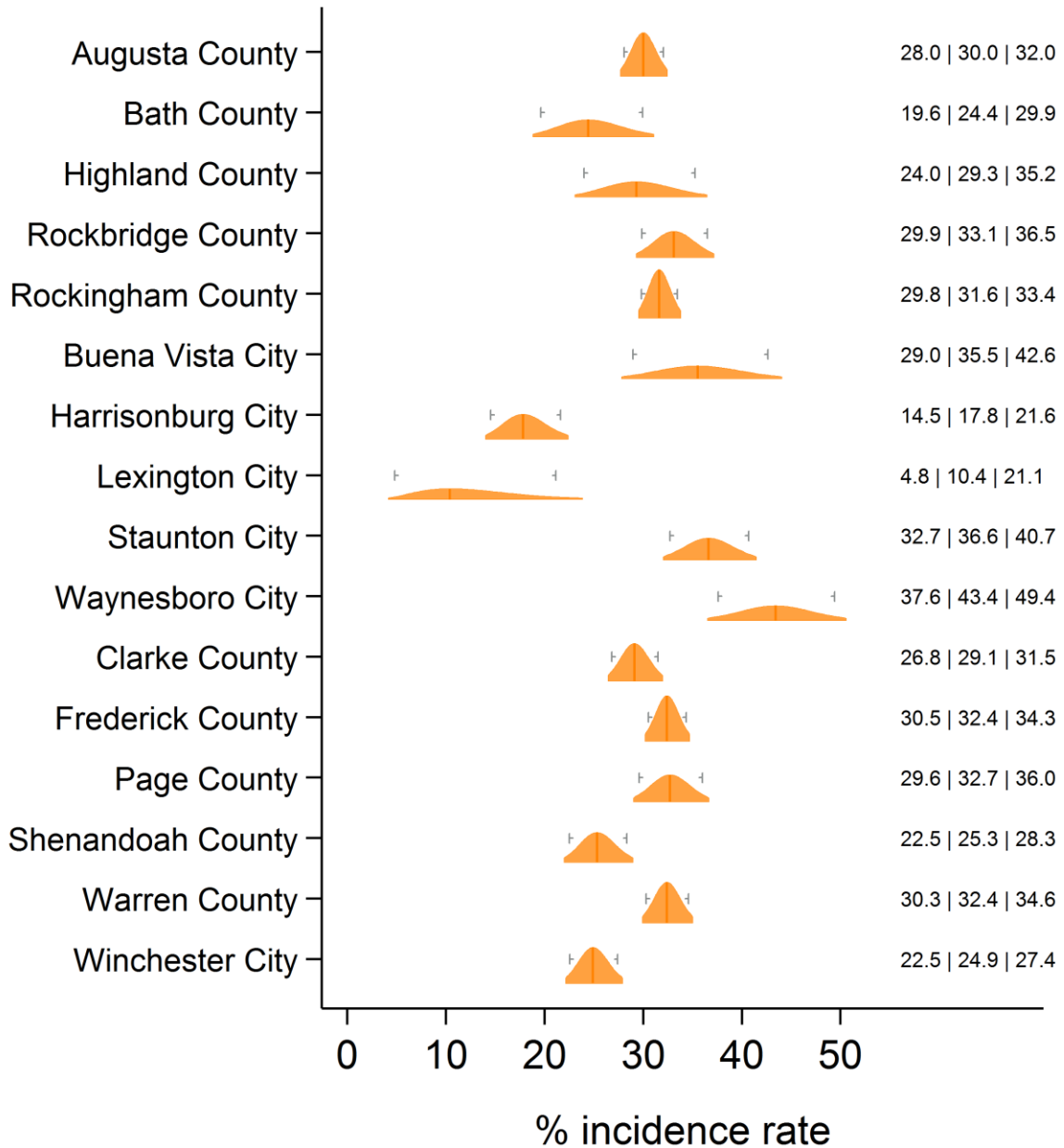
Augusta County	28.0 | 30.0 | 32.0
Bath County	19.6 | 24.4 | 29.9
Highland County	24.0 | 29.3 | 35.2
Rockbridge County	29.9 | 33.1 | 36.5
Rockingham County	29.8 | 31.6 | 33.4
Buena Vista City	29.0 | 35.5 | 42.6
Harrisonburg City	14.5 | 17.8 | 21.6
Lexington City	4.8 | 10.4 | 21.1
Staunton City	32.7 | 36.6 | 40.7
Waynesboro City	37.6 | 43.4 | 49.4
Clarke County	26.8 | 29.1 | 31.5
Frederick County	30.5 | 32.4 | 34.3
Page County	29.6 | 32.7 | 36.0
Shenandoah County	22.5 | 25.3 | 28.3
Warren County	30.3 | 32.4 | 34.6
Winchester City	22.5 | 24.9 | 27.4

% incidence rate

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

Lifetime pneumonia shot/vaccine
Alleghany, Roanoke and Central Virginia HDs
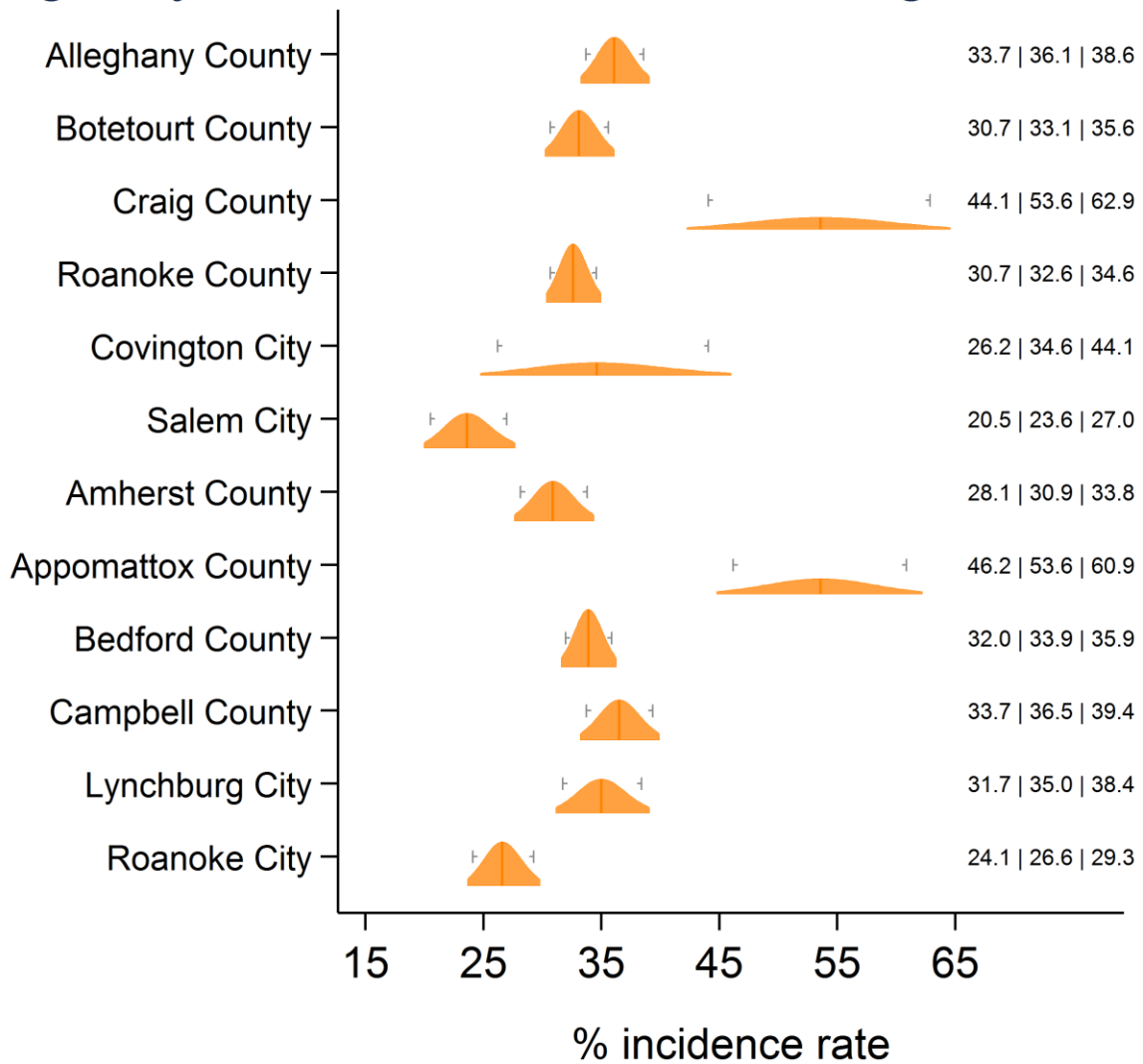
County/City		
Alleghany County		33.7 | 36.1 | 38.6
Botetourt County		30.7 | 33.1 | 35.6
Craig County		44.1 | 53.6 | 62.9
Roanoke County		30.7 | 32.6 | 34.6
Covington City		26.2 | 34.6 | 44.1
Salem City		20.5 | 23.6 | 27.0
Amherst County		28.1 | 30.9 | 33.8
Appomattox County		46.2 | 53.6 | 60.9
Bedford County		32.0 | 33.9 | 35.9
Campbell County		33.7 | 36.5 | 39.4
Lynchburg City		31.7 | 35.0 | 38.4
Roanoke City		24.1 | 26.6 | 29.3

% incidence rate

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

Lifetime pneumonia shot/vaccine Eastern Shore and Three Rivers HDs
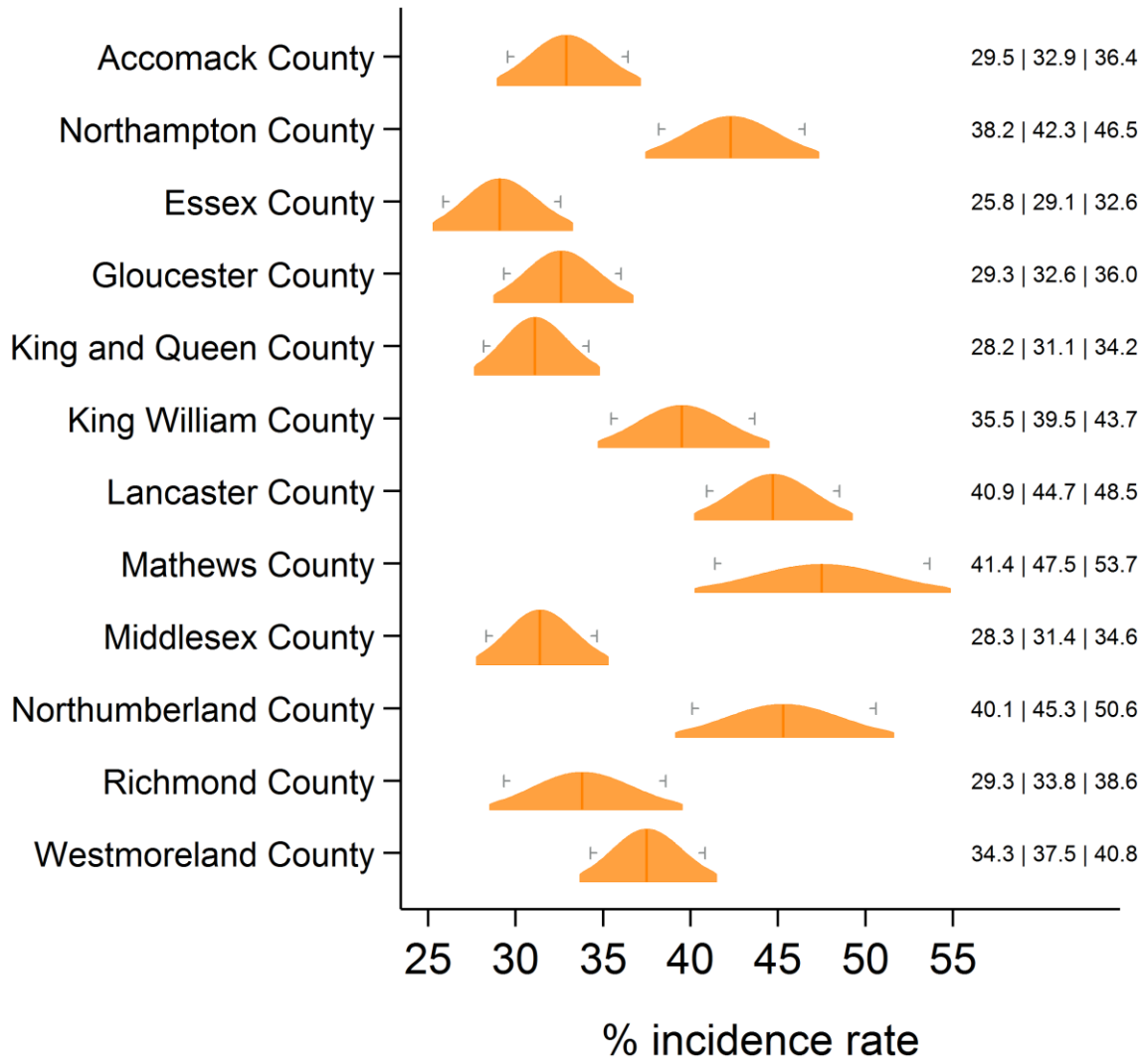
County	1-sided 95% LCB	Point Estimate	1-sided 95% UCB
Accomack County	29.5	32.9	36.4
Northampton County	38.2	42.3	46.5
Essex County	25.8	29.1	32.6
Gloucester County	29.3	32.6	36.0
King and Queen County	28.2	31.1	34.2
King William County	35.5	39.5	43.7
Lancaster County	40.9	44.7	48.5
Mathews County	41.4	47.5	53.7
Middlesex County	28.3	31.4	34.6
Northumberland County	40.1	45.3	50.6
Richmond County	29.3	33.8	38.6
Westmoreland County	34.3	37.5	40.8

% incidence rate

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

Lifetime pneumonia shot/vaccine
Norfolk,Portsmouth,Chesapeake,VA Beach,W. Tidewater HDs
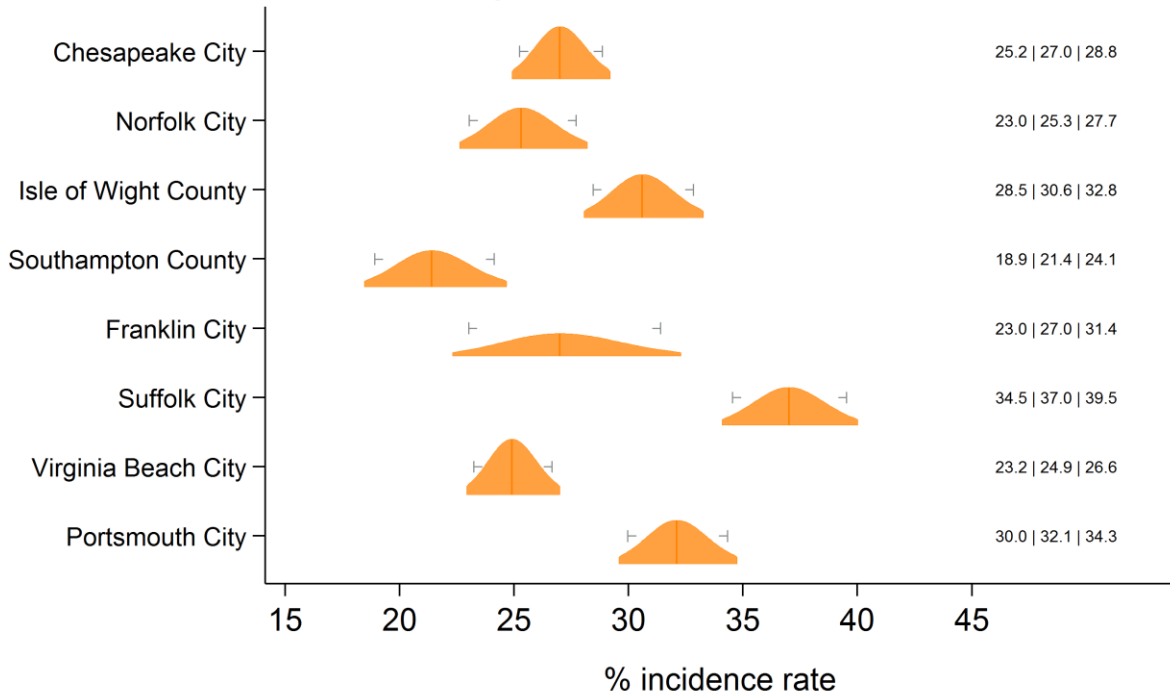
Locality	LCB | Point | UCB
Chesapeake City	25.2 | 27.0 | 28.8
Norfolk City	23.0 | 25.3 | 27.7
Isle of Wight County	28.5 | 30.6 | 32.8
Southampton County	18.9 | 21.4 | 24.1
Franklin City	23.0 | 27.0 | 31.4
Suffolk City	34.5 | 37.0 | 39.5
Virginia Beach City	23.2 | 24.9 | 26.6
Portsmouth City	30.0 | 32.1 | 34.3

% incidence rate

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

Lifetime pneumonia shot/vaccine
Pittsylvania/Danville, Southside and West Piedmont HDs

County/City	LCB | Point | UCB
Pittsylvania County	32.3 | 34.9 | 37.6
Danville City	34.7 | 38.2 | 41.8
Franklin County	35.4 | 38.2 | 41.1
Henry County	29.5 | 32.8 | 36.3
Patrick County	36.3 | 40.2 | 44.2
Martinsville City	29.6 | 33.5 | 37.6
Brunswick County	31.6 | 34.5 | 37.5
Halifax County	37.3 | 40.6 | 44.0
Mecklenburg County	31.1 | 33.8 | 36.6

% incidence rate

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

Lifetime pneumonia shot/vaccine
Chesterfield, Chickahominy, Henrico and Richmond HDs
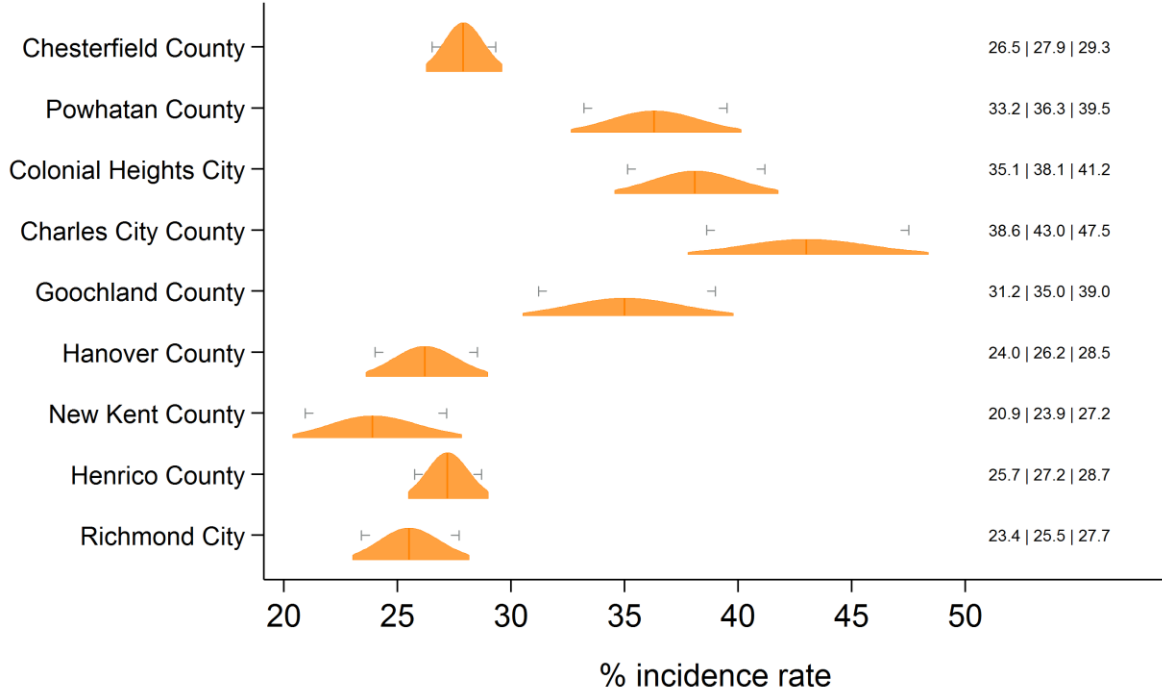
County/City	1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Chesterfield County	26.5 | 27.9 | 29.3
Powhatan County	33.2 | 36.3 | 39.5
Colonial Heights City	35.1 | 38.1 | 41.2
Charles City County	38.6 | 43.0 | 47.5
Goochland County	31.2 | 35.0 | 39.0
Hanover County	24.0 | 26.2 | 28.5
New Kent County	20.9 | 23.9 | 27.2
Henrico County	25.7 | 27.2 | 28.7
Richmond City	23.4 | 25.5 | 27.7

% incidence rate

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

Lifetime pneumonia shot/vaccine
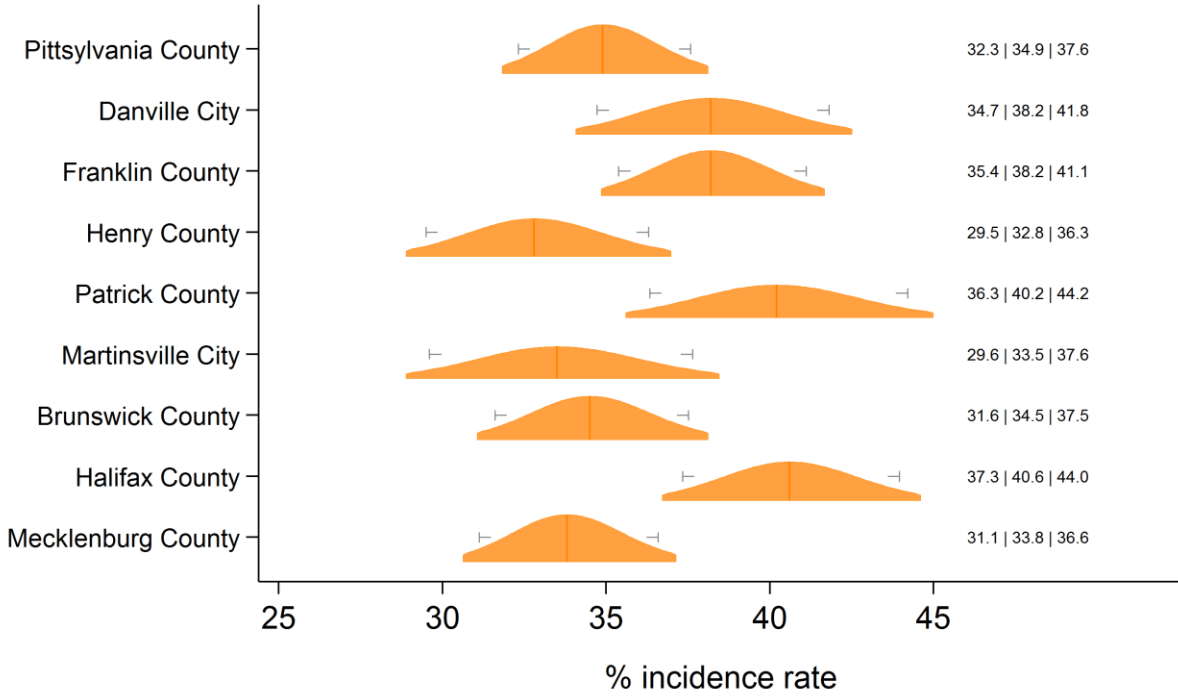## Rappahannock/Rapidan and Rappahannock HDs
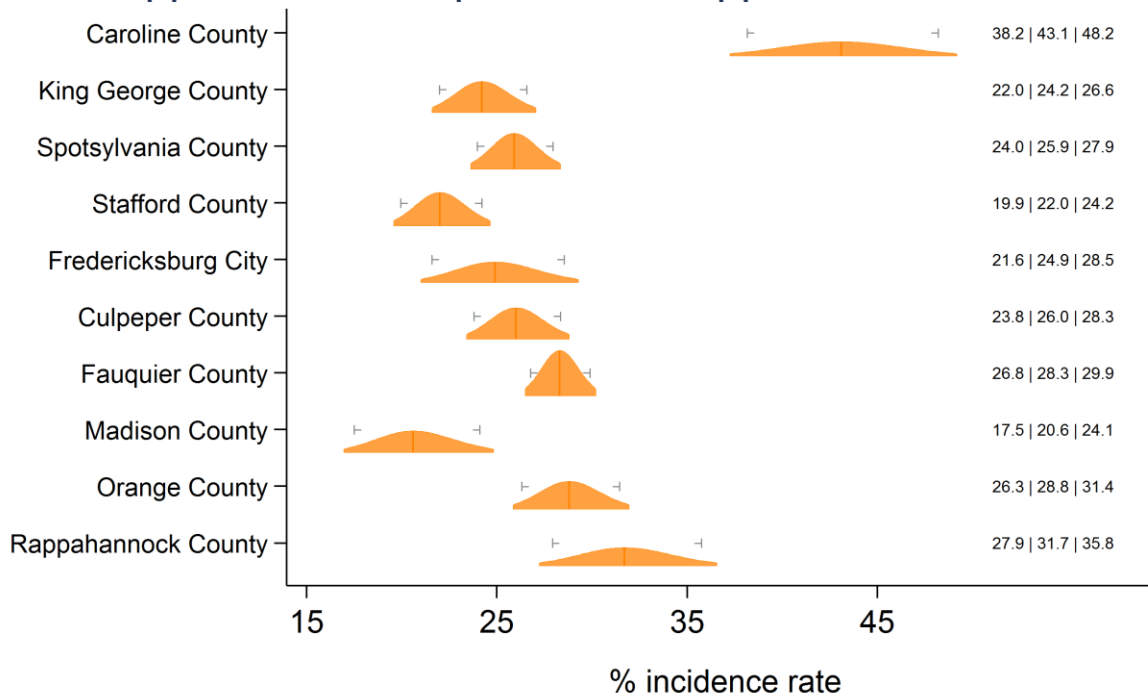
County	LCB | Point | UCB
Caroline County	38.2 | 43.1 | 48.2
King George County	22.0 | 24.2 | 26.6
Spotsylvania County	24.0 | 25.9 | 27.9
Stafford County	19.9 | 22.0 | 24.2
Fredericksburg City	21.6 | 24.9 | 28.5
Culpeper County	23.8 | 26.0 | 28.3
Fauquier County	26.8 | 28.3 | 29.9
Madison County	17.5 | 20.6 | 24.1
Orange County	26.3 | 28.8 | 31.4
Rappahannock County	27.9 | 31.7 | 35.8

% incidence rate

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

Lifetime pneumonia shot/vaccine
Thomas Jefferson and Piedmont HDs
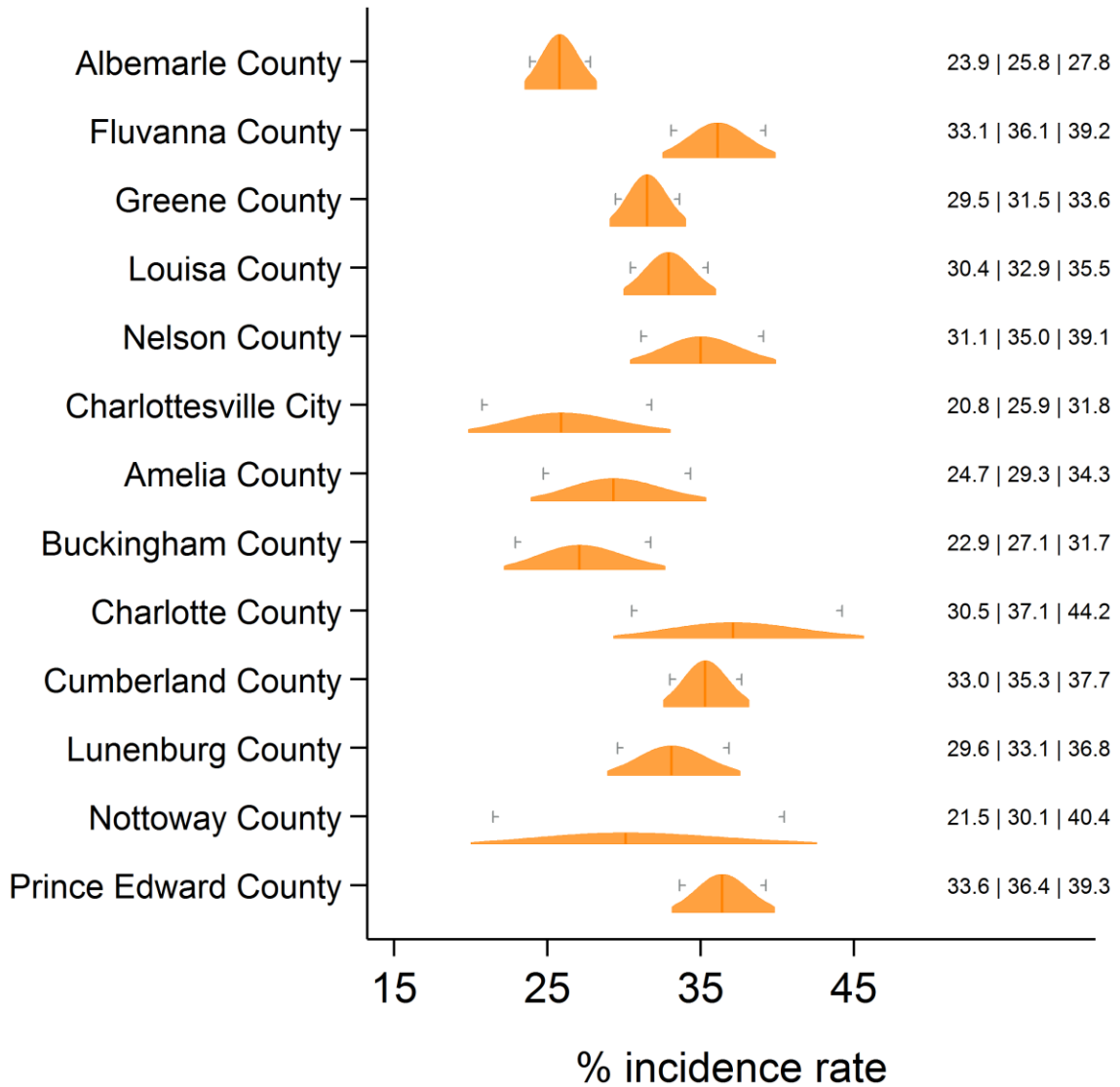
County	LCB | Point | UCB
Albemarle County	23.9 | 25.8 | 27.8
Fluvanna County	33.1 | 36.1 | 39.2
Greene County	29.5 | 31.5 | 33.6
Louisa County	30.4 | 32.9 | 35.5
Nelson County	31.1 | 35.0 | 39.1
Charlottesville City	20.8 | 25.9 | 31.8
Amelia County	24.7 | 29.3 | 34.3
Buckingham County	22.9 | 27.1 | 31.7
Charlotte County	30.5 | 37.1 | 44.2
Cumberland County	33.0 | 35.3 | 37.7
Lunenburg County	29.6 | 33.1 | 36.8
Nottoway County	21.5 | 30.1 | 40.4
Prince Edward County	33.6 | 36.4 | 39.3

% incidence rate

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

Lifetime pneumonia shot/vaccine
Alexandria, Fairfax, Arlington, Loudon, Prince William HDs
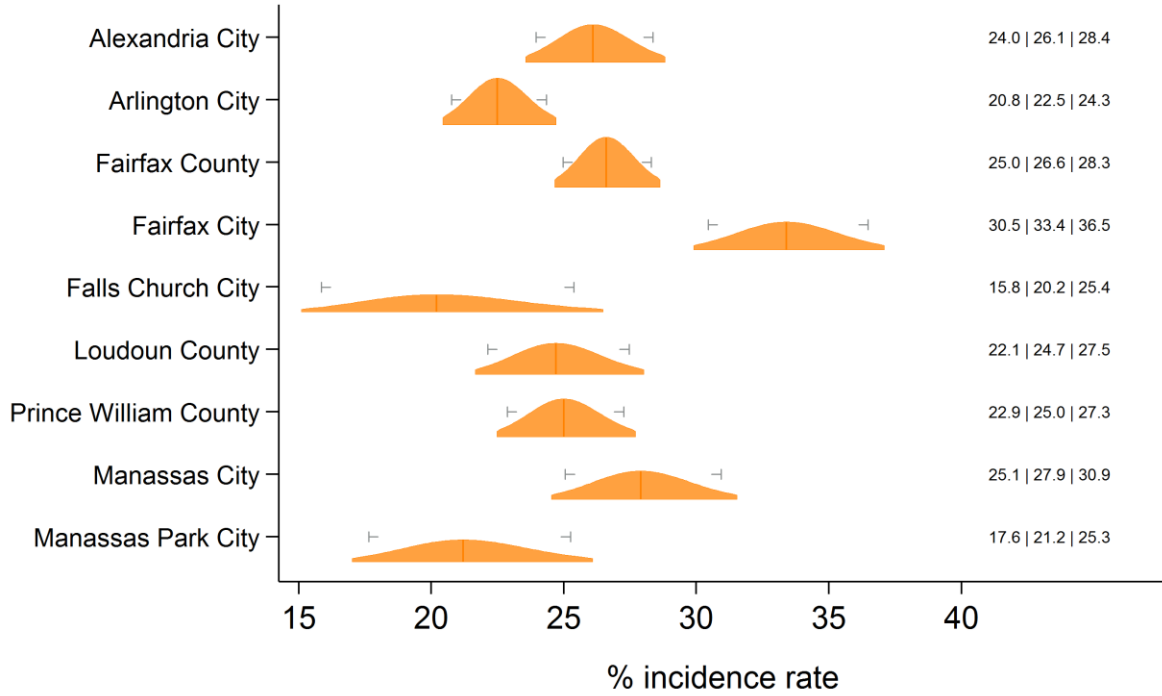
Location	1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Alexandria City	24.0 | 26.1 | 28.4
Arlington City	20.8 | 22.5 | 24.3
Fairfax County	25.0 | 26.6 | 28.3
Fairfax City	30.5 | 33.4 | 36.5
Falls Church City	15.8 | 20.2 | 25.4
Loudoun County	22.1 | 24.7 | 27.5
Prince William County	22.9 | 25.0 | 27.3
Manassas City	25.1 | 27.9 | 30.9
Manassas Park City	17.6 | 21.2 | 25.3

% incidence rate

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

Lifetime pneumonia shot/vaccine
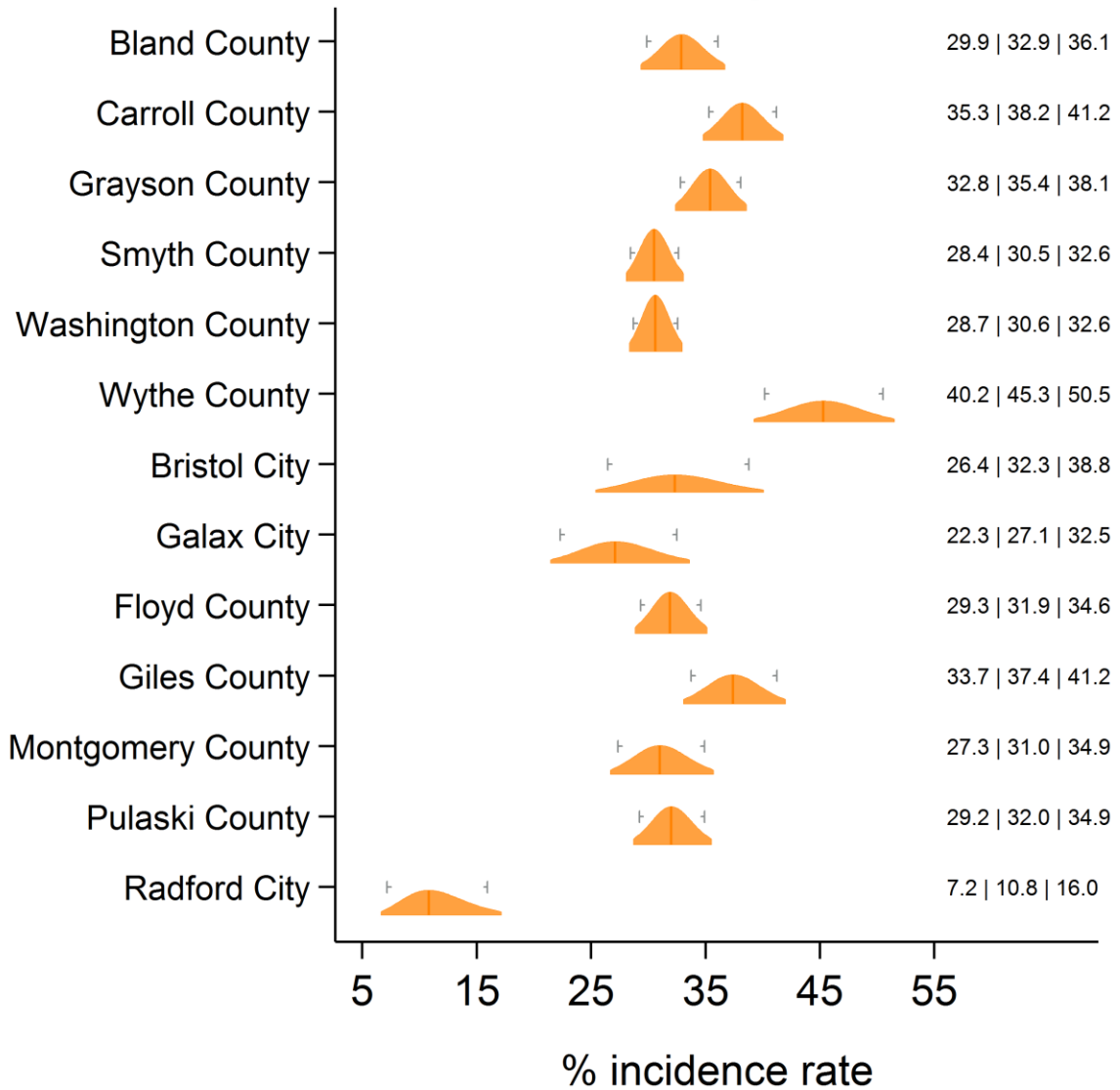## Cumberland Plateau and Lenowisco HDs
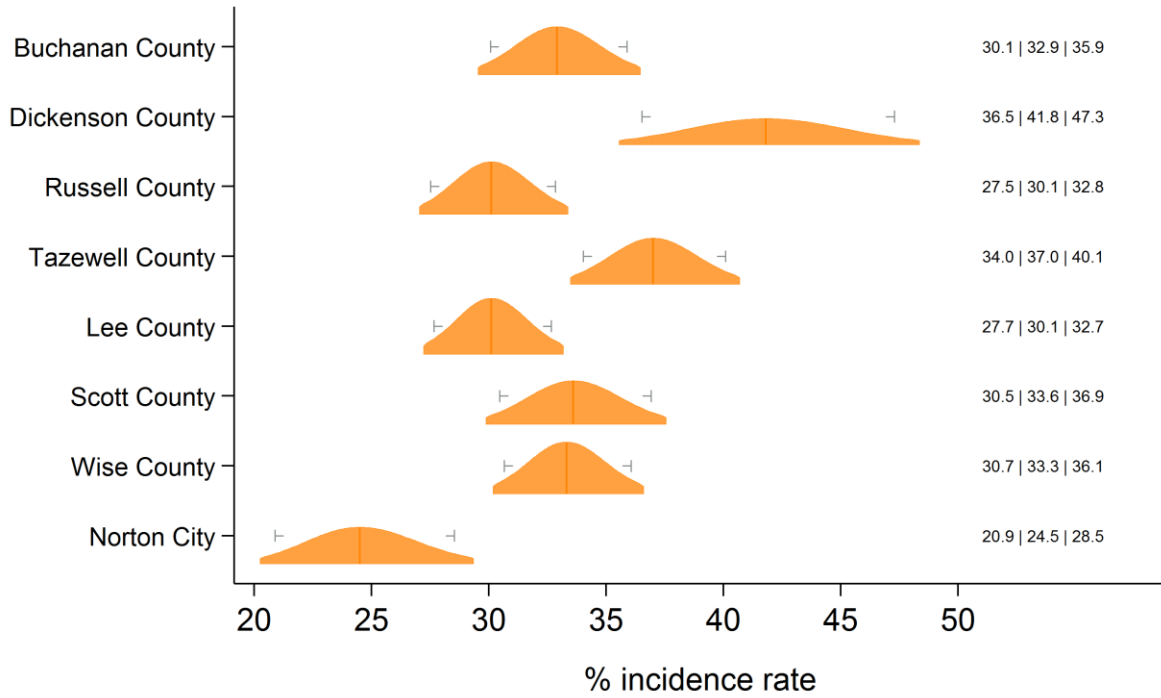
County	1-sided 95% LCB | Point Estimate | 1-sided 95% UCB
Buchanan County	30.1 | 32.9 | 35.9
Dickenson County	36.5 | 41.8 | 47.3
Russell County	27.5 | 30.1 | 32.8
Tazewell County	34.0 | 37.0 | 40.1
Lee County	27.7 | 30.1 | 32.7
Scott County	30.5 | 33.6 | 36.9
Wise County	30.7 | 33.3 | 36.1
Norton City	20.9 | 24.5 | 28.5

% incidence rate

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

Lifetime pneumonia shot/vaccine
New River and Mount Rogers HDs

County		Values
Bland County		29.9 | 32.9 | 36.1
Carroll County		35.3 | 38.2 | 41.2
Grayson County		32.8 | 35.4 | 38.1
Smyth County		28.4 | 30.5 | 32.6
Washington County		28.7 | 30.6 | 32.6
Wythe County		40.2 | 45.3 | 50.5
Bristol City		26.4 | 32.3 | 38.8
Galax City		22.3 | 27.1 | 32.5
Floyd County		29.3 | 31.9 | 34.6
Giles County		33.7 | 37.4 | 41.2
Montgomery County		27.3 | 31.0 | 34.9
Pulaski County		29.2 | 32.0 | 34.9
Radford City		7.2 | 10.8 | 16.0

% incidence rate

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

Lifetime pneumonia shot/vaccine
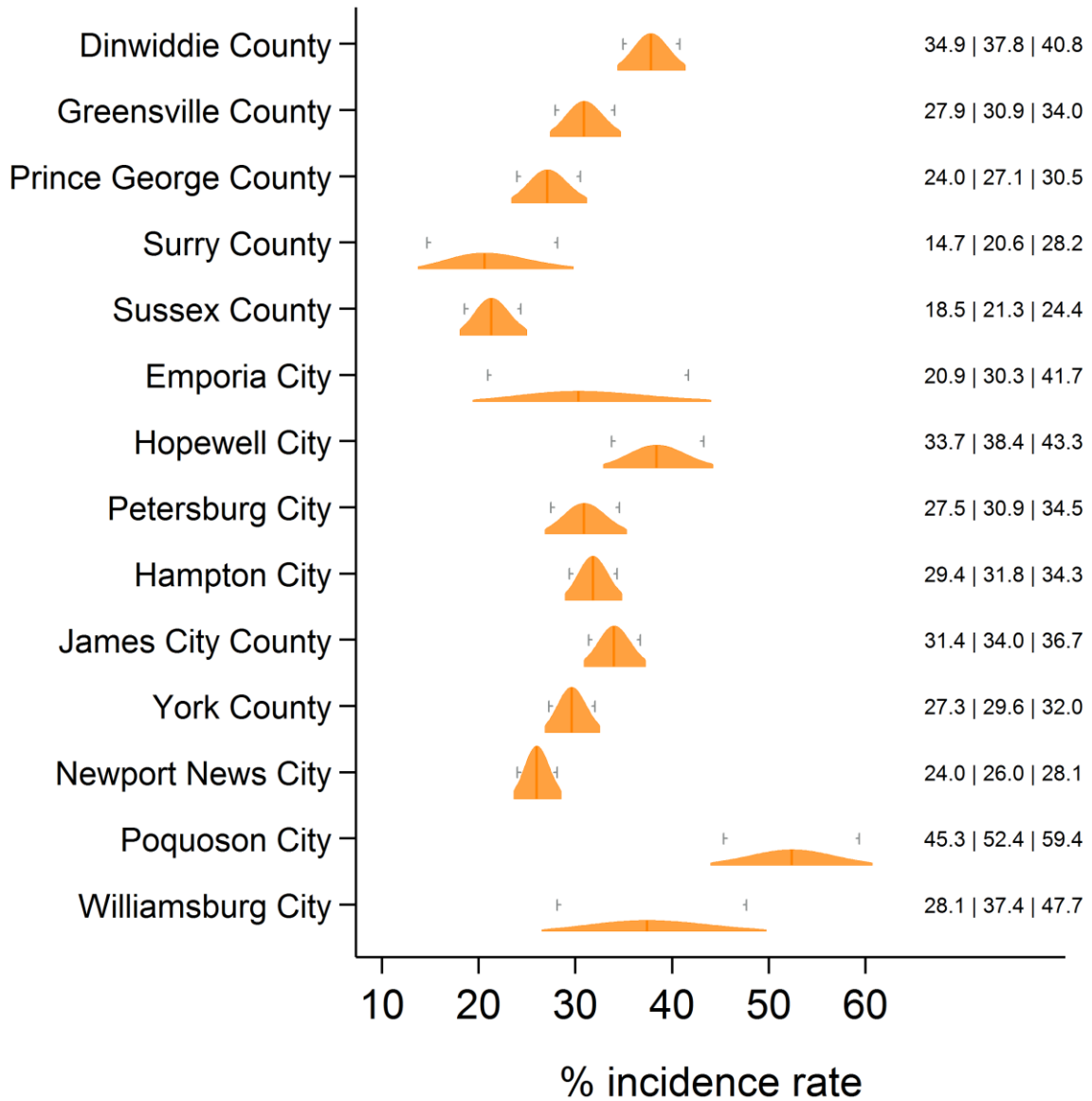## Crater, Peninsula and Hampton HDs

County/City	LCB | Point Estimate | UCB
Dinwiddie County	34.9 | 37.8 | 40.8
Greensville County	27.9 | 30.9 | 34.0
Prince George County	24.0 | 27.1 | 30.5
Surry County	14.7 | 20.6 | 28.2
Sussex County	18.5 | 21.3 | 24.4
Emporia City	20.9 | 30.3 | 41.7
Hopewell City	33.7 | 38.4 | 43.3
Petersburg City	27.5 | 30.9 | 34.5
Hampton City	29.4 | 31.8 | 34.3
James City County	31.4 | 34.0 | 36.7
York County	27.3 | 29.6 | 32.0
Newport News City	24.0 | 26.0 | 28.1
Poquoson City	45.3 | 52.4 | 59.4
Williamsburg City	28.1 | 37.4 | 47.7

% incidence rate

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: 51 areas.

Direct estimate is outside the 95% SAE Wilson CI: 82 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: 120 areas.

SAE Wilson 95% CI partially overlaps with the 95% direct Wilson CI: 13 areas.

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

SAE standard error is less that the direct standard error: 128 areas.

SAE standard error is greater that the (nonzero) direct standard error: 1 areas.

Direct standard error is zero: 4 areas.

Proportion of SAE variance due to ACS sampling error: min = 0.18%; med = 7.39%; max = 27.61%.

Proportion of SAE variance to sampling error in regression coefficient estimates: min = 65.53%; med = 91.22%; max = 99.28%.

Proportion of SAE variance due to model selection: min = 0.03%; med = 0.51%; max = 32.12%.