

# On Fair and Balanced Presentations of Election Results

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February 14, 2004  
Program in Applied and Computational Mathematics  
Princeton University



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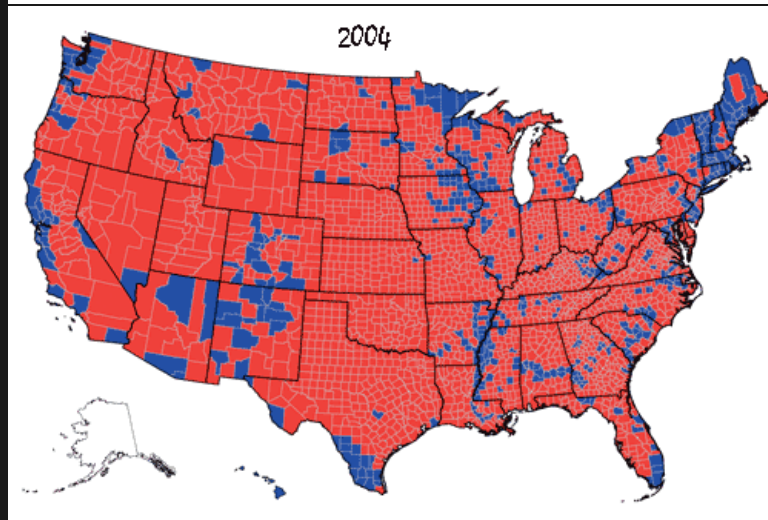
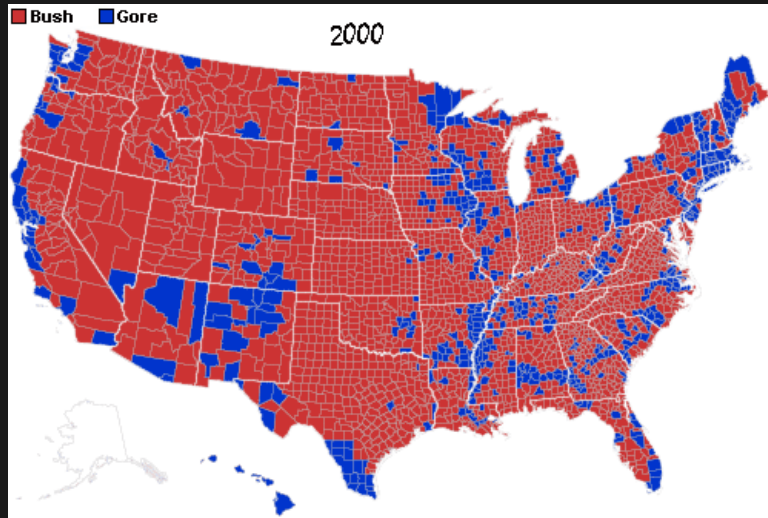
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# USA Today Election Maps



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# Color Perception

Physically, color is infinite dimensional—it can be described by a function  $I(\lambda)$ .

But, the human eye has only three types of color receptors. They are located in the cones. Hence, human color perception is 3 dimensional.



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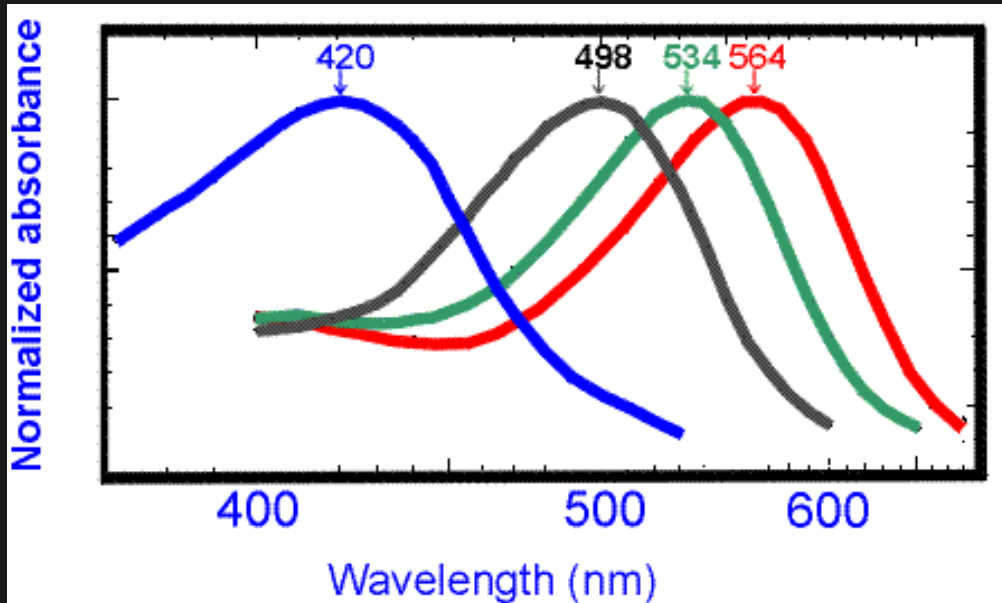
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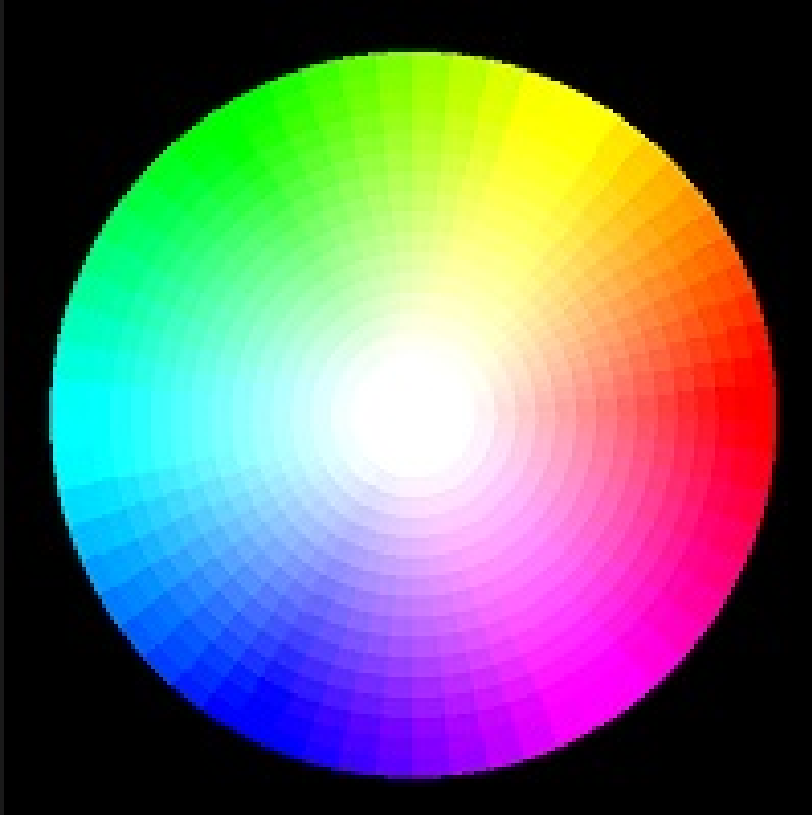
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After Bowmaker & Dartnall, 1980

# Primary Colors

Computer monitors use *Red*, *Green*, and *Blue* as primary colors:



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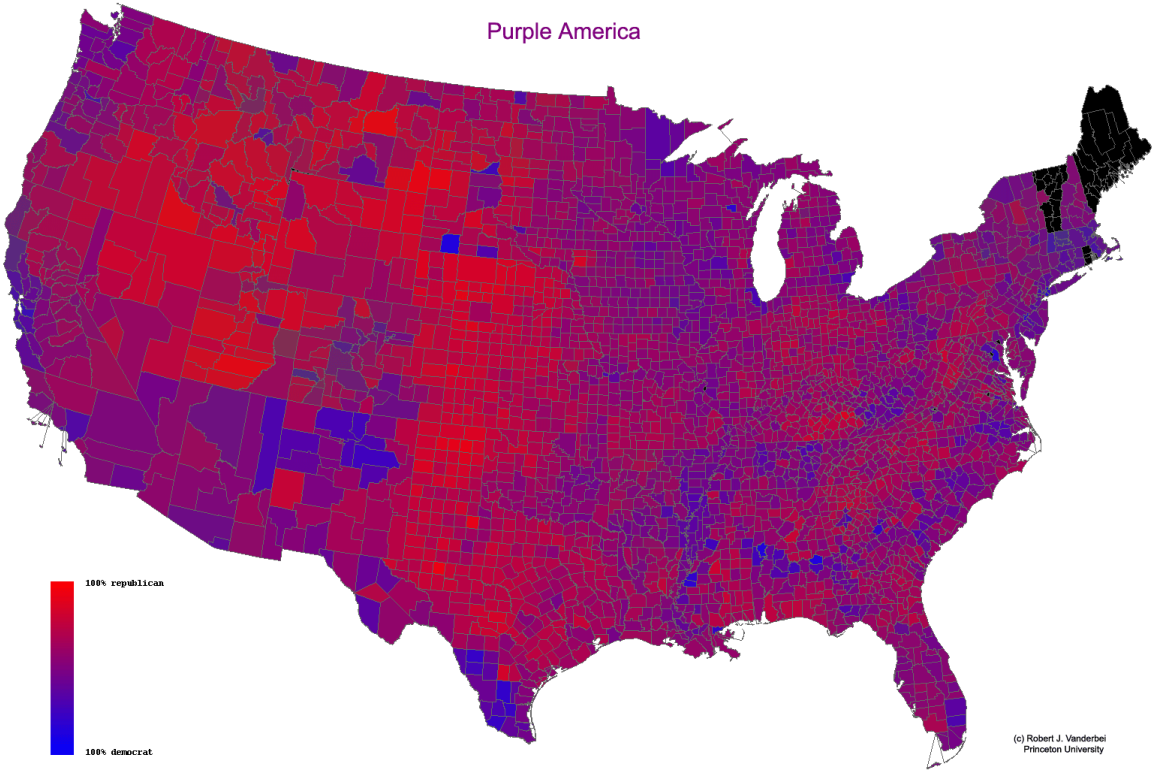
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# Election 2000



## 2000 Presidential Election

Purple America



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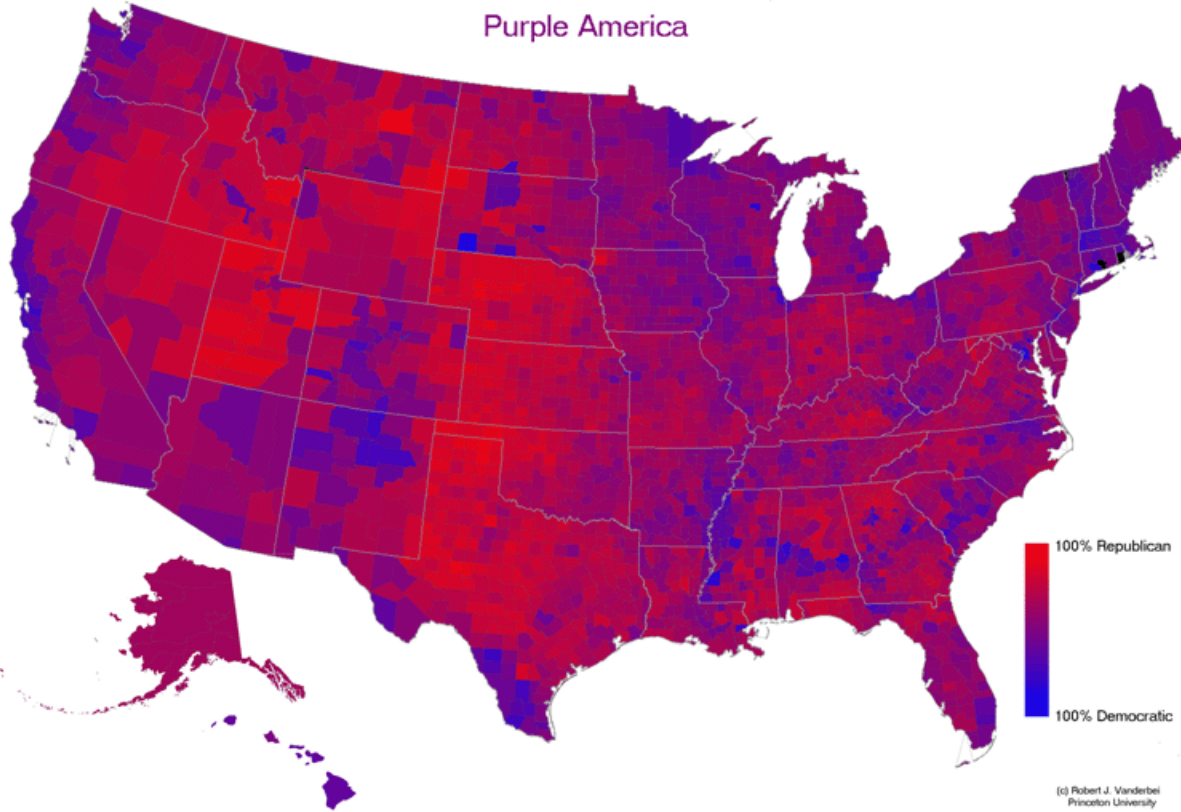
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# Election 2004



## 2004 Presidential Election

Purple America



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# Congressional Districts



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# Where People Live



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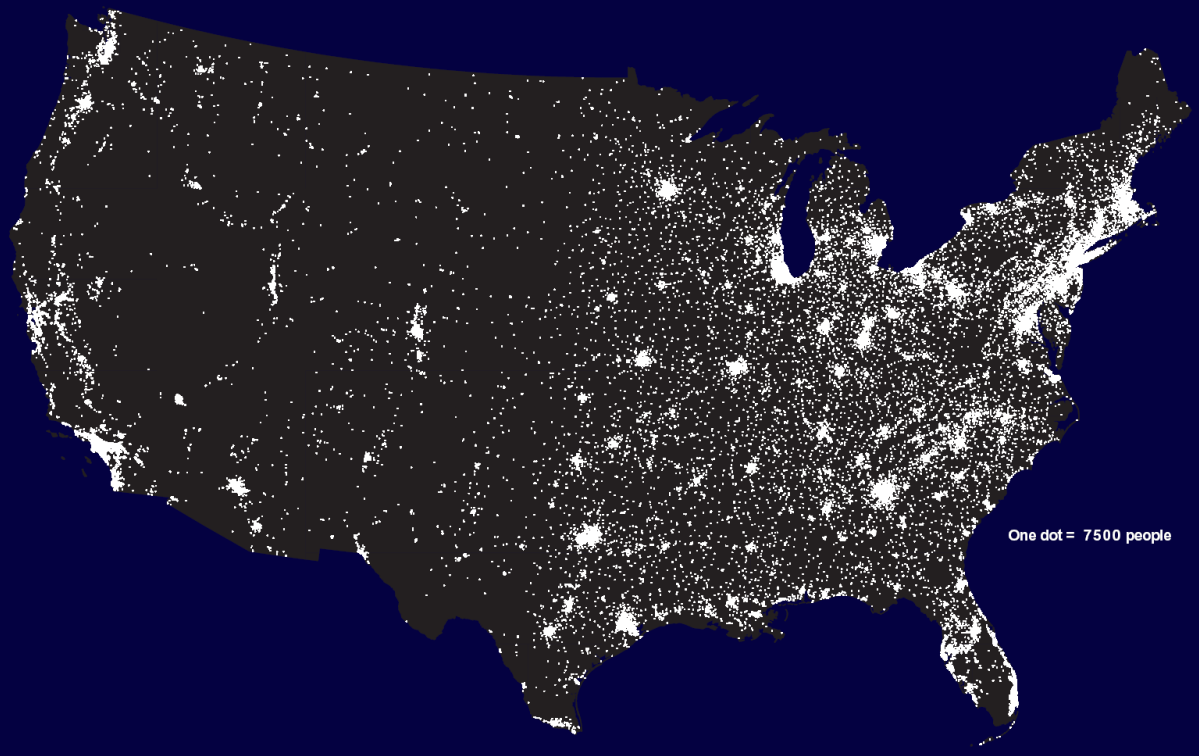
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# Census Bureau Population Density



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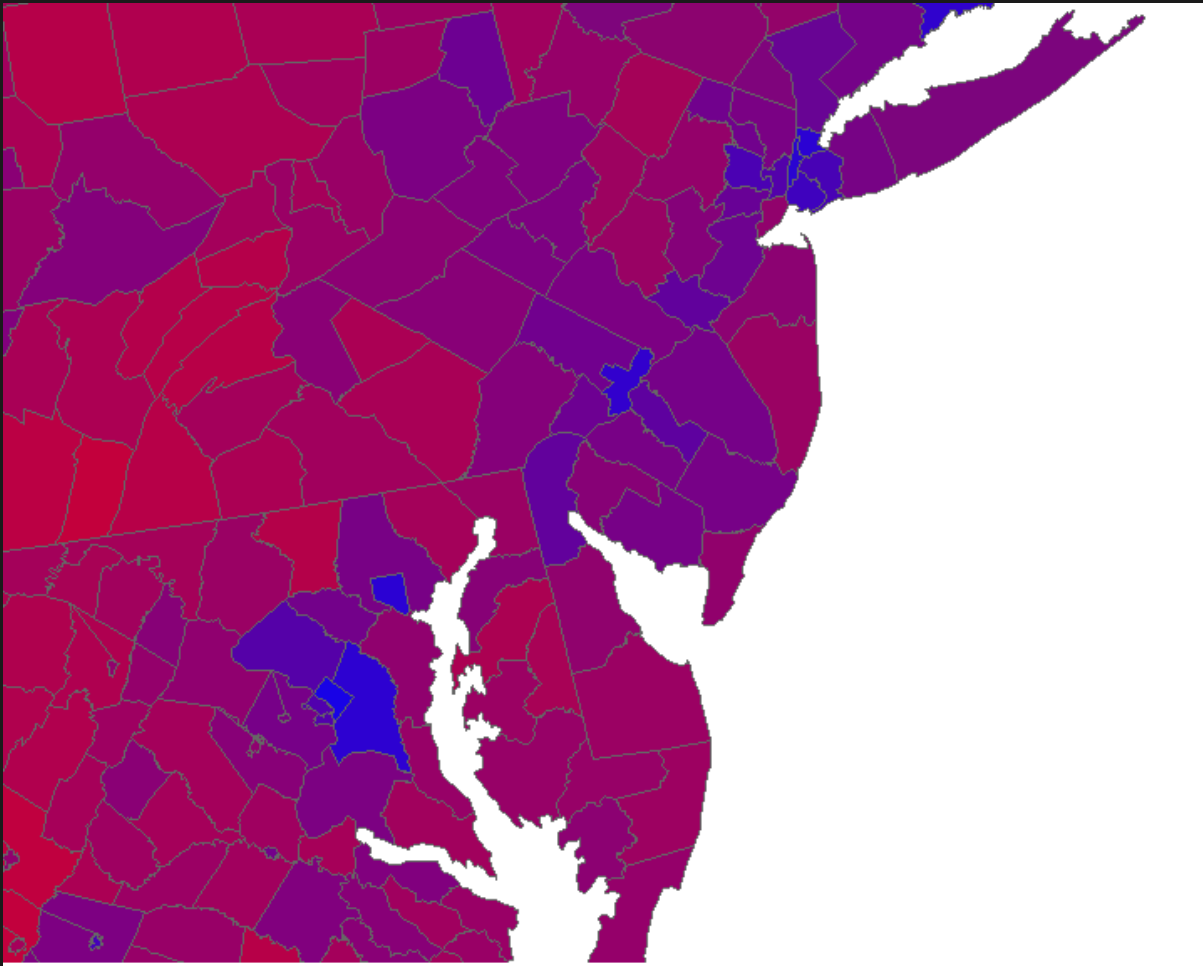
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# NJ Area



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# Ohio—Battleground North



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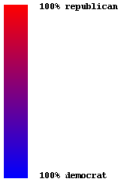
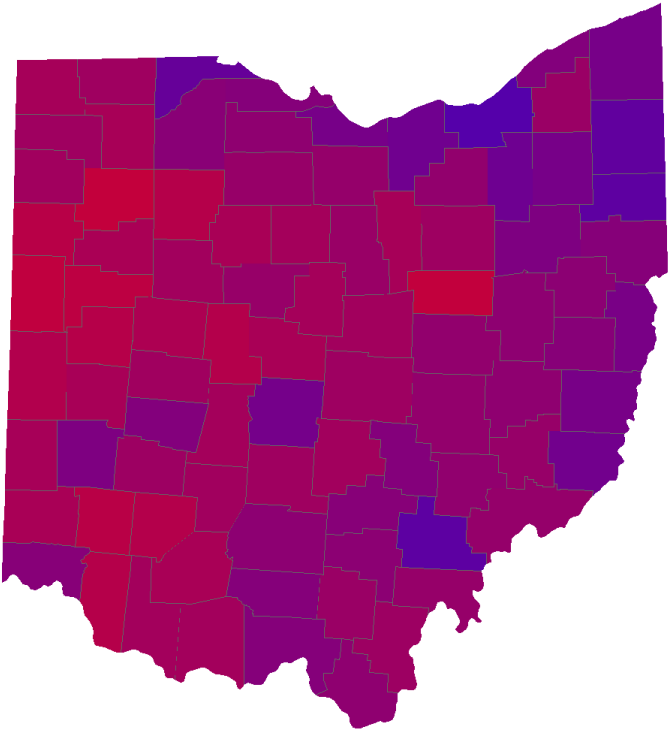
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# Florida—Battleground South



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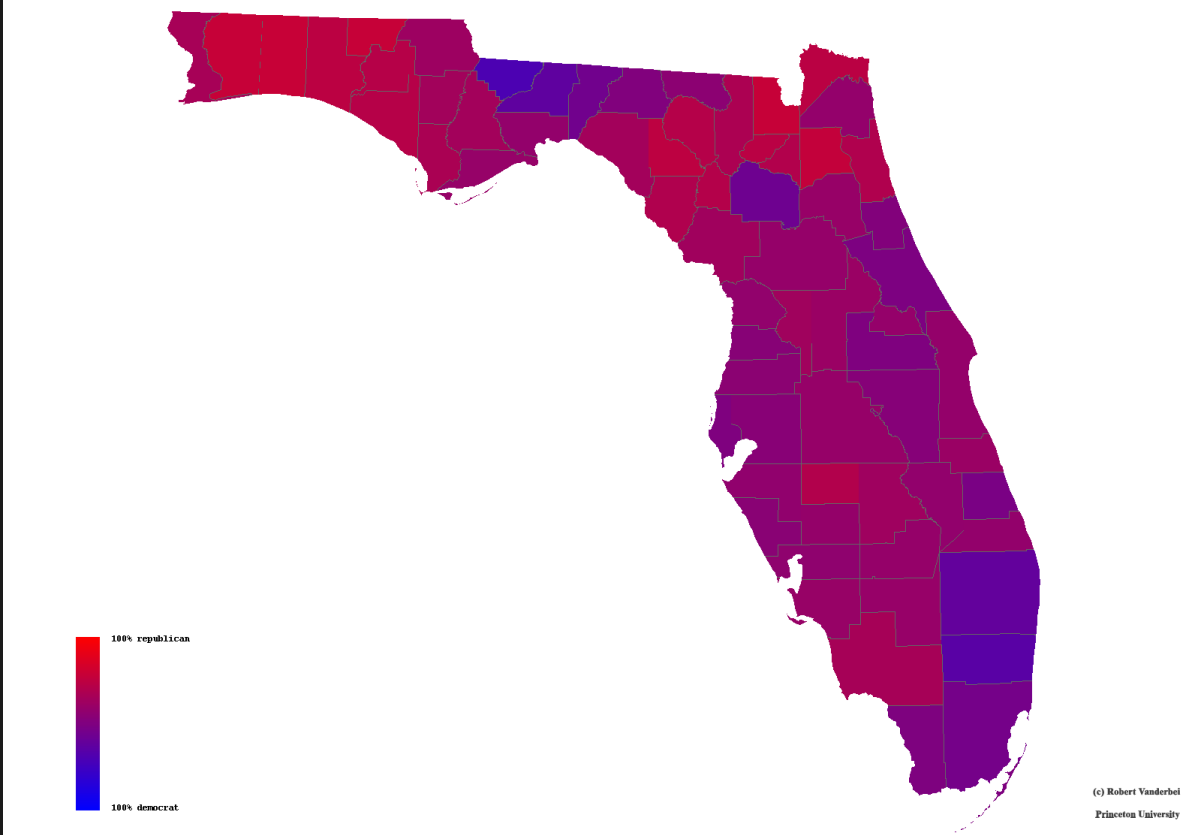
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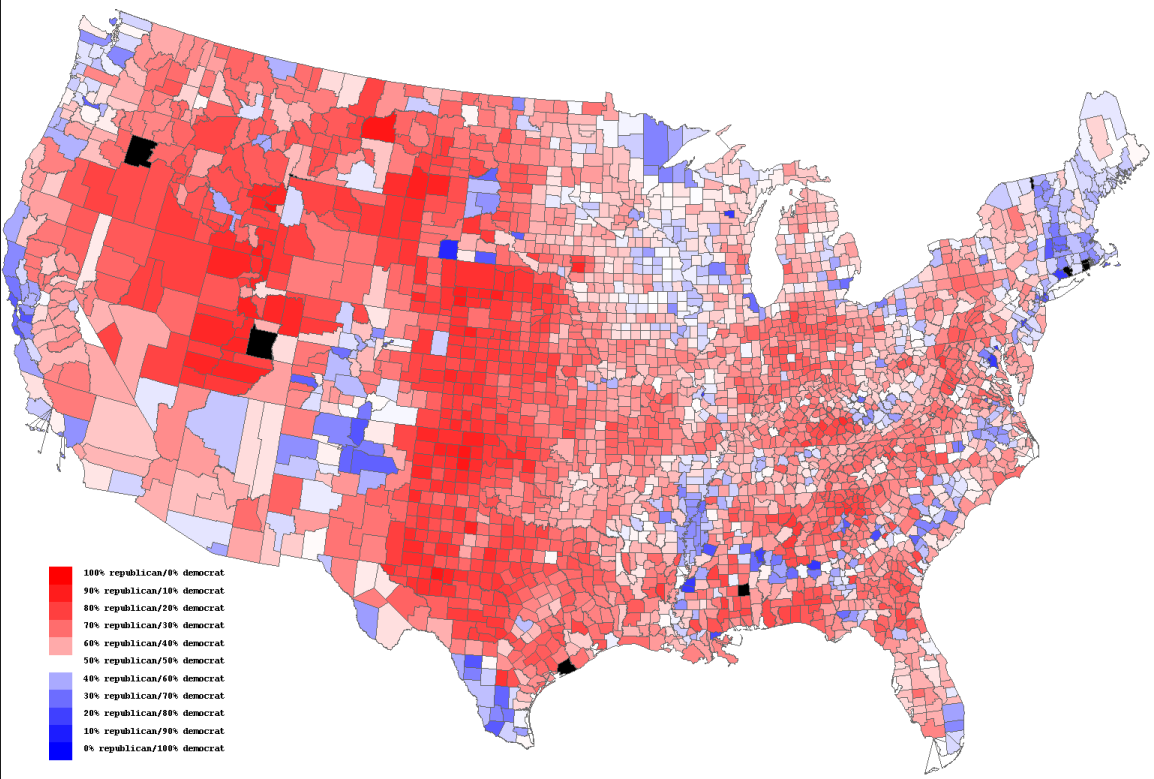
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# Red, White, and Blue America



Very patriotic!

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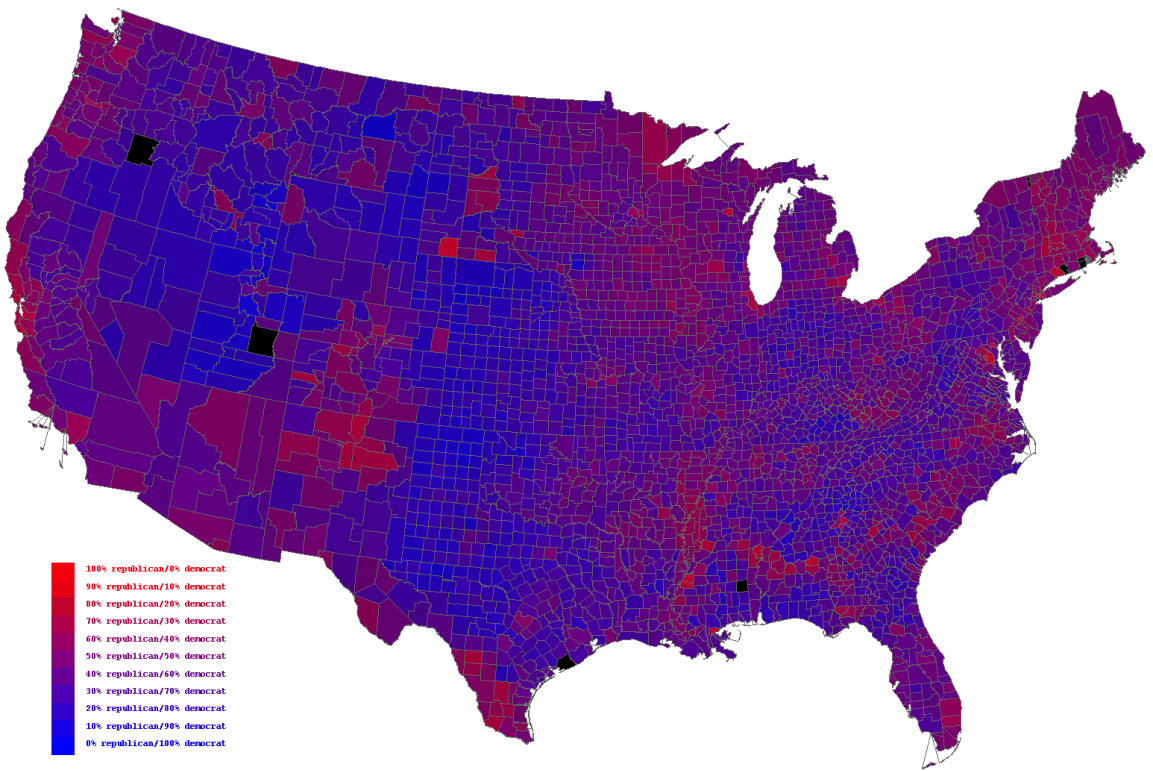
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# Colors Reversed



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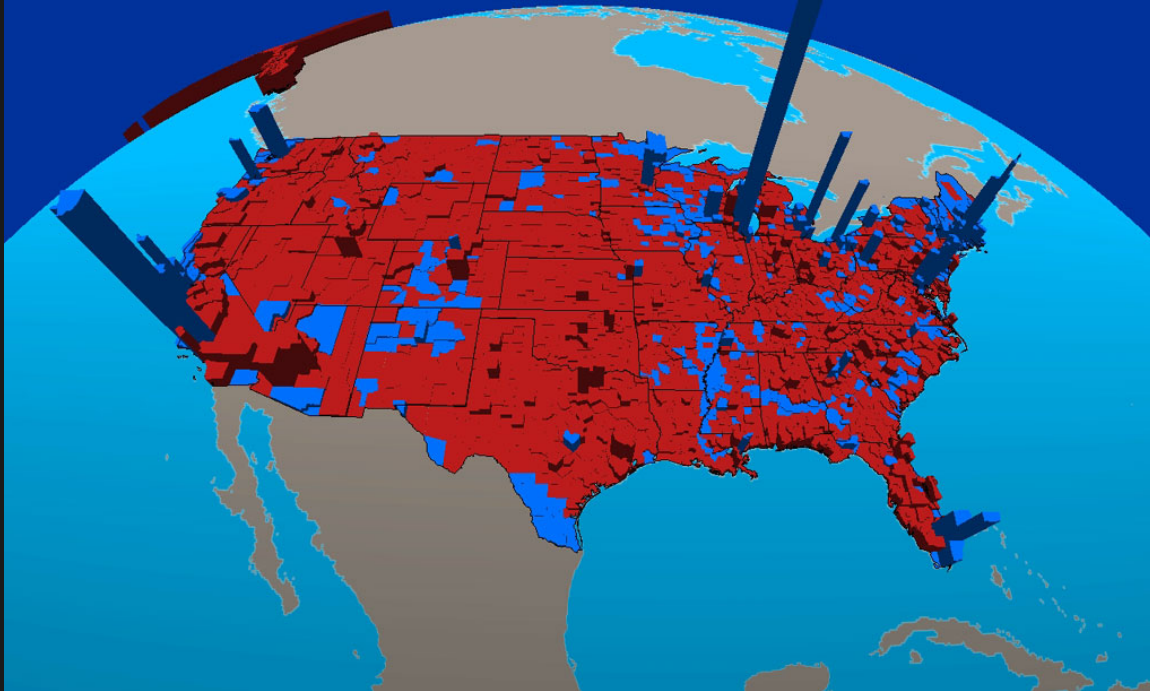
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# A 3-D Map by ESRI



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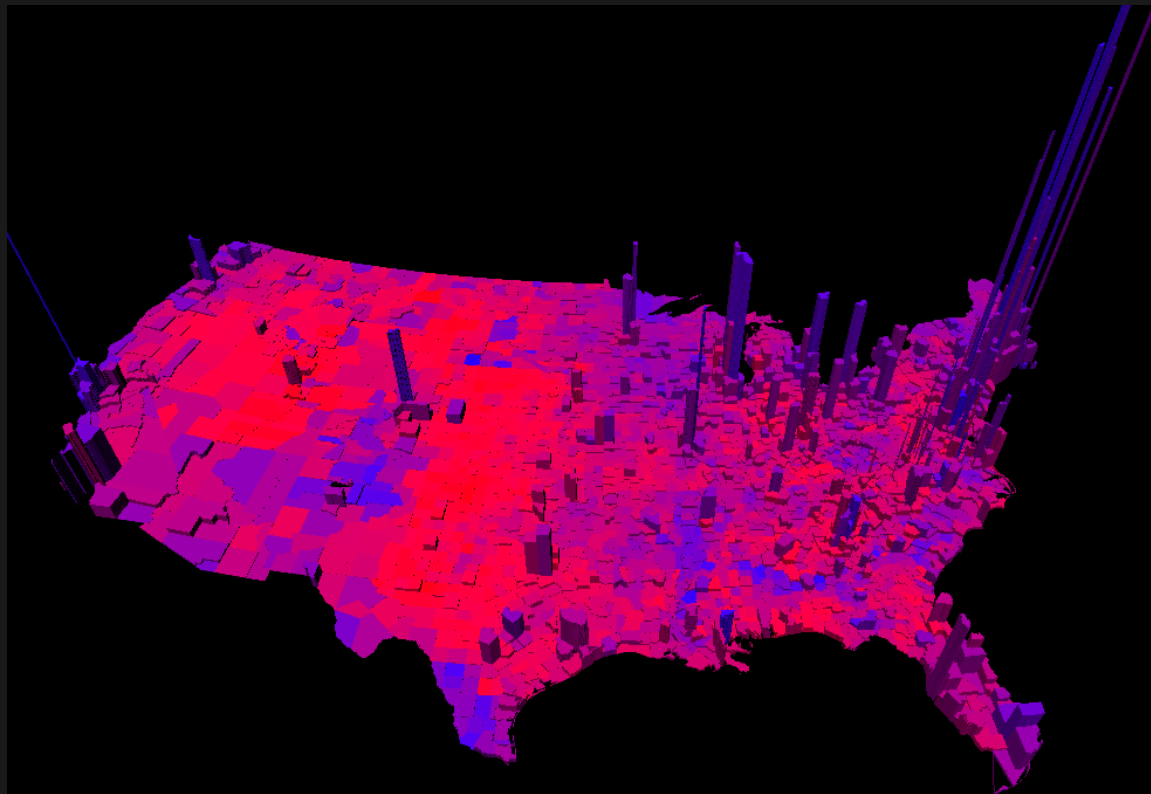
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# Purple Mountains Majesty



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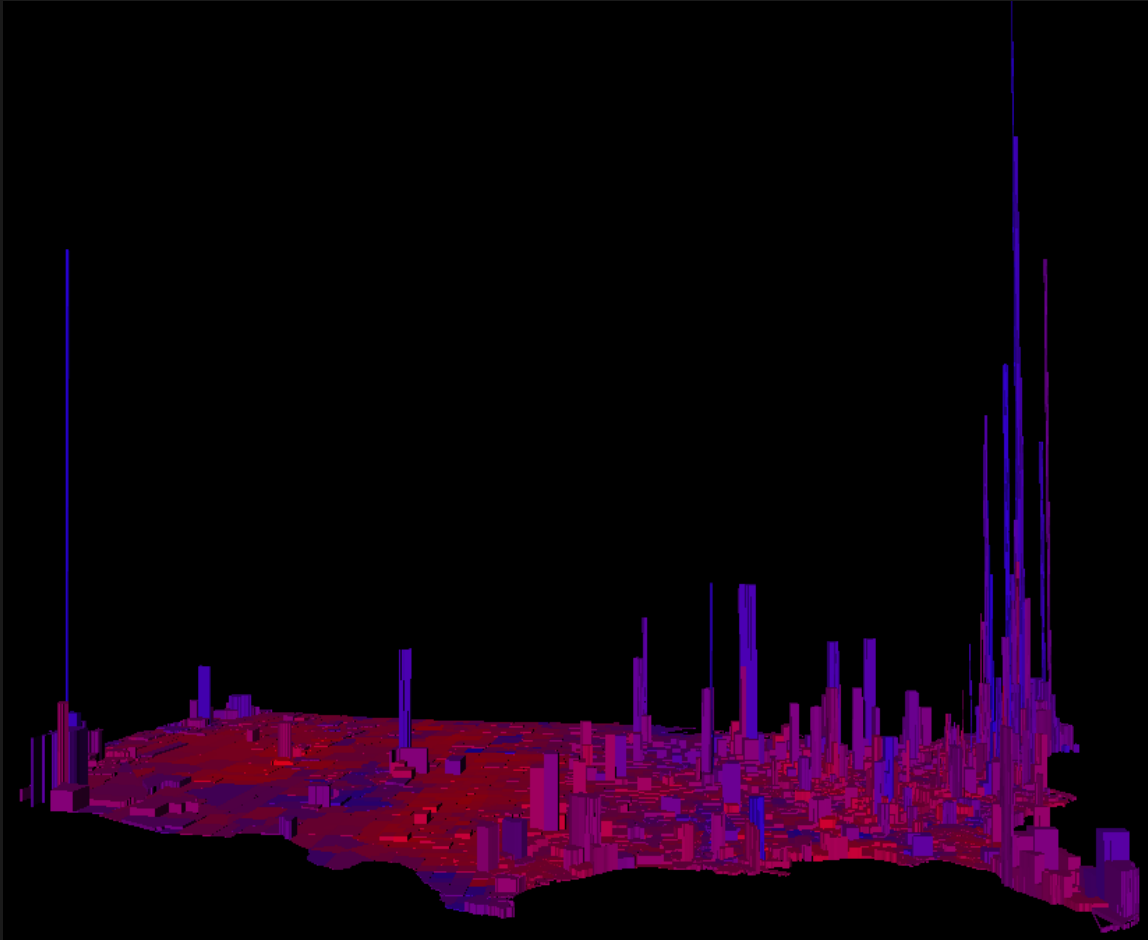
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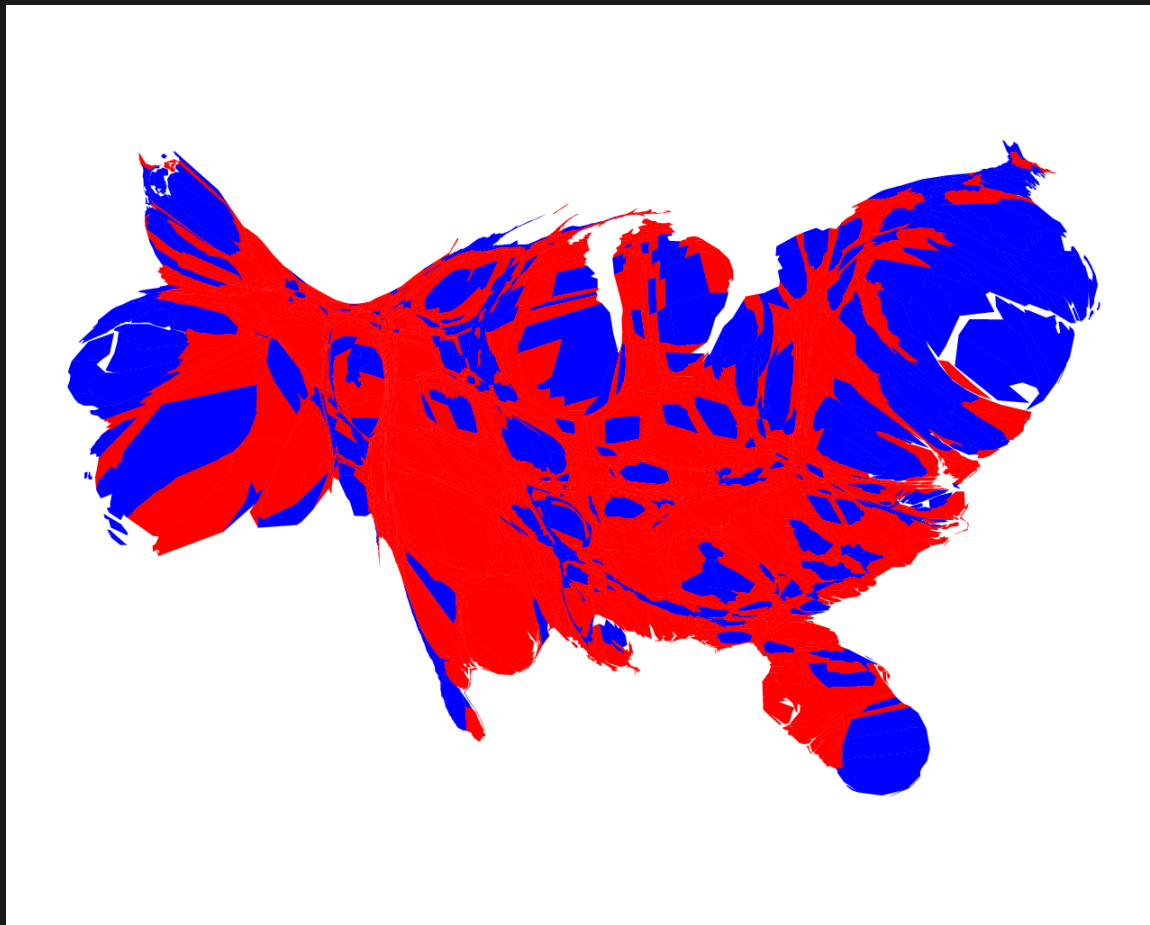
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# Red-Blue Cartogram



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# Purple Cartogram



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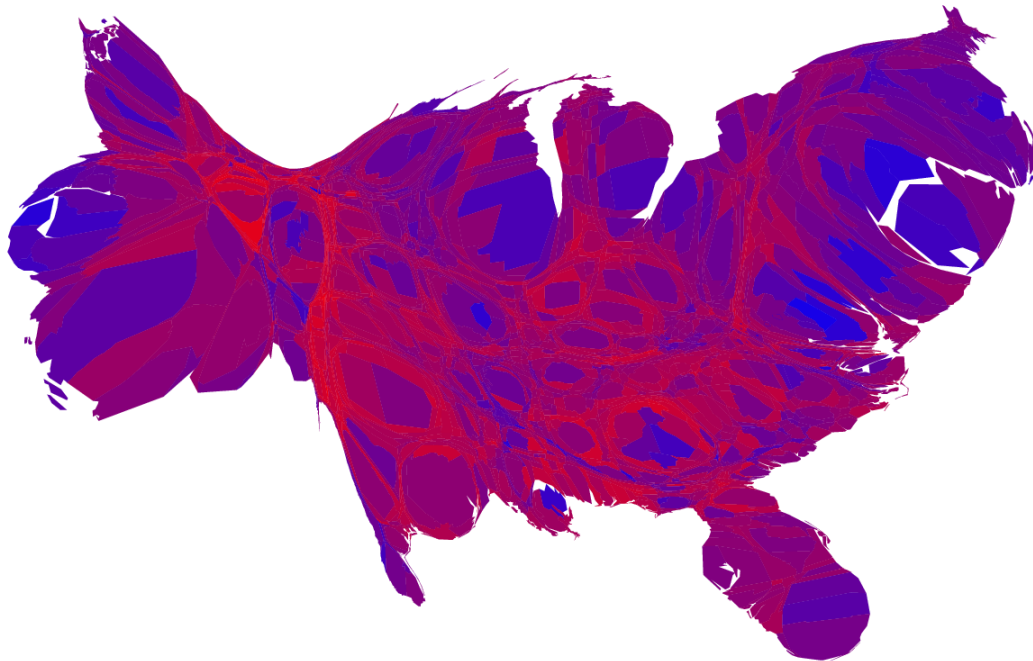
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# Statistical Analysis of Polling Data

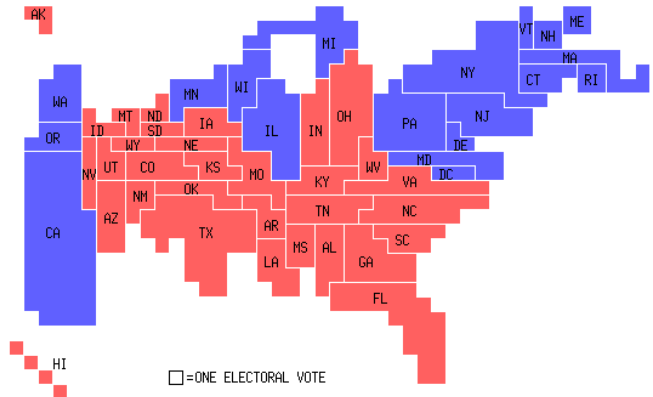


Electoral Scoreboard (Oct 3 - Nov 2 8:17 AM): **Kerry 248**, **Bush 290**, Toss-Up 0

In the table below are given for each state, the median margin of victory as a percentage by either candidate (Kerry in blue, Bush in red); also given are the win-loss record and the number of electors from each state. All data were gathered from [www.electoral-vote.com](http://www.electoral-vote.com)

[Explanation of method ...](#) [All Polls Since Jul 7 ...](#) [Blank Map for Election Night](#)

Med. MOV (%)	W-L-T	E.V.	State	Med. MOV (%)	W-L-T	E.V.	State
AL	18.0	5-0-0	9	AK	21.0	2-0-0	3
AK*	27.0	1-0-0	3	NE <sup>2</sup>	29.0	1-0-0	5
AZ	6.0	10-0-0	10	NV	4.0	16-1-1	5
AR	5.5	8-0-2	6	NH	2.5	10-2-4	4
CA	9.0	9-0-0	55	NJ	5.0	18-1-2	15
CO <sup>1</sup>	1.5	14-6-2	9	NM	3.0	12-6-1	5
CT	10.0	1-0-0	7	NY	17.0	7-0-0	31
DC*	67.0	1-0-0	3	NC	7.5	10-0-0	15
DE*	7.0	1-0-0	3	ND	20.0	1-0-0	3
FL	1.5	40-16-12	27	OH	2.0	39-14-3	20
GA	17.0	11-0-0	15	OK	30.0	8-0-0	7
HI	0.5	1-0-1	4	OR	6.0	14-1-0	7
ID*	29.0	1-0-0	4	PA	3.0	52-3-5	21
IL	12.0	8-0-0	21	RI	16.5	2-0-0	4
IN	19.0	6-0-0	11	SC	13.0	6-0-0	8
IA	0.5	17-11-6	7	SD	19.0	3-0-0	3
KS	23.0	3-0-0	6	TN	14.5	8-0-0	11
KY	20.0	4-0-0	8	TX	23.0	3-0-0	34
LA	15.0	6-0-0	9	UT	45.0	2-0-0	5
ME <sup>2</sup>	7.0	4-0-0	4	VT	13.0	1-0-0	3
MD	10.0	7-0-0	10	VA	5.0	8-0-0	13
MA	14.0	1-0-0	12	WA	6.0	10-0-1	11
MI	3.0	42-5-5	17	WV	5.0	5-0-0	5
MN	2.0	30-16-6	10	WI	1.0	16-13-2	10
MS*	9.0	1-0-0	6	WY*	36.0	1-0-0	3
MO	5.0	12-0-0	11				



Map layout by J. Richard Gott, III. The area of each state is directly proportional to its number of electoral votes. Note also that the topology of the states is correct in that all states that touch in reality touch on the map, and states that do not touch in reality do not touch on the map.

\*Asterisked states have no poll available in the time window; the most recent has been used.  
 1-Colorado referendum to split electors proportionally to its popular vote is behind in polls. [\[explanations\]](#)  
 2-Maine and Nebraska award two electoral votes to the popular vote winner, then assign the other electors by congressional district. [\[explanations\]](#)

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