

Indicator 25: Diagnosed with pre-diabetes or borderline diabetes?

Internal variable name: outc25_prediab_diag

Definition: Have you ever been told by a doctor or other health professional that you have pre-diabetes or borderline diabetes?

Predictive models

| | Mixed, demos only | Logit, no area effects | Mixed with area covariates |
|---|------------------------|------------------------|----------------------------|
| | b/se | b/se | b/se |
| Outcome 25: Diagnosed with pre-diabetes or borderline diabetes? | | | |
| NH Black vs. NH White | 0.5457*** (0.1244) | 0.5441*** (0.1280) | 0.5441*** (0.1228) |
| NH Asian vs. NH White | 0.0924 (0.3617) | 0.0550 (0.3285) | 0.0550 (0.3757) |
| NH Other vs. NH White | 0.0961 (0.2442) | 0.0796 (0.2221) | 0.0796 (0.2439) |
| Hispanic vs. NH White | 0.8006*** (0.2177) | 0.7416** (0.2356) | 0.7416** (0.2401) |
| Female | -0.0826 (0.0946) | -0.0924 (0.0993) | -0.0924 (0.0941) |
| Age 18-34 vs. 65+ | -1.8398*** (0.2180) | -1.8690*** (0.2038) | -1.8690*** (0.2184) |
| Age 35-44 vs. 65+ | -1.0758*** (0.1757) | -1.0782*** (0.1699) | -1.0782*** (0.1762) |
| Age 45-54 vs. 65+ | -0.2910* (0.1229) | -0.3033* (0.1365) | -0.3033* (0.1235) |
| Age 55-64 vs. 65+ | -0.1507 (0.0815) | -0.1499 (0.1177) | -0.1499 (0.0833) |
| VA BRFSS 2014 SAE outc8_heart_disease | | 7.4067** (2.7403) | 7.4067** (2.6629) |
| % Hispanic among adults 18 to 64 | | 0.0176 (0.0122) | 0.0176 (0.0151) |
| o.% Hispanic among adults 18 to 64 | | 0.0000 (.) | |
| Myeloma Female Rate | | 0.0432 (0.0289) | 0.0432 (0.0320) |
| c.ACS_pct_Hisp_18to64#c.MyelomaFemaleRate | | 0.0025 (0.0033) | 0.0025 (0.0038) |
| o.Myeloma Female Rate | | 0.0000 (.) | |
| c.MyelomaFemaleRate#c.MyelomaFemaleRate | | -0.0011 (0.0008) | -0.0011 (0.0011) |
| Intercept | -1.6671*** | -2.3076*** | -2.3076*** |

| | | | |
|----------------------|--------------------------------|----------|----------------------------------|
| Area effect variance | (0.0922) 0.0000 (0.0000) | (0.1980) | (0.2075) 0.0000** (0.0000) |
|----------------------|--------------------------------|----------|----------------------------------|

Number of alternative models used to estimate model error = 7.

Results

| County name | County FIPS | Direct estimate | Direct 95% CI | SAE composite | SAE CI |
|---------------------|-------------|-----------------|----------------|---------------|----------------|
| Augusta County | 51015 | 13.2% | (6.2%, 25.9%) | 12.3% | (10.3%, 14.6%) |
| Bath County | 51017 | 9.8% | (1.8%, 47.7%) | 13.2% | (10.3%, 16.7%) |
| Caroline County | 51033 | 7.1% | (2.8%, 38.1%) | 14.6% | (12.6%, 16.9%) |
| Clarke County | 51043 | 10.7% | (2.1%, 40.0%) | 9.5% | (7.9%, 11.4%) |
| Culpeper County | 51047 | 6.8% | (3.2%, 21.1%) | 13.6% | (12.4%, 14.9%) |
| Fauquier County | 51061 | 9.4% | (4.9%, 23.5%) | 11.0% | (9.7%, 12.4%) |
| Frederick County | 51069 | 6.2% | (3.3%, 18.6%) | 14.8% | (12.5%, 17.4%) |
| Highland County | 51091 | 0.0% | (0.0%, 53.9%) | 7.4% | (5.3%, 10.1%) |
| King George County | 51099 | 4.2% | (1.6%, 48.1%) | 14.0% | (11.7%, 16.7%) |
| Madison County | 51113 | 16.2% | (3.9%, 47.8%) | 9.7% | (7.9%, 11.9%) |
| Orange County | 51137 | 31.7% | (16.0%, 53.2%) | 14.4% | (12.5%, 16.6%) |
| Page County | 51139 | 3.8% | (1.6%, 38.8%) | 11.3% | (9.5%, 13.5%) |
| Rappahannock County | 51157 | 15.9% | (2.3%, 60.7%) | 9.8% | (8.1%, 11.7%) |
| Rockbridge County | 51163 | 17.3% | (5.6%, 42.4%) | 9.4% | (7.6%, 11.4%) |
| Rockingham County | 51165 | 2.4% | (1.7%, 10.1%) | 9.9% | (8.8%, 11.1%) |
| Shenandoah County | 51171 | 5.3% | (2.7%, 20.5%) | 13.8% | (12.2%, 15.6%) |
| Spotsylvania County | 51177 | 12.6% | (5.1%, 27.6%) | 14.1% | (12.6%, 15.6%) |
| Stafford County | 51179 | 2.9% | (1.8%, 8.8%) | 11.7% | (10.5%, 13.0%) |
| Warren County | 51187 | 6.2% | (1.7%, 20.5%) | 11.3% | (9.8%, 12.9%) |
| Buena Vista City | 51530 | 0.0% | (0.0%, 57.5%) | 9.6% | (6.7%, 13.5%) |
| Fredericksburg City | 51630 | 11.1% | (3.2%, 31.8%) | 9.4% | (7.8%, 11.3%) |
| Harrisonburg City | 51660 | 1.6% | (0.8%, 49.3%) | 15.5% | (11.3%, 20.7%) |
| Lexington City | 51678 | 0.0% | (0.0%, 96.3%) | 14.7% | (10.7%, 19.8%) |
| Staunton City | 51790 | 35.1% | (7.3%, 78.8%) | 17.1% | (12.6%, 22.7%) |
| Waynesboro City | 51820 | 27.5% | (5.4%, 71.7%) | 13.5% | (11.9%, 15.2%) |
| Winchester City | 51840 | 2.0% | (0.7%, 63.6%) | 11.4% | (8.7%, 14.8%) |

| County name | County FIPS | Direct estimate | Direct 95% CI | SAE composite | SAE CI |
|-----------------------|-------------|-----------------|----------------|---------------|----------------|
| Albemarle County | 51003 | 7.7% | (4.6%, 15.7%) | 9.4% | (8.2%, 10.9%) |
| Alleghany County | 51005 | 11.9% | (5.4%, 46.9%) | 10.5% | (8.7%, 12.6%) |
| Amherst County | 51009 | 9.7% | (2.7%, 29.3%) | 10.5% | (8.8%, 12.5%) |
| Appomattox County | 51011 | 7.6% | (2.7%, 30.3%) | 11.0% | (9.0%, 13.3%) |
| Arlington City | 51013 | 11.6% | (6.1%, 20.8%) | 11.9% | (10.3%, 13.6%) |
| Bedford County | 51019 | 1.2% | (0.7%, 7.5%) | 11.6% | (10.2%, 13.2%) |
| Botetourt County | 51023 | 12.7% | (4.4%, 31.7%) | 13.0% | (10.0%, 16.8%) |
| Campbell County | 51031 | 6.5% | (2.7%, 14.9%) | 10.3% | (8.8%, 11.9%) |
| Craig County | 51045 | 9.9% | (1.4%, 81.3%) | 8.8% | (6.8%, 11.3%) |
| Fairfax County | 51059 | 11.3% | (8.6%, 14.8%) | 13.4% | (11.8%, 15.2%) |
| Fluvanna County | 51065 | 6.3% | (2.8%, 27.1%) | 11.1% | (9.5%, 12.9%) |
| Greene County | 51079 | 11.7% | (4.6%, 49.1%) | 8.1% | (6.8%, 9.8%) |
| Loudoun County | 51107 | 10.4% | (6.5%, 16.1%) | 13.9% | (11.8%, 16.4%) |
| Louisa County | 51109 | 21.6% | (9.8%, 41.1%) | 14.3% | (11.6%, 17.6%) |
| Nelson County | 51125 | 3.7% | (2.0%, 34.8%) | 10.5% | (8.8%, 12.5%) |
| Prince William County | 51153 | 15.6% | (11.1%, 21.4%) | 17.1% | (14.1%, 20.5%) |
| Roanoke County | 51161 | 6.2% | (3.9%, 13.9%) | 10.7% | (9.2%, 12.5%) |
| Alexandria City | 51510 | 12.5% | (7.4%, 20.3%) | 12.1% | (9.9%, 14.6%) |
| Charlottesville City | 51540 | 3.0% | (1.8%, 25.4%) | 10.1% | (8.5%, 11.9%) |
| Covington City | 51580 | 0.0% | (0.0%, 99.4%) | 10.3% | (8.3%, 12.8%) |
| Fairfax City | 51600 | 16.4% | (8.3%, 30.0%) | 12.4% | (9.0%, 16.9%) |
| Falls Church City | 51610 | 8.6% | (4.0%, 34.4%) | 9.5% | (7.4%, 12.0%) |
| Lynchburg City | 51680 | 5.6% | (2.0%, 14.5%) | 10.8% | (9.1%, 12.9%) |
| Manassas City | 51683 | 1.8% | (1.1%, 34.6%) | 15.3% | (8.2%, 26.8%) |
| Manassas Park City | 51685 | 0.0% | (-0.0%, 86.7%) | 32.7% | (13.6%, 60.0%) |
| Salem City | 51775 | 7.5% | (2.9%, 48.2%) | 9.7% | (8.2%, 11.6%) |

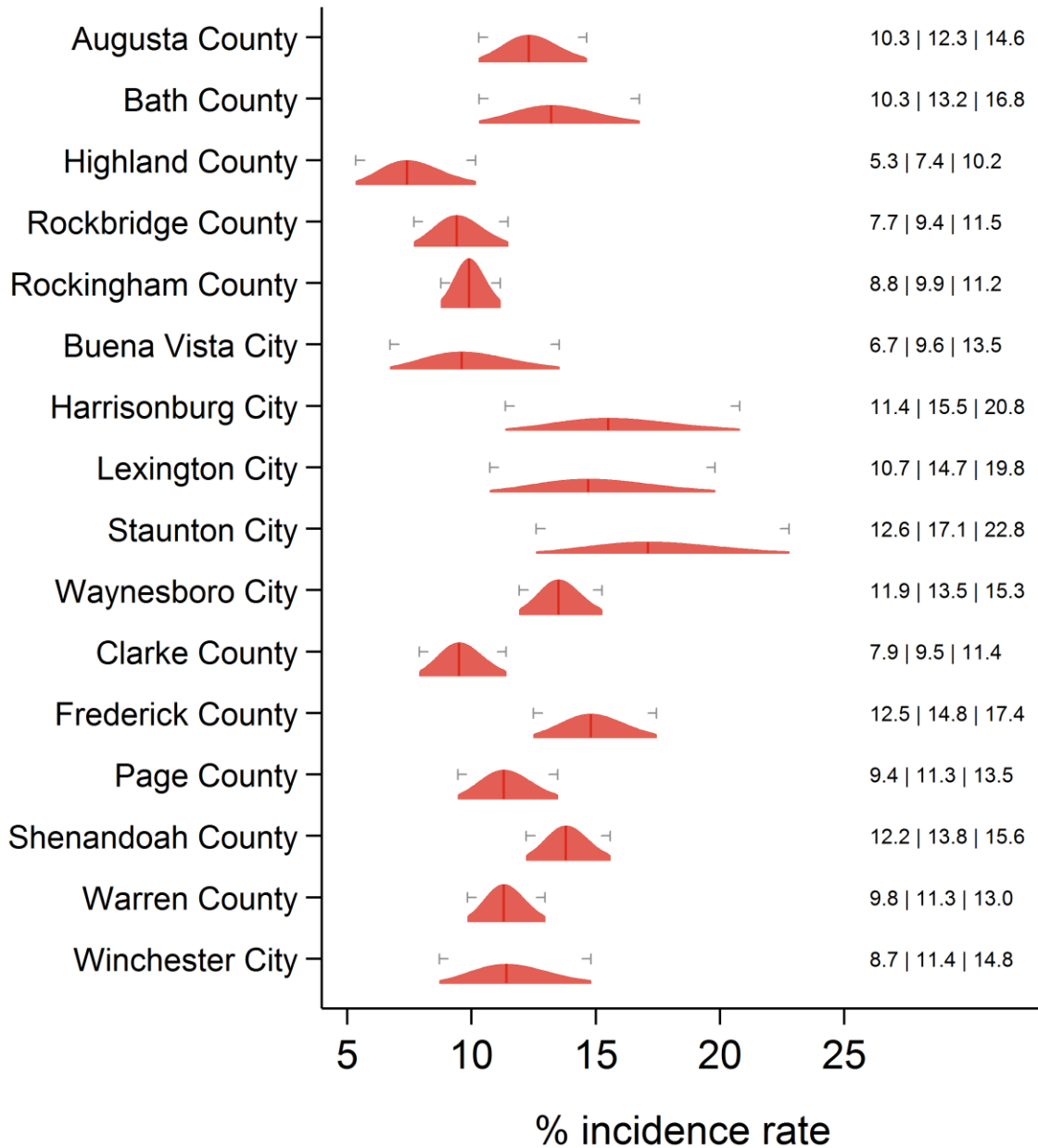
| County name | County FIPS | Direct estimate | Direct 95% CI | SAE composite | SAE CI |
|---------------------|-------------|-----------------|----------------|---------------|----------------|
| Bland County | 51021 | 7.5% | (2.1%, 51.8%) | 11.4% | (9.1%, 14.3%) |
| Buchanan County | 51027 | 28.2% | (10.0%, 58.2%) | 18.4% | (11.4%, 28.3%) |
| Carroll County | 51035 | 19.5% | (7.7%, 41.4%) | 11.0% | (9.2%, 13.1%) |
| Dickenson County | 51051 | 26.1% | (8.9%, 56.0%) | 21.6% | (13.8%, 32.2%) |
| Floyd County | 51063 | 3.3% | (2.0%, 22.6%) | 6.7% | (5.2%, 8.6%) |
| Franklin County | 51067 | 2.1% | (1.2%, 18.7%) | 13.3% | (11.2%, 15.6%) |
| Giles County | 51071 | 5.5% | (0.9%, 27.3%) | 7.2% | (5.7%, 9.0%) |
| Grayson County | 51077 | 12.5% | (4.0%, 33.1%) | 9.7% | (8.0%, 11.7%) |
| Henry County | 51089 | 4.7% | (1.2%, 16.4%) | 15.5% | (13.6%, 17.6%) |
| Lee County | 51105 | 1.9% | (1.0%, 35.9%) | 10.1% | (8.4%, 12.1%) |
| Montgomery County | 51121 | 9.5% | (4.9%, 17.8%) | 8.5% | (7.3%, 9.8%) |
| Patrick County | 51141 | 23.8% | (5.1%, 64.2%) | 11.3% | (9.6%, 13.3%) |
| Pittsylvania County | 51143 | 7.7% | (3.7%, 15.3%) | 11.8% | (10.0%, 13.9%) |
| Pulaski County | 51155 | 16.8% | (6.1%, 38.6%) | 9.4% | (7.8%, 11.4%) |
| Russell County | 51167 | 8.4% | (4.1%, 25.6%) | 13.1% | (10.4%, 16.4%) |
| Scott County | 51169 | 19.9% | (9.3%, 37.7%) | 11.8% | (9.0%, 15.3%) |
| Smyth County | 51173 | 1.1% | (0.6%, 38.1%) | 9.8% | (8.0%, 11.9%) |
| Tazewell County | 51185 | 4.1% | (2.2%, 20.1%) | 11.1% | (8.9%, 13.6%) |
| Washington County | 51191 | 3.9% | (2.4%, 13.7%) | 9.6% | (7.8%, 11.7%) |
| Wise County | 51195 | 10.6% | (3.8%, 26.1%) | 14.1% | (10.7%, 18.2%) |
| Wythe County | 51197 | 18.6% | (7.0%, 40.8%) | 17.1% | (12.0%, 23.7%) |
| Bristol City | 51520 | 0.0% | (0.0%, 78.7%) | 14.8% | (10.5%, 20.4%) |
| Danville City | 51590 | 3.2% | (1.3%, 26.2%) | 14.6% | (12.7%, 16.7%) |
| Galax City | 51640 | 0.0% | (0.0%, 91.3%) | 26.8% | (16.4%, 40.7%) |
| Martinsville City | 51690 | 0.0% | (0.0%, 54.3%) | 10.8% | (9.1%, 12.7%) |
| Norton City | 51720 | 36.6% | (4.7%, 87.0%) | 20.2% | (12.2%, 31.5%) |
| Radford City | 51750 | 42.8% | (10.8%, 82.2%) | 12.4% | (7.6%, 19.4%) |
| Roanoke City | 51770 | 9.1% | (4.4%, 17.9%) | 13.5% | (11.9%, 15.3%) |

| County name | County FIPS | Direct estimate | Direct 95% CI | SAE composite | SAE CI |
|-----------------------|-------------|-----------------|----------------|---------------|----------------|
| Amelia County | 51007 | 3.9% | (2.1%, 37.0%) | 16.3% | (11.9%, 22.0%) |
| Brunswick County | 51025 | 8.7% | (3.0%, 36.4%) | 12.2% | (9.7%, 15.3%) |
| Buckingham County | 51029 | 13.6% | (5.3%, 31.0%) | 10.5% | (8.2%, 13.2%) |
| Charles City County | 51036 | 42.3% | (8.7%, 85.0%) | 16.4% | (10.6%, 24.6%) |
| Charlotte County | 51037 | 28.3% | (13.5%, 50.0%) | 19.0% | (11.6%, 29.6%) |
| Chesterfield County | 51041 | 14.1% | (9.6%, 20.3%) | 16.1% | (14.0%, 18.4%) |
| Cumberland County | 51049 | 15.3% | (5.5%, 35.8%) | 10.7% | (8.7%, 13.2%) |
| Dinwiddie County | 51053 | 3.3% | (1.9%, 35.0%) | 15.8% | (12.9%, 19.2%) |
| Goochland County | 51075 | 4.2% | (2.2%, 29.2%) | 16.2% | (12.6%, 20.7%) |
| Greensville County | 51081 | 0.0% | (0.0%, 40.9%) | 11.5% | (9.8%, 13.4%) |
| Halifax County | 51083 | 7.4% | (3.9%, 23.7%) | 11.2% | (9.4%, 13.3%) |
| Hanover County | 51085 | 15.5% | (8.1%, 27.6%) | 12.9% | (11.4%, 14.7%) |
| Henrico County | 51087 | 11.0% | (7.3%, 16.3%) | 13.2% | (11.8%, 14.7%) |
| Lunenburg County | 51111 | 17.1% | (5.5%, 42.6%) | 12.3% | (10.5%, 14.5%) |
| Mecklenburg County | 51117 | 9.4% | (3.9%, 20.7%) | 13.7% | (12.0%, 15.7%) |
| New Kent County | 51127 | 7.5% | (2.6%, 34.9%) | 10.2% | (8.5%, 12.2%) |
| Nottoway County | 51135 | 18.8% | (5.5%, 48.1%) | 15.5% | (13.4%, 17.9%) |
| Powhatan County | 51145 | 10.9% | (2.7%, 35.3%) | 12.3% | (10.3%, 14.7%) |
| Prince Edward County | 51147 | 9.1% | (2.3%, 30.2%) | 10.8% | (9.1%, 12.8%) |
| Prince George County | 51149 | 9.4% | (3.5%, 22.8%) | 21.8% | (16.8%, 27.8%) |
| Surry County | 51181 | 5.1% | (1.8%, 46.0%) | 19.6% | (13.2%, 28.1%) |
| Sussex County | 51183 | 10.8% | (3.9%, 26.6%) | 11.8% | (10.1%, 13.9%) |
| Colonial Heights City | 51570 | 10.5% | (5.4%, 32.7%) | 14.1% | (11.6%, 16.9%) |
| Emporia City | 51595 | 0.0% | (0.0%, 99.4%) | 20.8% | (8.7%, 42.1%) |
| Hopewell City | 51670 | 11.6% | (2.6%, 39.5%) | 15.5% | (12.4%, 19.2%) |
| Petersburg City | 51730 | 9.8% | (3.3%, 25.4%) | 11.1% | (9.2%, 13.4%) |
| Richmond City | 51760 | 8.3% | (4.6%, 14.4%) | 14.8% | (12.5%, 17.6%) |

| County name | County FIPS | Direct estimate | Direct 95% CI | SAE composite | SAE CI |
|-----------------------|-------------|-----------------|----------------|---------------|----------------|
| Accomack County | 51001 | 8.2% | (3.2%, 19.4%) | 19.8% | (15.9%, 24.4%) |
| Essex County | 51057 | 37.8% | (11.5%, 74.0%) | 17.1% | (12.5%, 23.1%) |
| Gloucester County | 51073 | 6.8% | (2.9%, 15.4%) | 13.3% | (11.7%, 15.0%) |
| Isle of Wight County | 51093 | 15.5% | (4.2%, 43.2%) | 13.1% | (10.9%, 15.6%) |
| James City County | 51095 | 11.0% | (5.5%, 20.7%) | 12.2% | (10.3%, 14.5%) |
| King and Queen County | 51097 | 13.4% | (3.8%, 52.5%) | 14.5% | (11.6%, 18.1%) |
| King William County | 51101 | 35.3% | (13.9%, 64.8%) | 16.1% | (11.3%, 22.4%) |
| Lancaster County | 51103 | 3.1% | (1.9%, 26.8%) | 12.7% | (10.5%, 15.4%) |
| Mathews County | 51115 | 17.6% | (5.2%, 45.6%) | 13.8% | (10.8%, 17.3%) |
| Middlesex County | 51119 | 23.9% | (8.8%, 50.6%) | 16.1% | (11.2%, 22.6%) |
| Northampton County | 51131 | 15.1% | (4.8%, 38.5%) | 12.4% | (10.6%, 14.3%) |
| Northumberland County | 51133 | 1.6% | (0.9%, 25.0%) | 11.5% | (9.4%, 14.1%) |
| Richmond County | 51159 | 1.0% | (0.6%, 29.0%) | 12.9% | (11.0%, 15.0%) |
| Southampton County | 51175 | 2.1% | (1.1%, 33.0%) | 14.3% | (11.9%, 17.1%) |
| Westmoreland County | 51193 | 22.0% | (7.3%, 50.3%) | 21.9% | (16.8%, 27.9%) |
| York County | 51199 | 9.3% | (2.8%, 26.5%) | 11.7% | (10.0%, 13.7%) |
| Chesapeake City | 51550 | 10.9% | (6.1%, 18.6%) | 10.9% | (9.6%, 12.3%) |
| Franklin City | 51620 | 1.8% | (1.0%, 25.3%) | 12.3% | (2.6%, 42.7%) |
| Hampton City | 51650 | 11.8% | (7.1%, 19.1%) | 12.1% | (10.3%, 14.0%) |
| Newport News City | 51700 | 11.5% | (5.2%, 23.5%) | 14.6% | (13.0%, 16.4%) |
| Norfolk City | 51710 | 9.7% | (5.6%, 16.3%) | 10.5% | (9.3%, 11.9%) |
| Poquoson City | 51735 | 5.4% | (1.0%, 79.3%) | 10.9% | (9.2%, 13.0%) |
| Portsmouth City | 51740 | 9.2% | (4.8%, 17.0%) | 11.1% | (9.6%, 12.9%) |
| Suffolk City | 51800 | 6.4% | (3.6%, 17.2%) | 13.9% | (12.3%, 15.8%) |
| Virginia Beach City | 51810 | 10.1% | (6.9%, 14.4%) | 12.6% | (11.3%, 14.0%) |
| Williamsburg City | 51830 | 0.0% | (0.0%, 82.6%) | 23.1% | (12.6%, 38.6%) |

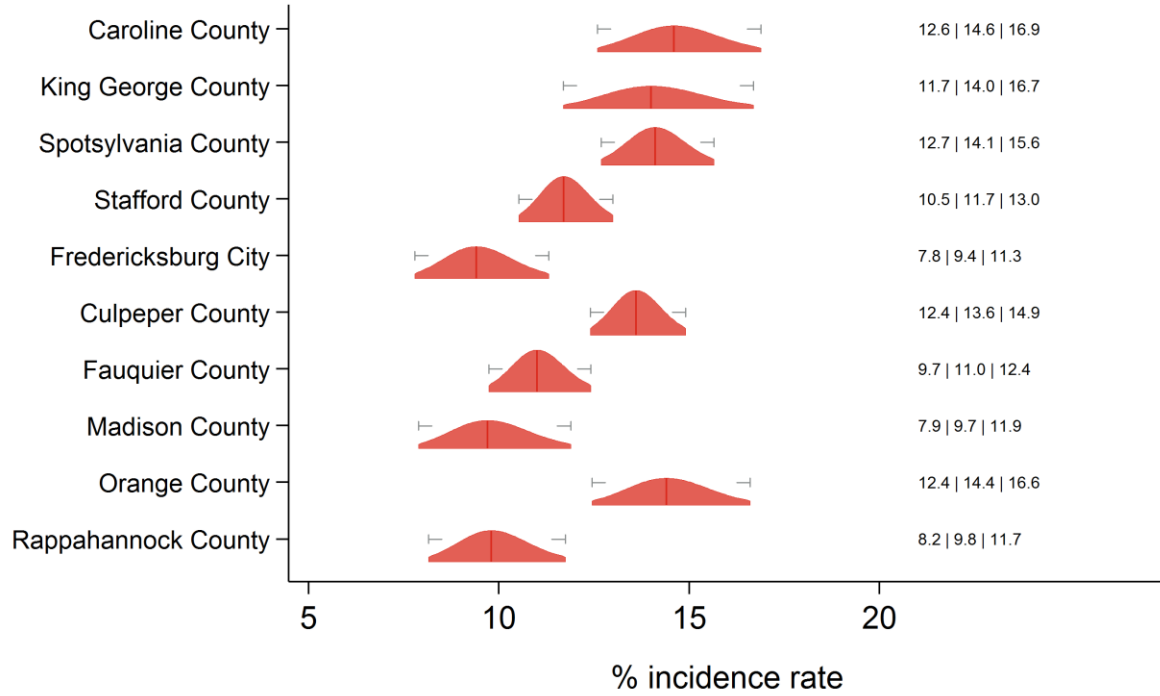
Graphical representation

Diagnosed with pre/borderline diabetes Central Shenandoah and Lord Fairfax HDs



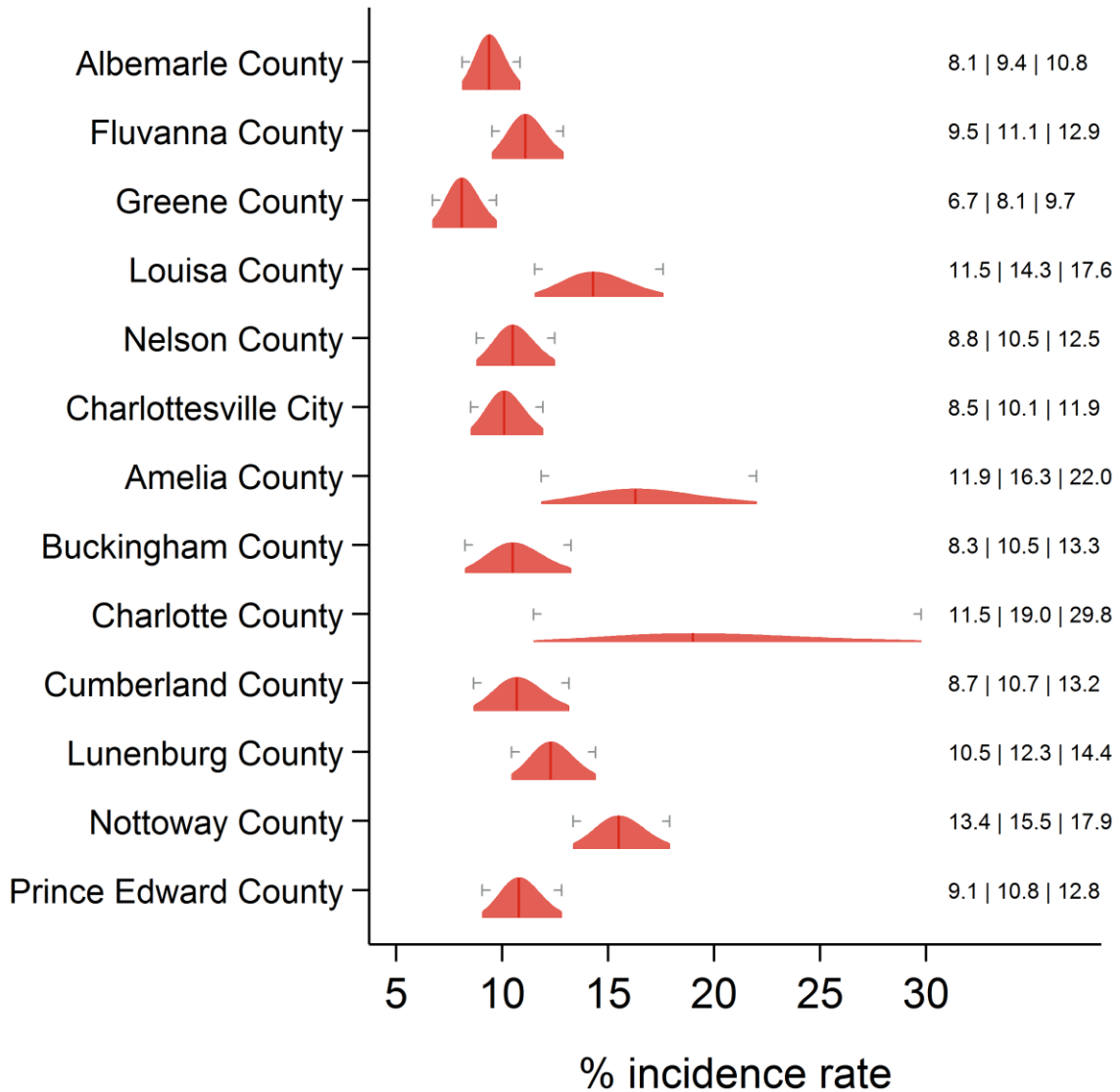
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes Rappahannock/Rapidan and Rappahannock HDs



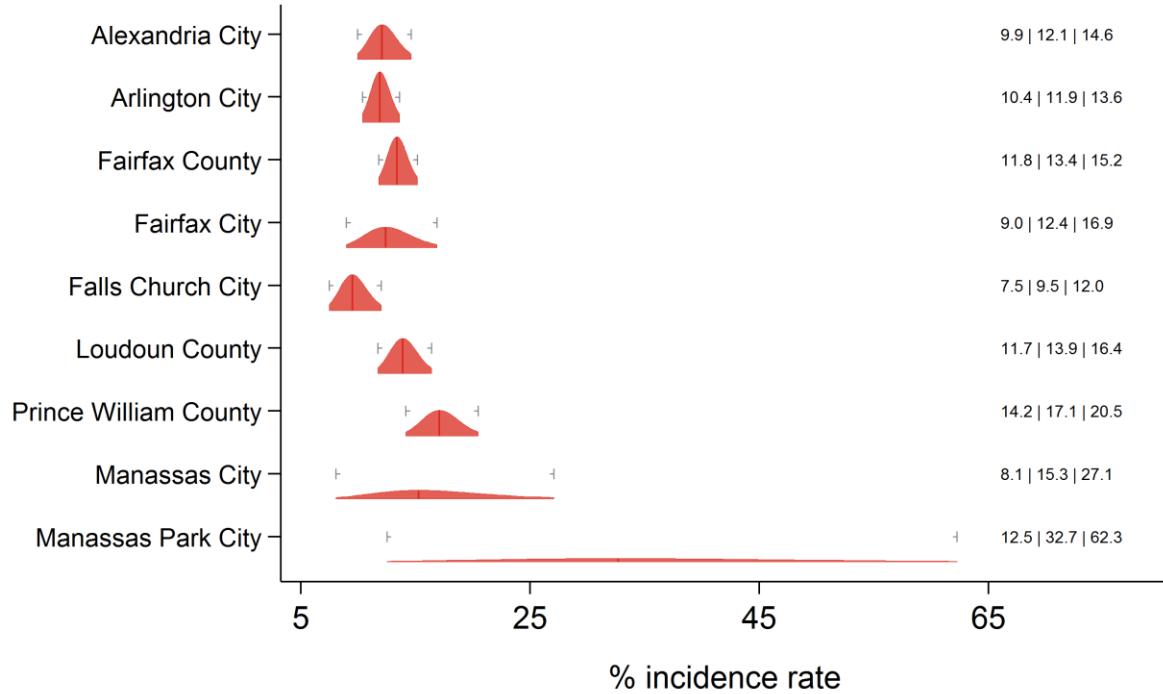
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes Thomas Jefferson and Piedmont HDs



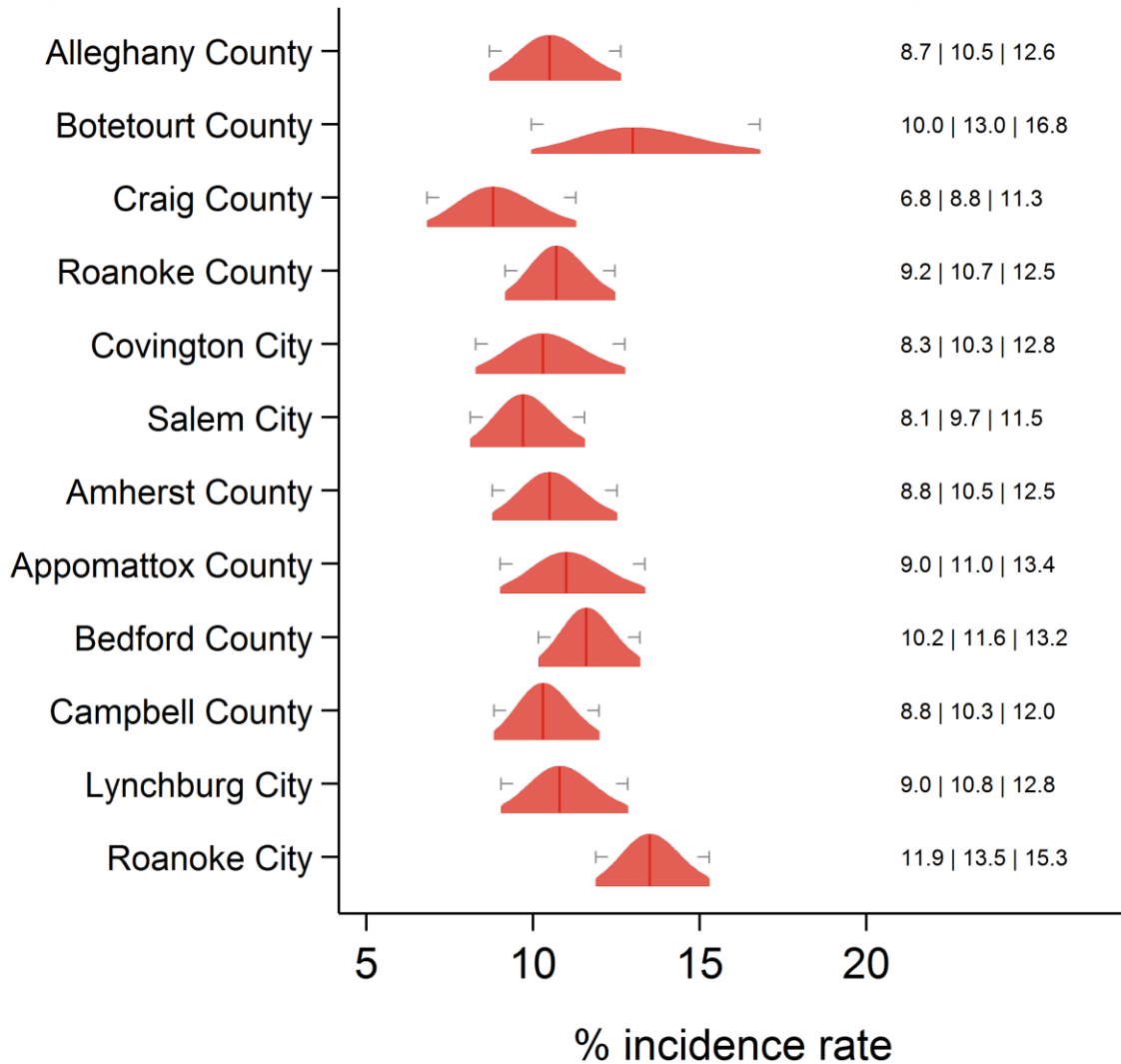
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes Alexandria, Fairfax, Arlington, Loudon, Prince William HDs



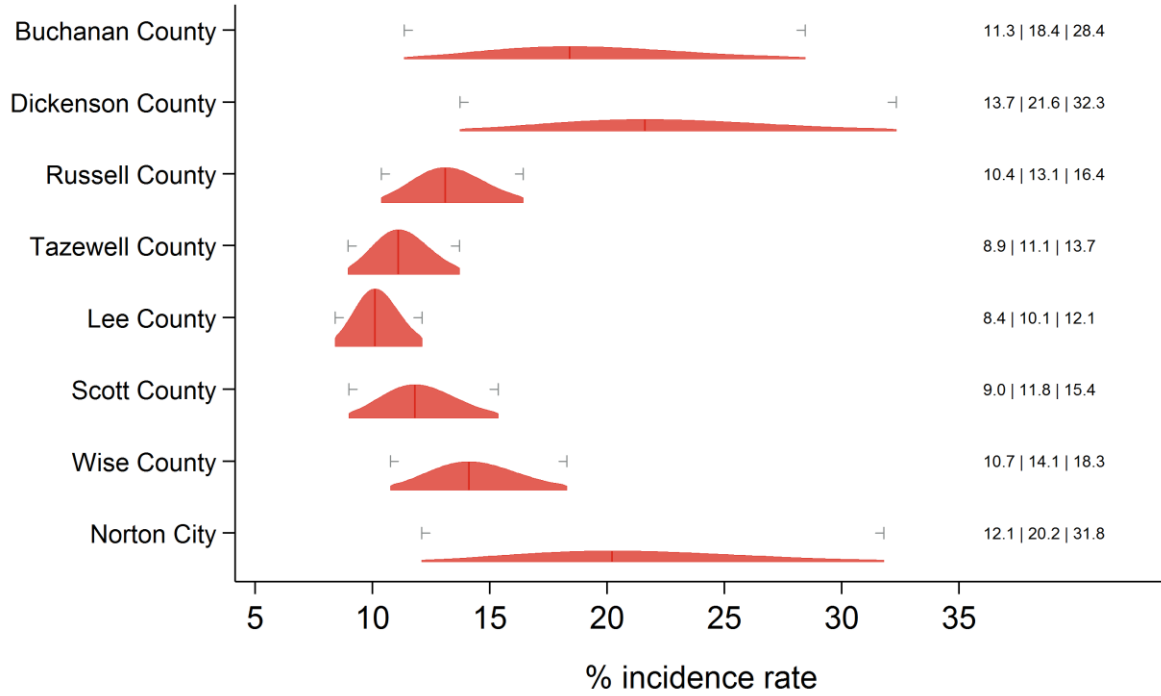
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes Alleghany, Roanoke and Central Virginia HDs



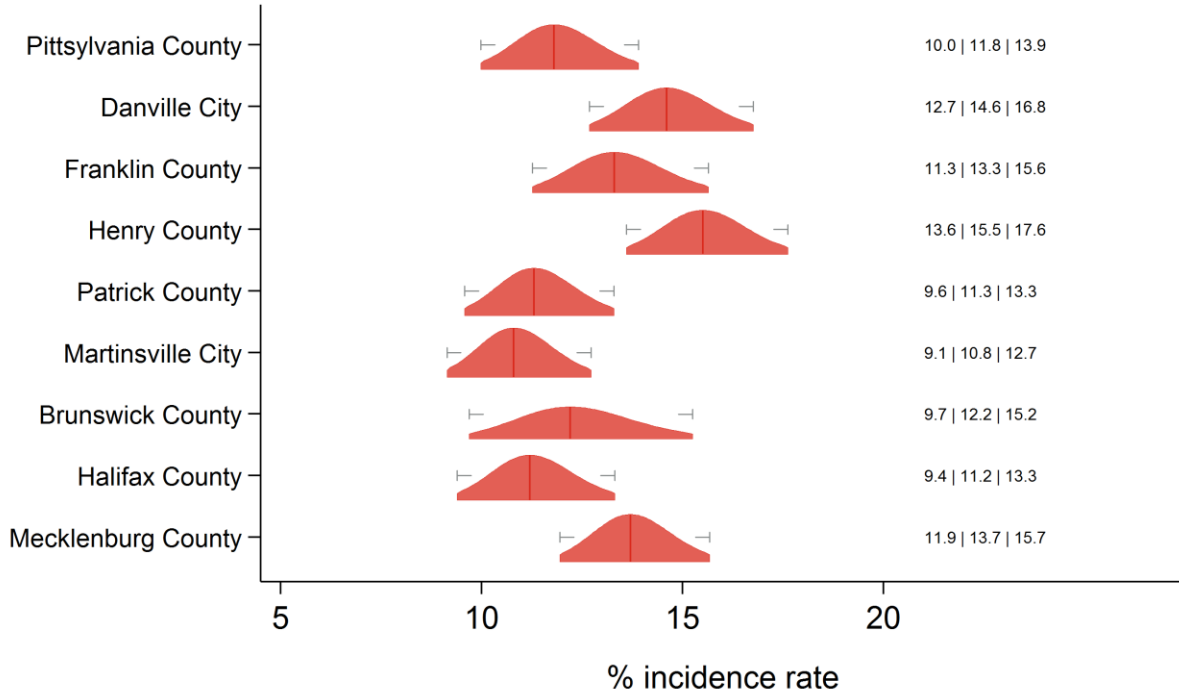
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes Cumberland Plateau and Lenowisco HDs



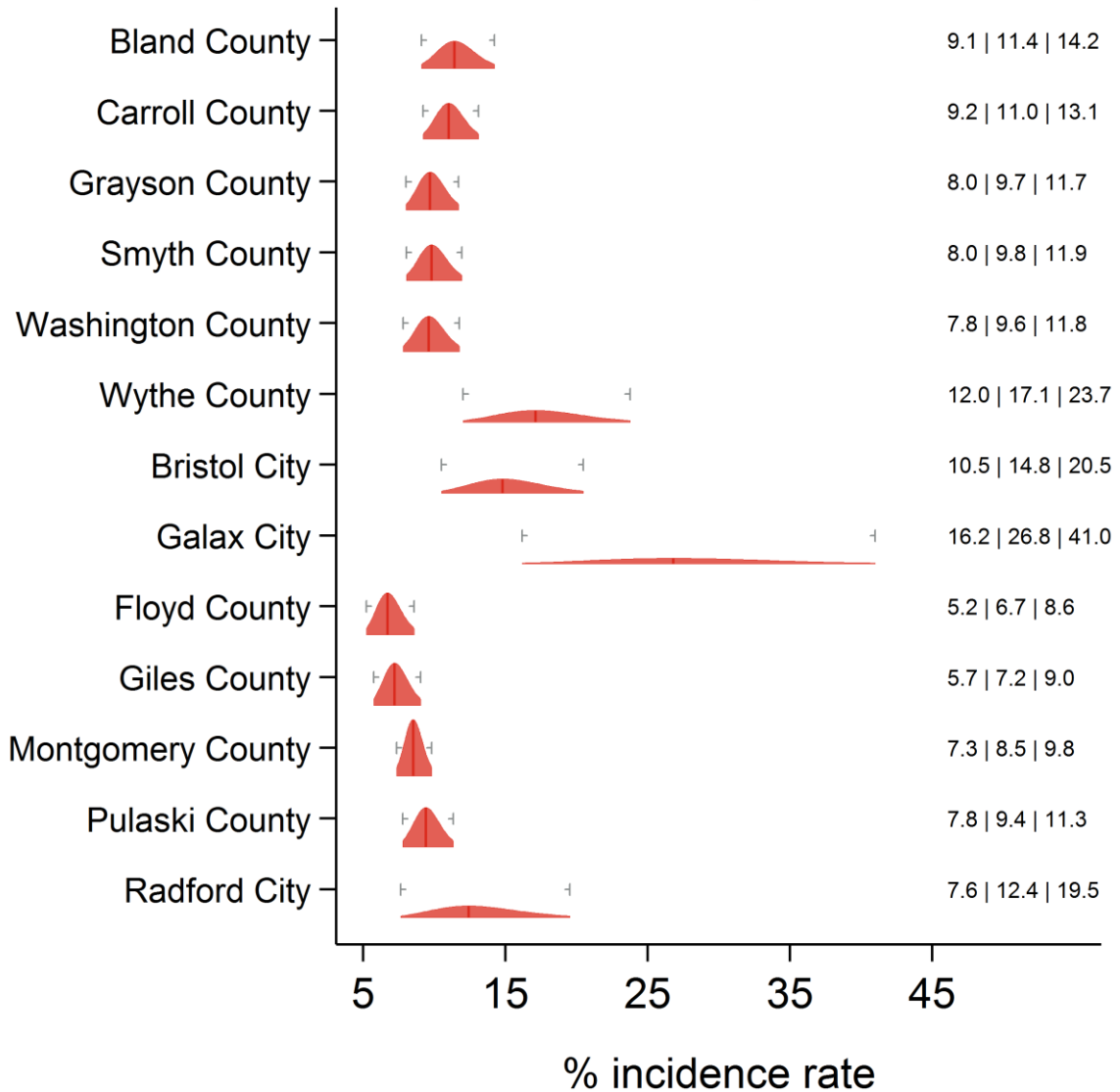
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes Pittsylvania/Danville, Southside and West Piedmont HDs



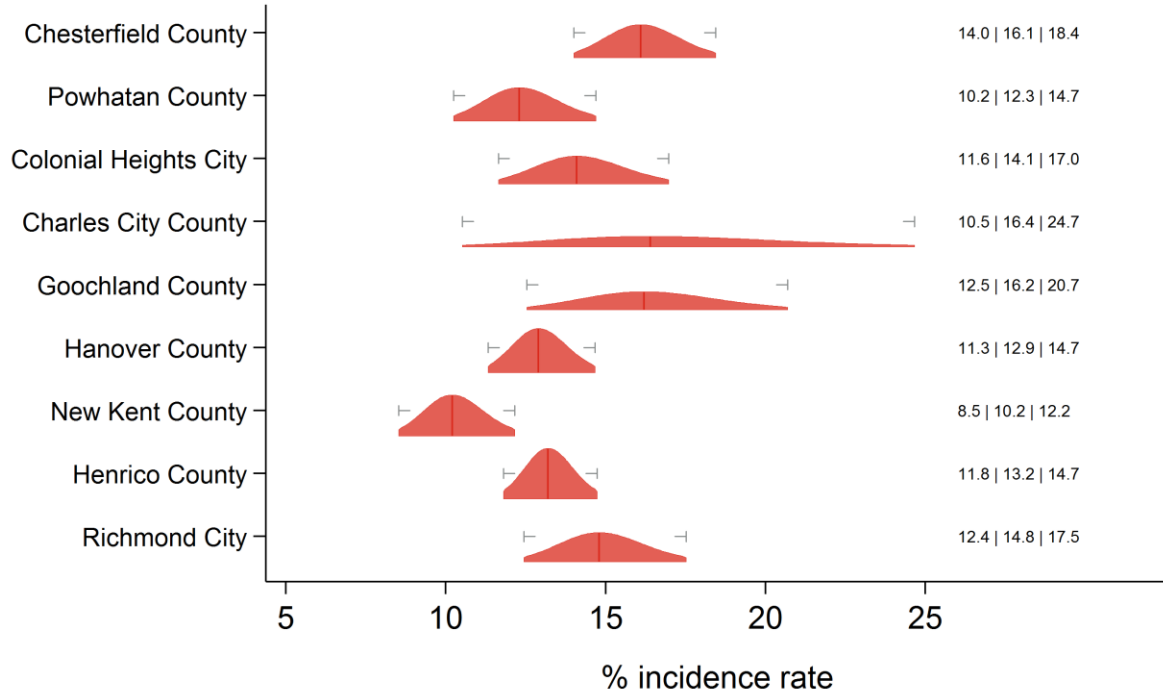
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes New River and Mount Rogers HDs



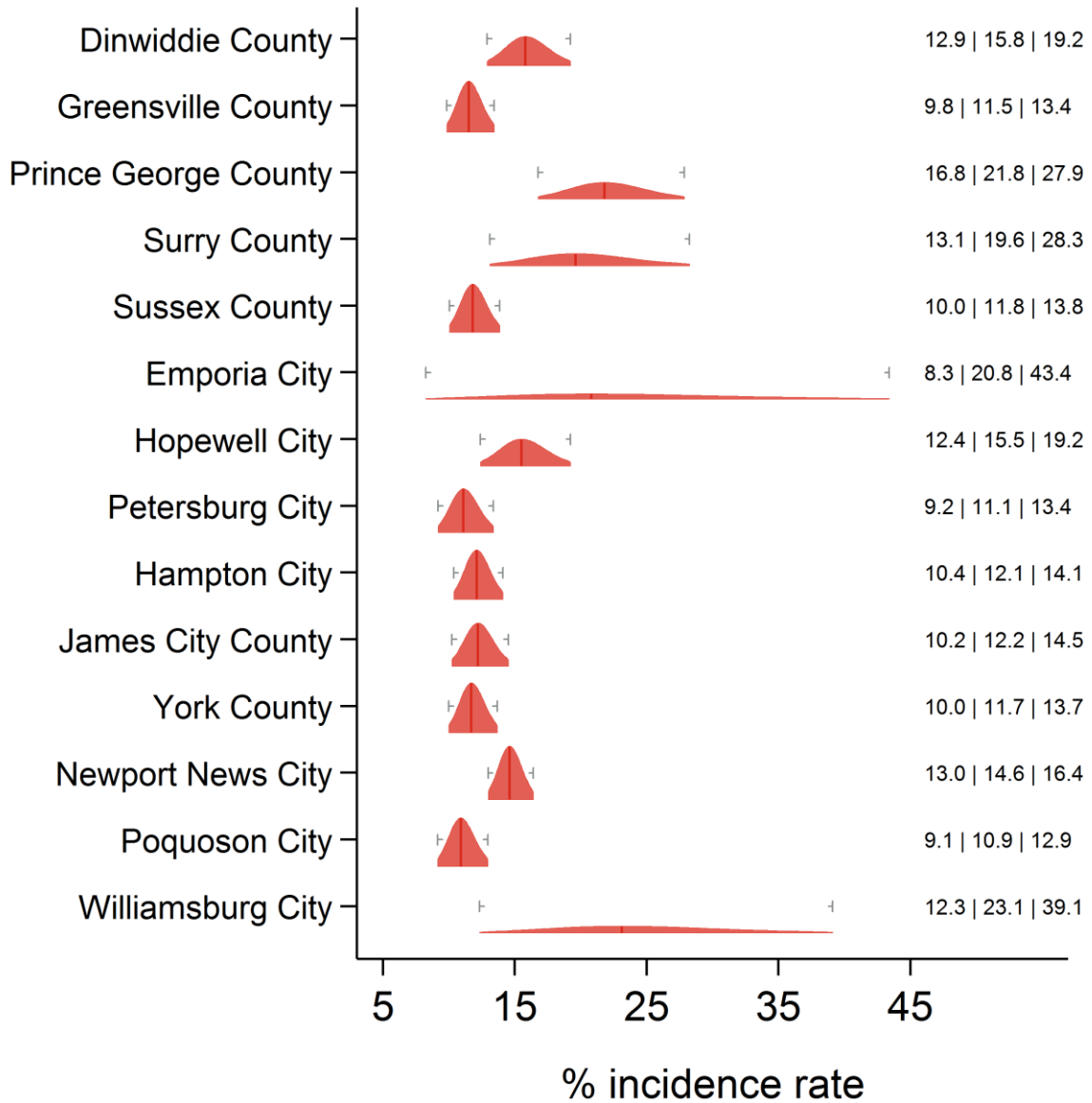
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes Chesterfield, Chickahominy, Henrico and Richmond HDs



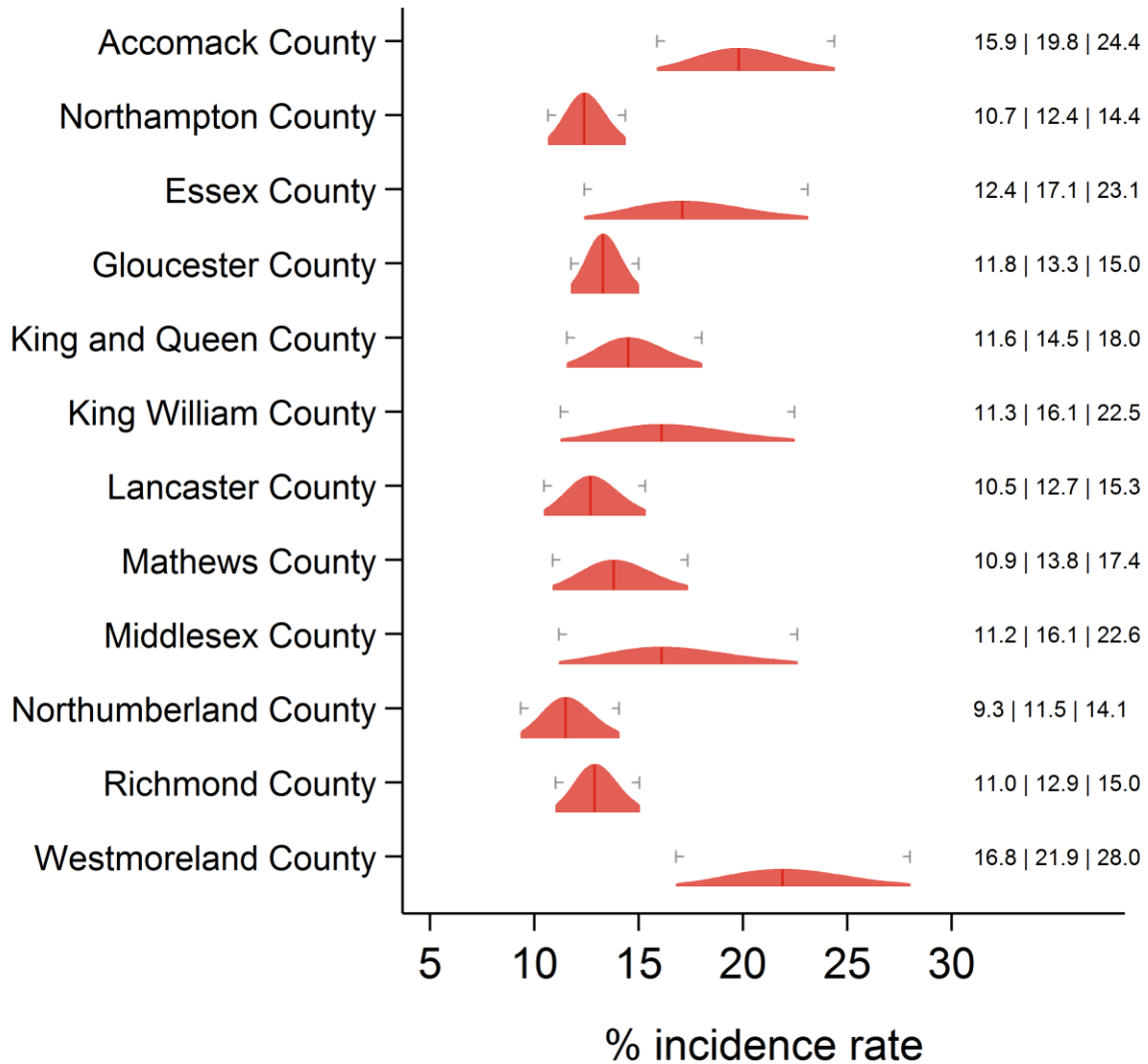
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes Crater, Peninsula and Hampton HDs



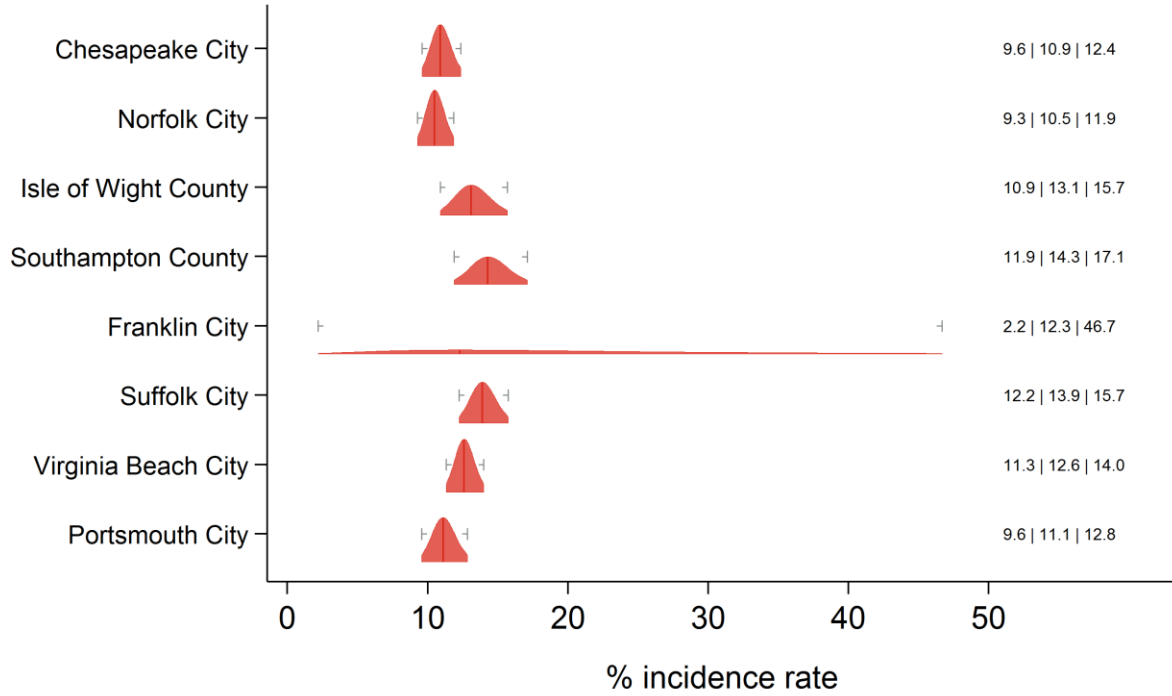
Text at right: 2-sided 95% LCB | Point Estimate | 2-sided 95% UCB
 Gray markers: 95% confidence interval

Diagnosed with pre/borderline diabetes Eastern Shore and Three Rivers HDs



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

Diagnosed with pre/borderline diabetes 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: 29 areas.

Direct estimate is outside the 95% SAE Wilson CI: 104 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: 119 areas.

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

Direct standard error is zero: 11 areas.

Proportion of SAE variance due to ACS sampling error: min = 0.05%; med = 2.71%; max = 13.95%.

Proportion of SAE variance due to sampling error in regression coefficient estimates: min = 27.77%; med = 93.66%; max = 99.39%.

Proportion of SAE variance due to model selection: min = 0.30%; med = 2.62%; max = 71.41%.

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