Your vote doesn't count…but how it was counted does.

Assessing the validity of the Electoral College in the United States through Voter Power and spatial analyses
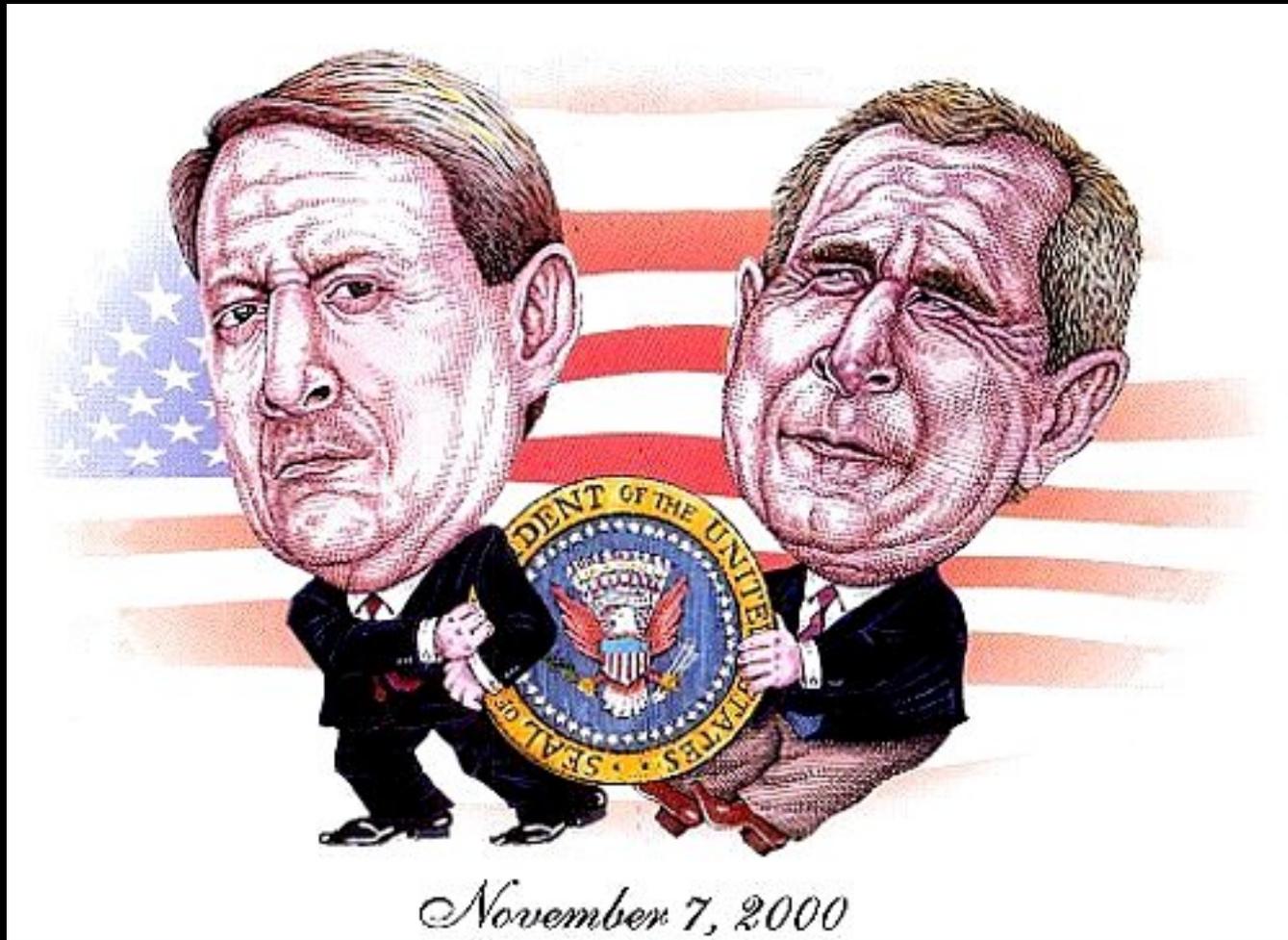
Luke Wenschhof

University of Southern California

ESRI International User Conference

July 11, 2013

USC

The Electoral College

November 7, 2000

The Electoral College

->background

->swing states

->current debate

does your vote matter? Voter Power

$$VP_s = \frac{n_s!}{(n_s - d_s)! \, d_s!} * EV_s$$
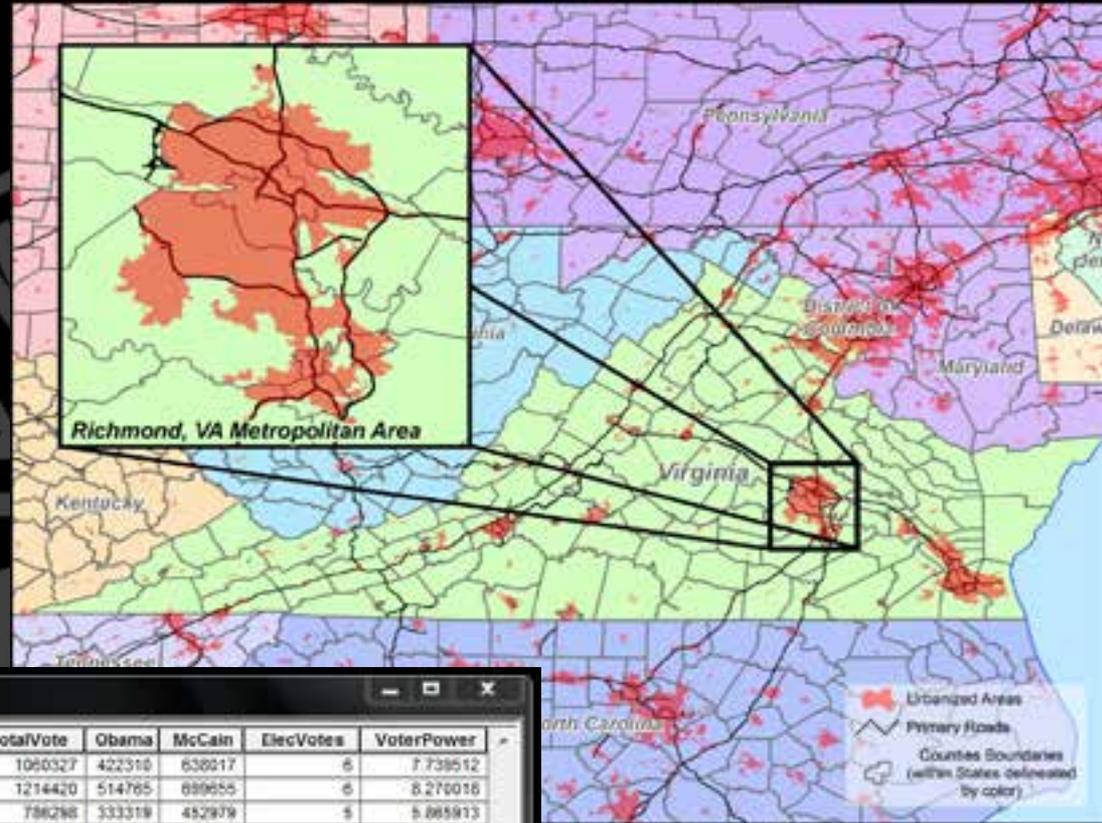
John Banzhaf and the statistic of Voter Power

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evaluating the argument with data

census data

election results

State	EV	Population	TotalVAP	TotalREG	BalCast	TotalVote	Obama	McCain	ElecVotes	VoterPower
Arkansas	0	2855390	2108000	1684240	1095955	1060327	422310	638017	6	7.739512
Kansas	0	2802134	2037000	1749759	1284208	1214420	514765	699655	6	8.270016
Nebraska	1	1783432	1308000	1157345	811923	786298	333319	452979	5	5.865913
Utah	0	2736424	1859000	1432525	971185	923700	327670	596030	5	6.077534
Mississippi	0	2938618	2109000	1895583	1288939	1279259	554662	724597	6	8.511989
Oklahoma	0	3642361	2667000	2184092	1474694	1462661	502496	960165	7	10.398854
West Virginia	0	1814468	1395000	1212117	738799	701323	303857	397466	5	5.709776
Michigan	17	10003422	7487000	7470764	5039080	4921218	287257	2048639	17	166
Colorado	9	4939456	3694000	2637014	2422238	2362262	128883	1073629	9	21.524214
New Jersey	15	8682661	6489000	5351669	3910220	3820629	221542	1613207	15	78.5
Delaware	3	873092	648000	602317	415166	407833	255459	152374	3	3.152479
Montana	0	967440	731000	668005	497599	476041	232159	243882	3	3.215895
Washington	11	6549224	4912000	3630118	3071587	2980064	175084	1228216	11	35.718440
Connecticut	7	3501252	2651000	2104989	1644945	1627201	997773	629428	7	11.397309
California	55	36756666	26993000	17304091	13743177	13200254	627447	5011781	55	81100
Kentucky	0	4269245	3179000	2906809	1861577	1800447	751985	1048462	8	14.28471
Massachusetts	12	6497967	4962000	4220488	3102995	3012952	191409	1108854	12	37.966756

Record: |◄ ◄ [1] ► ►| Show: [All] [Selected]   Records (0 out of 51 Selected)   Options ▾

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putting the data together
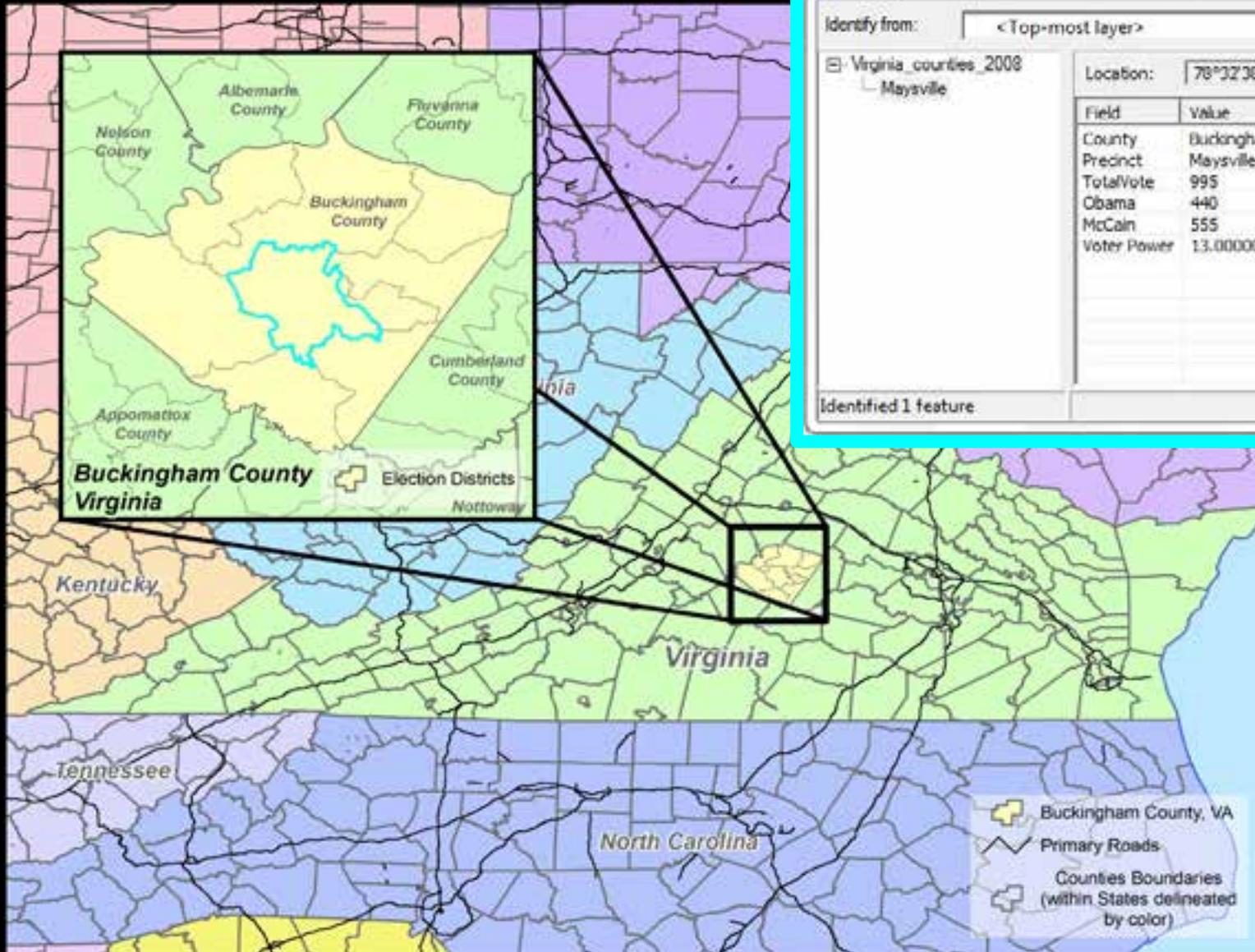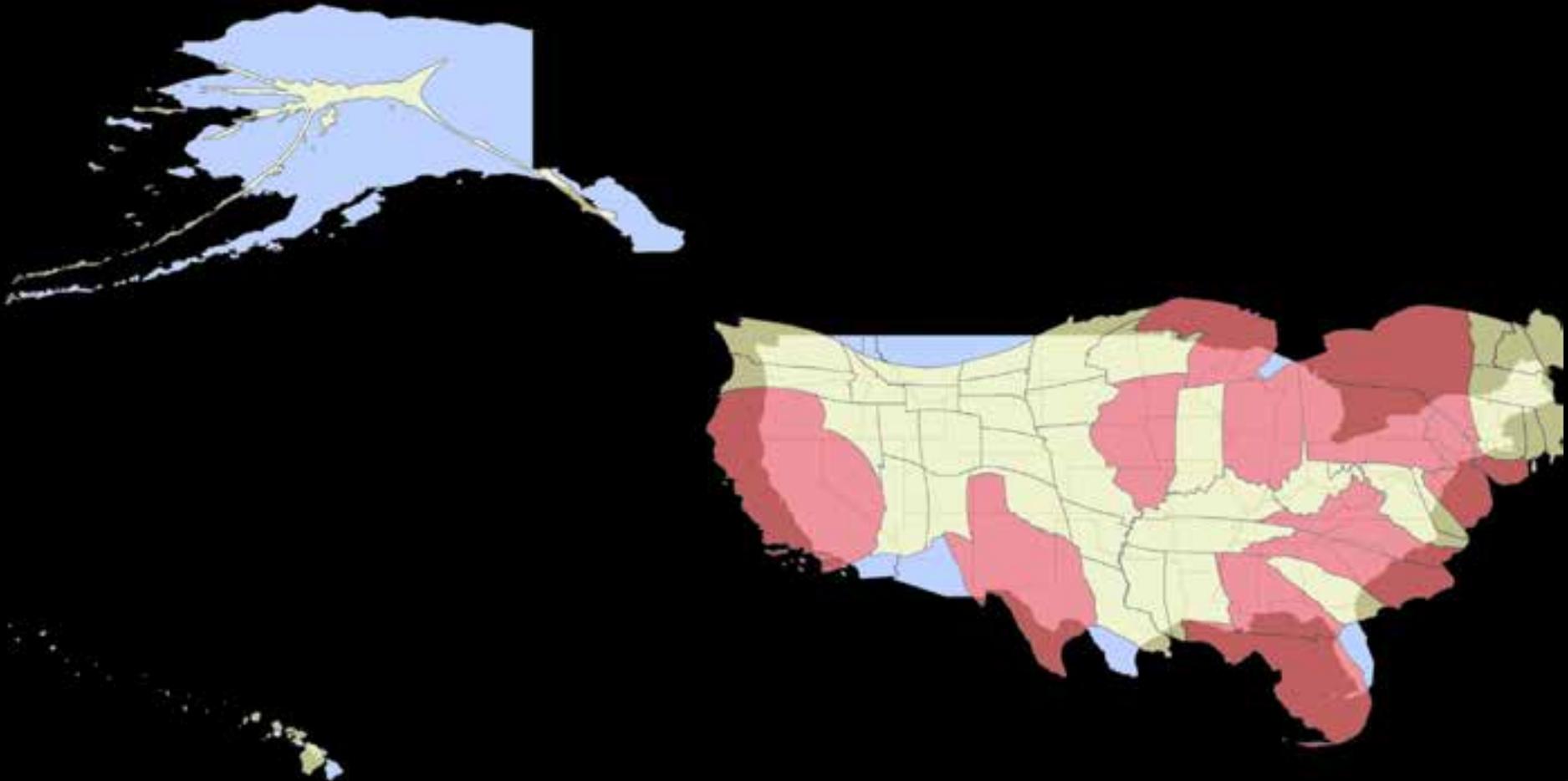
cartograms
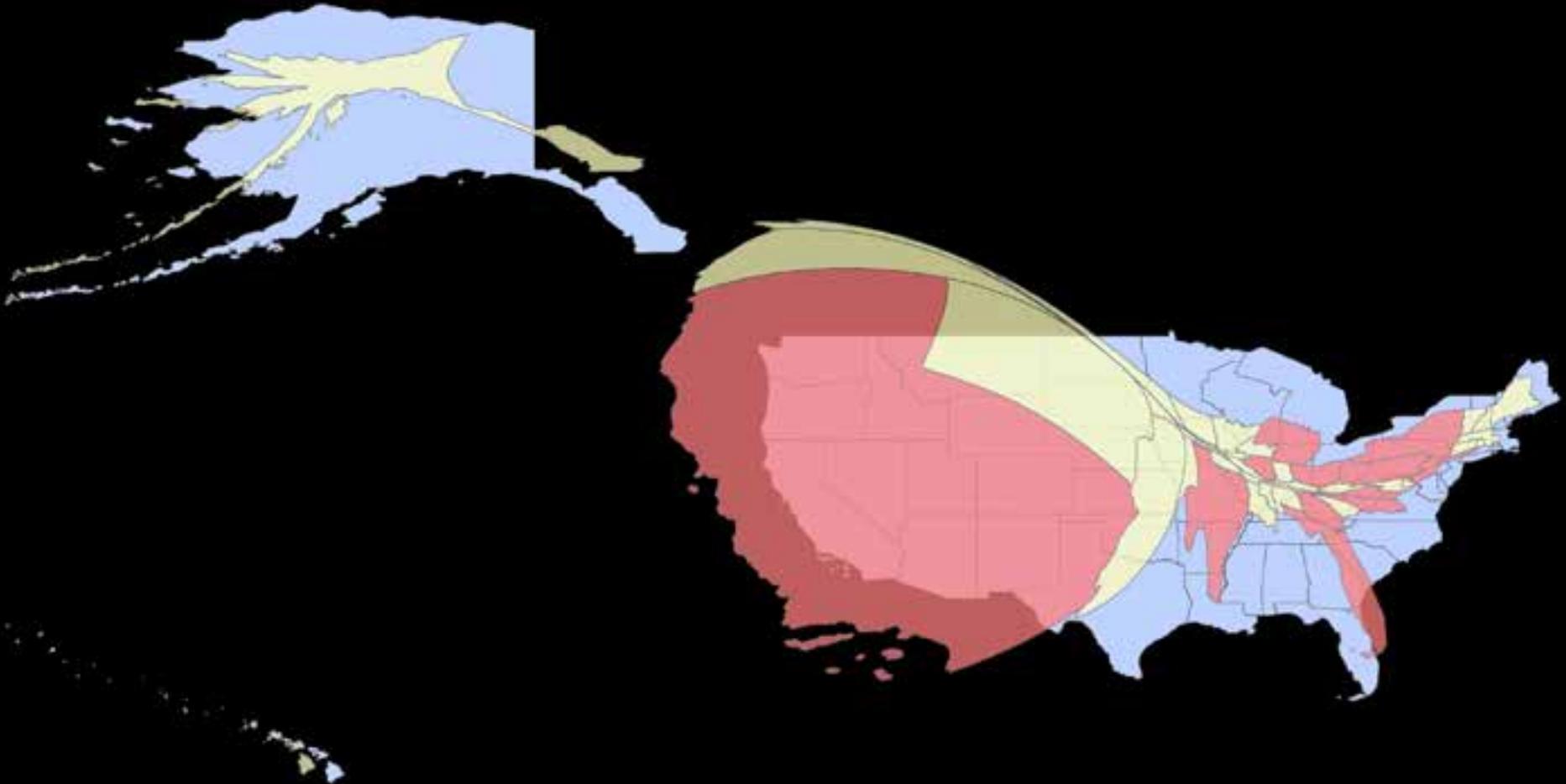

Electoral Votes by state

cartograms

Voter Power by state

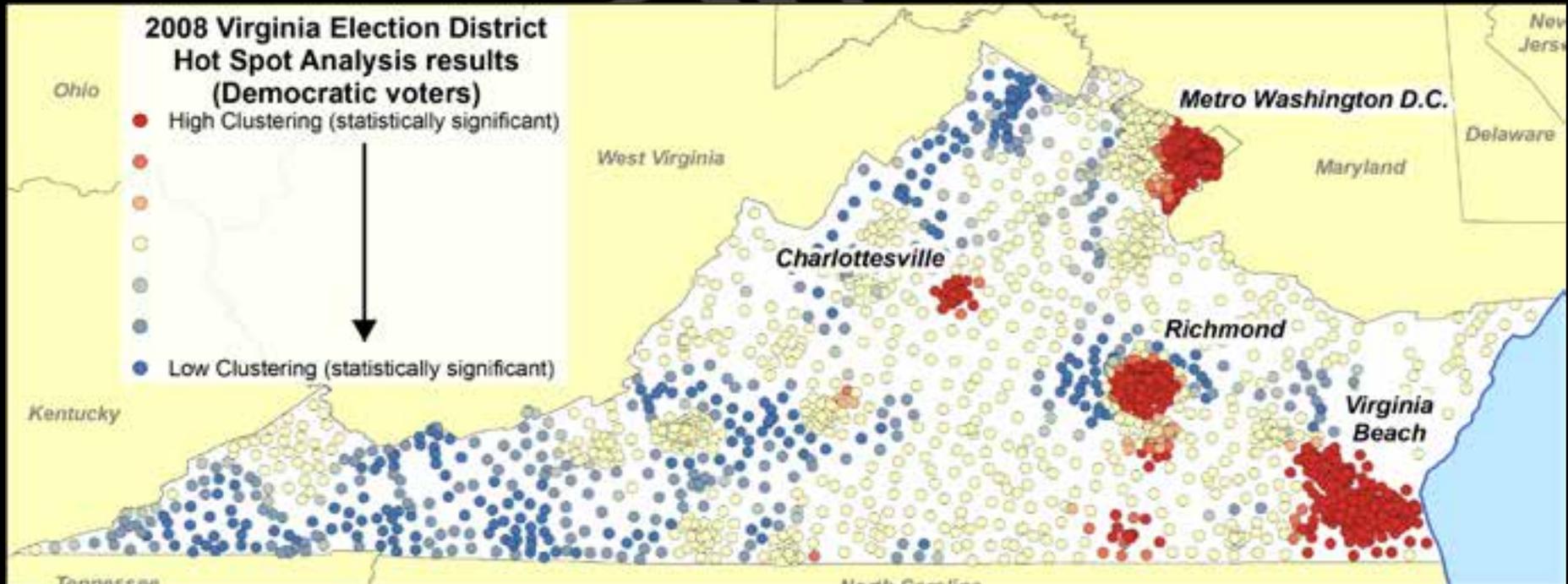# Virginia – Battleground 2008

Virginia – Battleground 2008

2008 Virginia Election District
Hot Spot Analysis results
(Republican voters)
High Clustering (statistically significant)

Low Clustering (statistically significant)
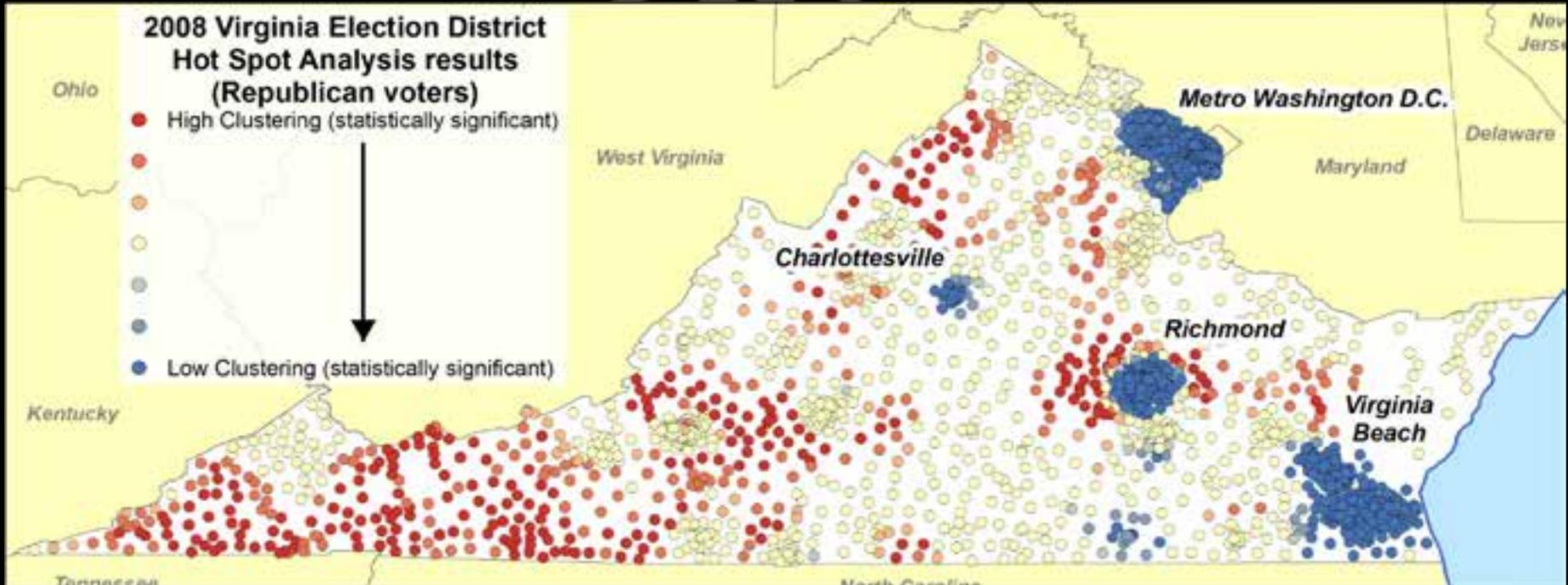
Hot Spot Analysis – GOP 2008

Virginia – Battleground 2008

Hot Spot Analysis – Dems 2008

Virginia - Battleground 2008
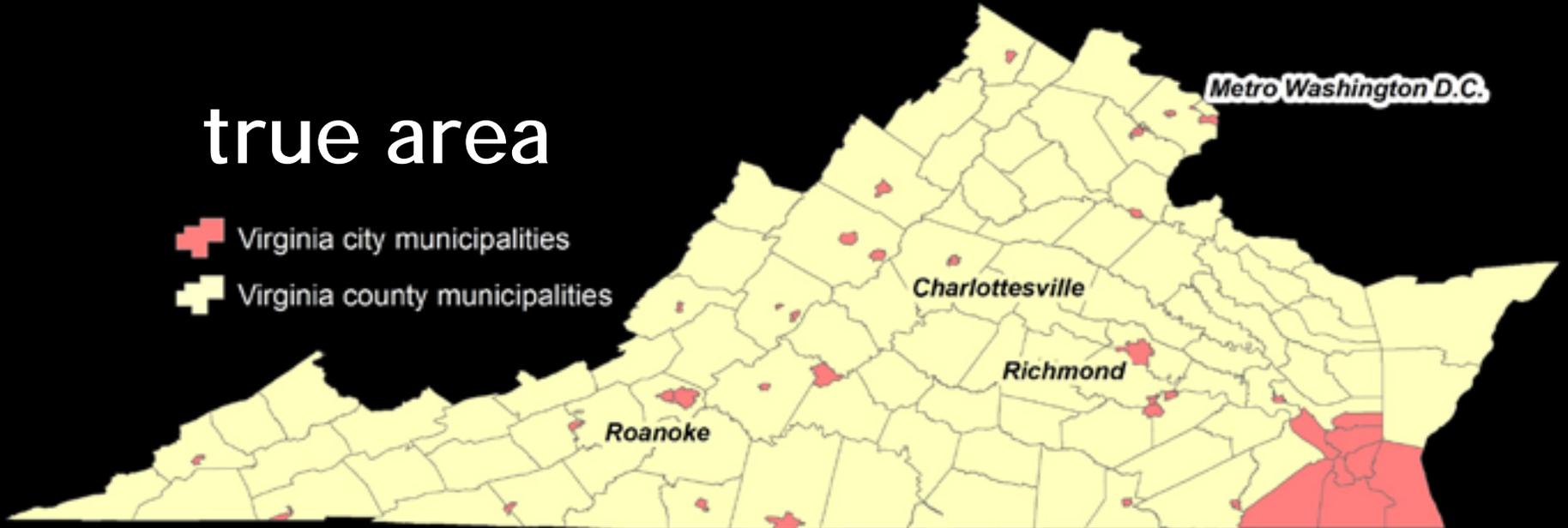
is the argument valid?

is the argument valid?
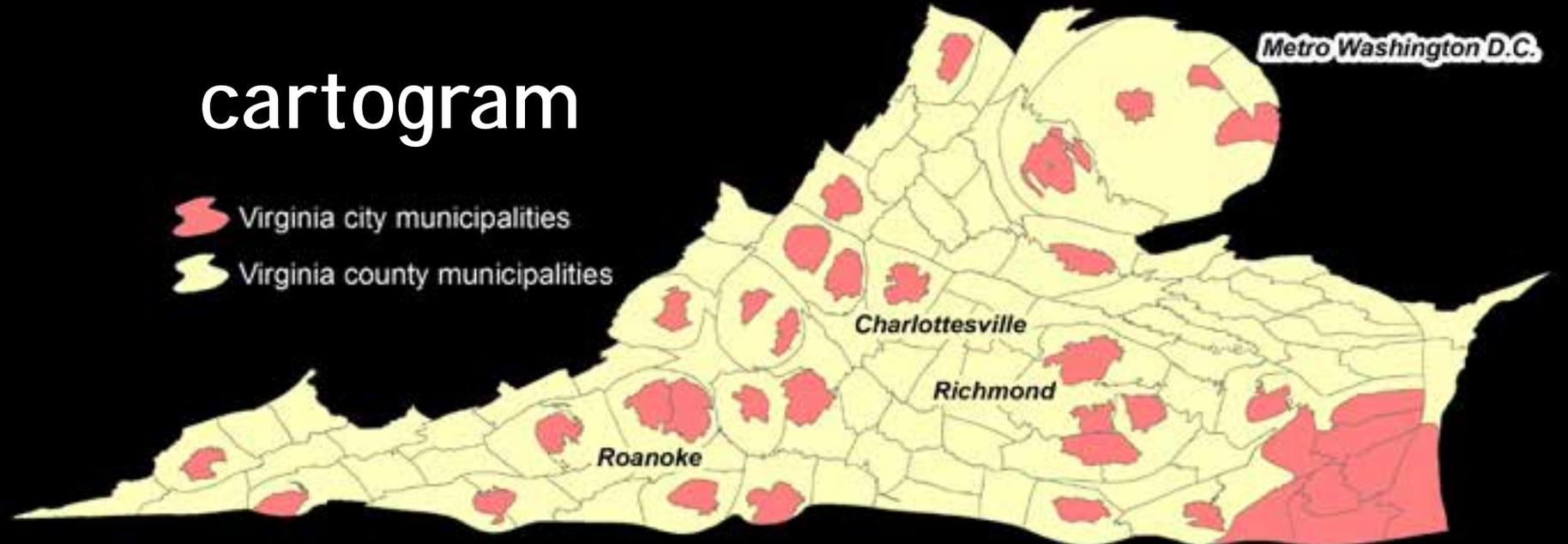

Voter Power in the 2008
Presidential Election in Florida

Palm Beach

Broward and
Miami-Dade
(Metro Miami)

"cartogram" municipalities (area
calculated using Voter Power)

"to scale" municipalities (area
calculated using measured area)
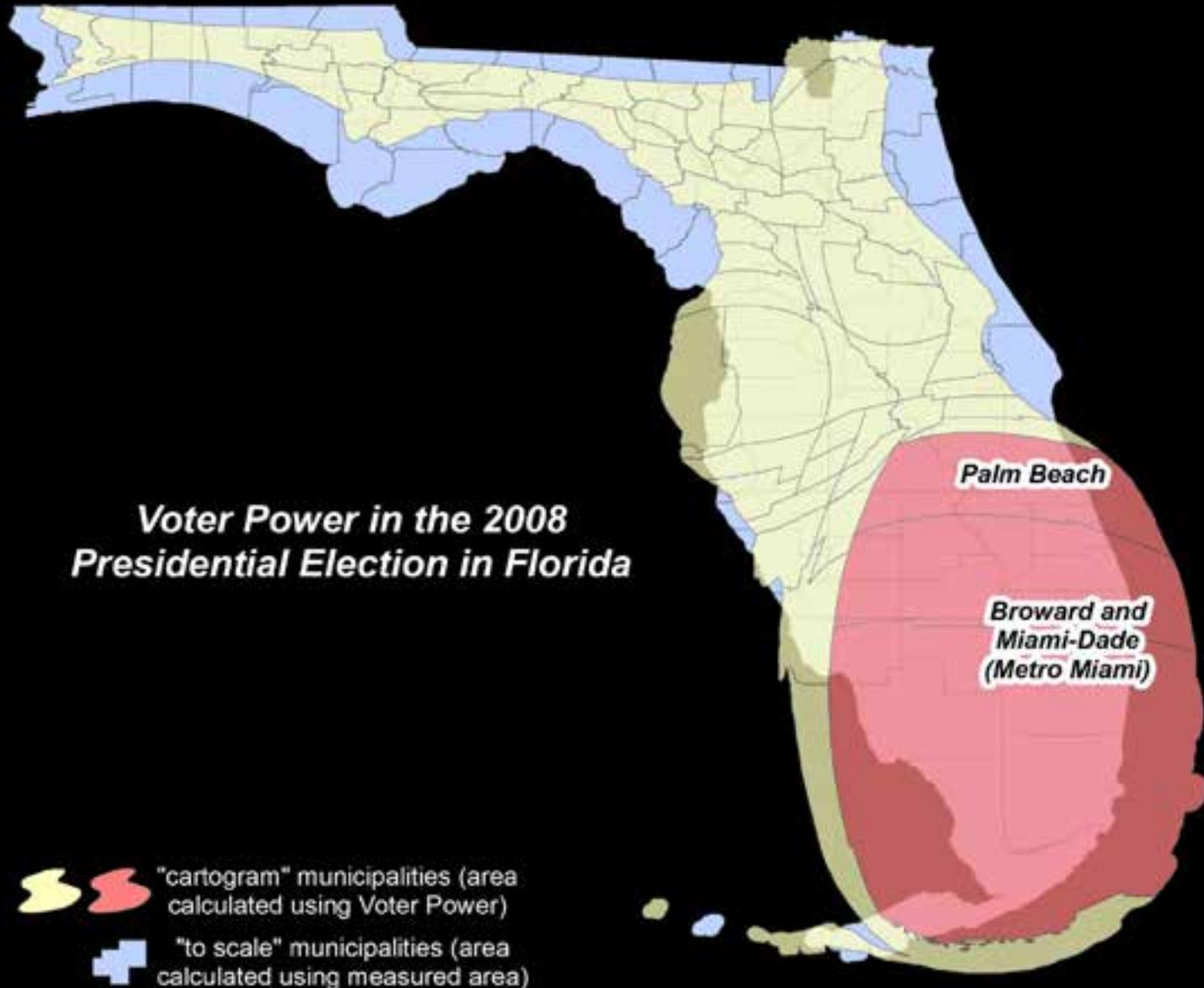
is the argument valid?

Voter Power in the 2008 Presidential Election in New York

Metro Rochester

Metro Buffalo

Metro NYC

"cartogram" municipalities (area calculated using Voter Power)

"to scale" municipalities (area calculated using measured area)

USC

is the argument valid?

Voter Power in the 2008 Presidential Election in Ohio

Metro Cleveland

Metro Columbus

"cartogram" municipalities (area calculated using Voter Power)
"to scale" municipalities (area calculated using measured area)

USC

is the argument valid?

"cartogram" municipalities (area calculated using Voter Power)
"to scale" municipalities (area calculated using measured area)

Metro Dallas

Metro Austin

Metro Houston

Voter Power in the 2008 Presidential Election in Texas

issues

->MAUP...is this a problem in the study or in the Electoral College itself?

->more research needs to be done on the statistic of Voter Power including the theory and math behind it

->cartograms don't afford the ability to do classic GIS overlays once constructed

questions or comments?