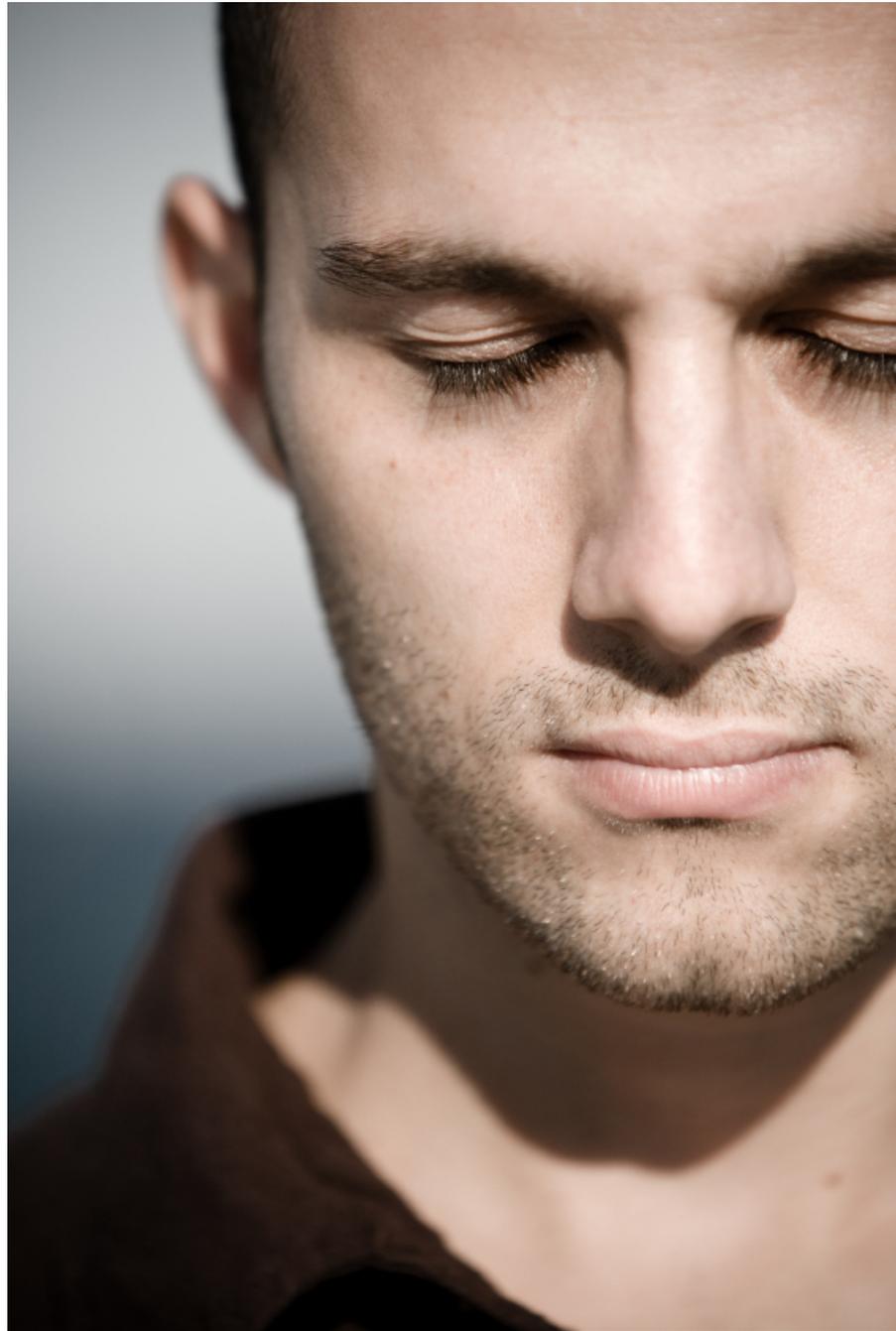


# CS 171: Visualization

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[pfister@seas.harvard.edu](mailto:pfister@seas.harvard.edu)



Microsoft Excel - sd\_evac\_bgs3.dbf

File Edit View Insert Format Tools Data Window Help Adobe PDF

Type a question for help

100% Arial 10 B I U

Reply with Changes... End Review...

ObjectID

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	ObjectID	ST	CNT	STCO	TRACT	B	FIPS	POP2000	POP2005	POP00_SQMI	POP05_SQMI	WHITE	BLACK	AMERI_ES	ASIAN
2	25044	06	073	06073	003207	3	060730032073	2033	2160	3835.8	4075.5	1244	133	13	21
3	25306	06	073	06073	008324	1	060730083241	1856	1803	1874.7	1821.2	1616	12	10	14
4	25307	06	073	06073	008324	2	060730083242	424	445	6057.1	6357.1	394	1	1	1
5	25308	06	073	06073	008324	3	060730083243	660	688	6600.0	6880.0	590	4	0	4
6	25309	06	073	06073	008324	4	060730083244	1908	1994	3028.6	3165.1	1712	15	2	10
7	25310	06	073	06073	008324	5	060730083245	554	556	7914.3	7942.9	511	11	0	1
8	25311	06	073	06073	008324	6	060730083246	568	613	7100.0	7662.5	518	7	0	2
9	25312	06	073	06073	008324	7	060730083247	812	833	5075.0	5206.3	724	7	2	4
10	25313	06	073	06073	008327	1	060730083271	2836	3321	1524.7	1785.5	2414	12	1	29
11	25314	06	073	06073	008327	2	060730083272	2179	2614	3961.8	4752.7	1769	8	4	31
12	25315	06	073	06073	008328	1	060730083281	2291	2707	836.1	988.0	1930	11	3	26
13	25316	06	073	06073	008329	1	060730083291	4334	4919	4422.4	5019.4	3589	35	10	47
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22	25487	06	073	06073	009504	1	060730095041	784	780	2613.3	2600.0	694	8	0	5
23	25765	06	073	06073	013410	1	060730134101	1228	1327	160.7	173.7	897	67	9	6
24	25766	06	073	06073	013410	2	060730134102	1133	1218	1691.0	1817.9	866	43	3	8
25	25767	06	073	06073	013410	3	060730134103	1131	1481	4039.3	5289.3	908	29	1	10
26	25770	06	073	06073	013411	3	060730134113	836	746	3344.0	2984.0	651	26	2	7
27	25798	06	073	06073	013504	1	060730135041	862	848	5746.7	5653.3	473	125	3	13
28	25800	06	073	06073	013504	2	060730135042	1237	1404	2656.2	2825.0	852	120	10	11

sd\_evac\_bgs3/

Ready

# Explain

The screenshot shows a Mozilla Firefox browser window with the Google Maps interface. The address bar shows the URL: <http://maps.google.com/maps/ms?f=q&hl=en&geocode=&bme=&date=&tttype=&ie=UTF8&>. The browser's toolbar includes various navigation and utility icons. The Google Maps sidebar on the left contains the following information:

**San Diego County Fires - KPBS Online**  
Fire perimeters are based on County Emergency Operations Center data and will be updated twice daily by a team of volunteers from the SDSU Geography department. Time stamps are now provided on information. Older data is included as a history of fire-related activities.

Live updates via Twitter:  
[www.twitter.com/kpbsnews](http://www.twitter.com/kpbsnews)  
<http://www.kpbs.org>  
<http://maps.sdsu.edu>  
1,299,695 views - Public  
Created by [KPBS Online](#) on Oct 21 - Updated 2 minutes ago

[Evacuation Center Full](#)  
Campo Community Center is at capacity --

[Harris Fire](#)  
The Harris Fire is 84,000 acres and 20%

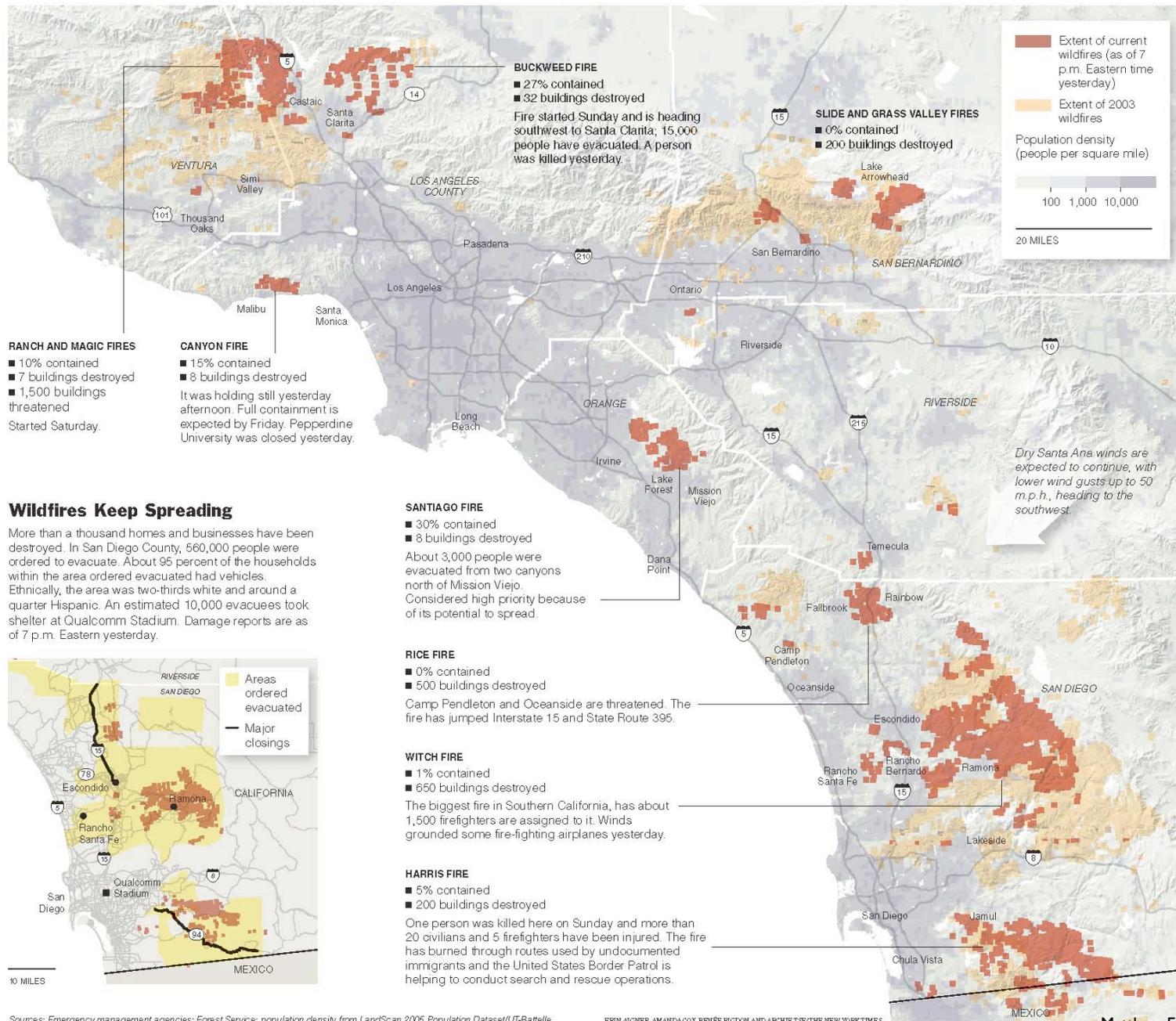
The main map area shows a map of San Diego County with fire perimeters and evacuation centers. A popup window is open over the Encinitas area, displaying:

**Evacuation Center: Encinitas Community Center**  
Last Updated by [KPBS Online](#) yesterday

Encinitas Senior and Community Center is closed. [ 1140 Oak Crest Park Drive ] -- 11:00 a.m. Oct 25

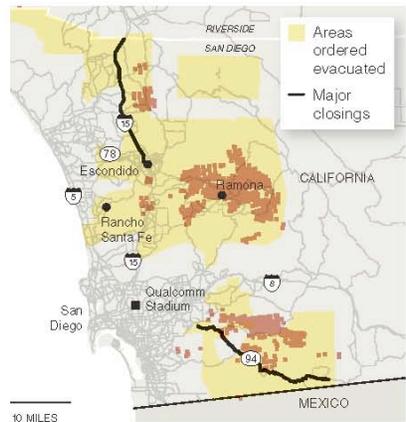
Get directions: [To here](#) - [From here](#)  
[Search nearby](#)

The map includes a scale bar (10 mi / 20 km) and a copyright notice: ©2007 Google - Map data ©2007 NAVTEQ.



### Wildfires Keep Spreading

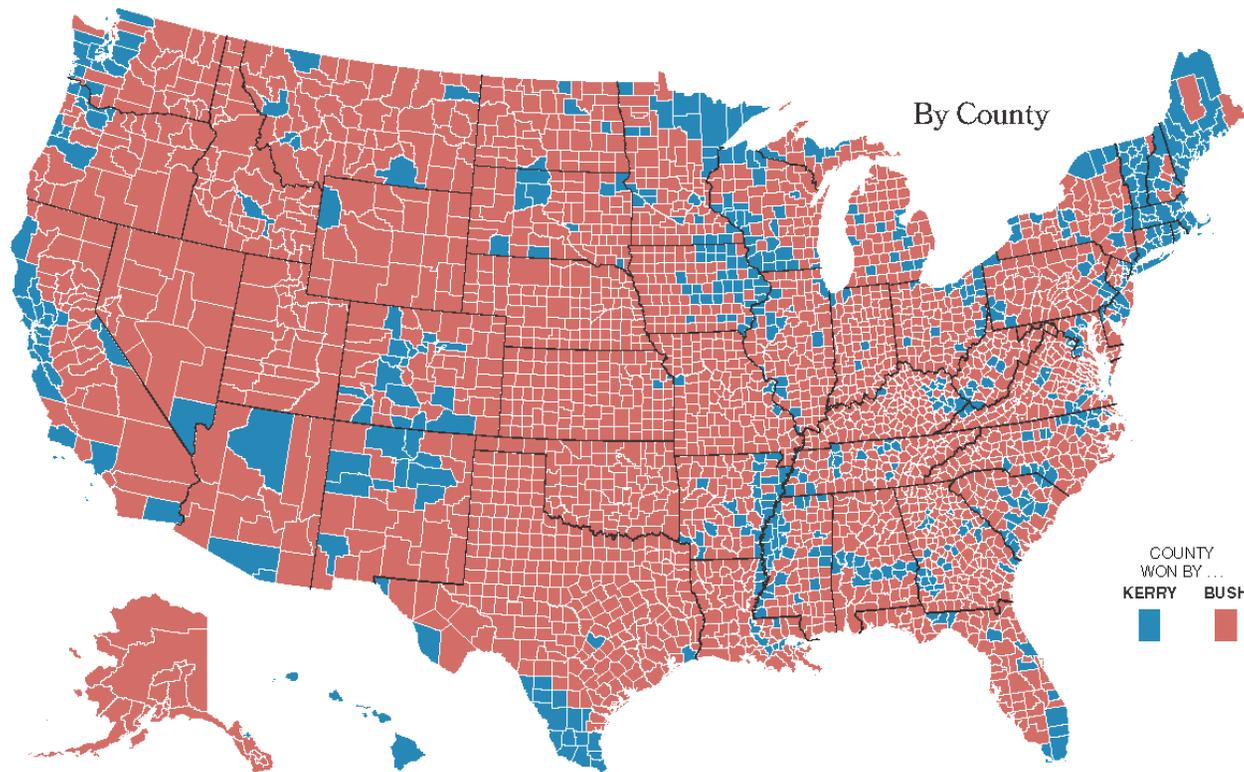
More than a thousand homes and businesses have been destroyed. In San Diego County, 560,000 people were ordered to evacuate. About 95 percent of the households within the area ordered evacuated had vehicles. Ethnically, the area was two-thirds white and around a quarter Hispanic. An estimated 10,000 evacuees took shelter at Qualcomm Stadium. Damage reports are as of 7 p.m. Eastern yesterday.



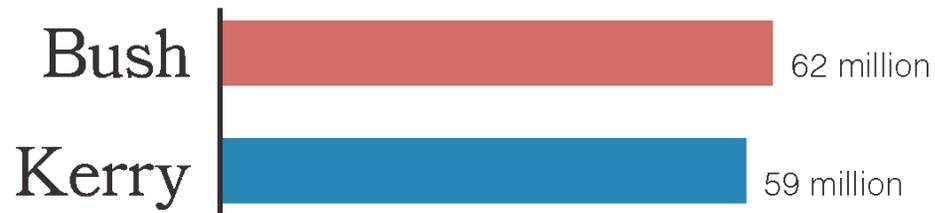
Sources: Emergency management agencies; Forest Service; population density from LandScan 2006 Population Dataset/UT-Battelle

ERIN AIGNER, AMANDA COX, RENEE BIGDON AND ARCHIE TISE/THE NEW YORK TIMES

# Honest Portrayal



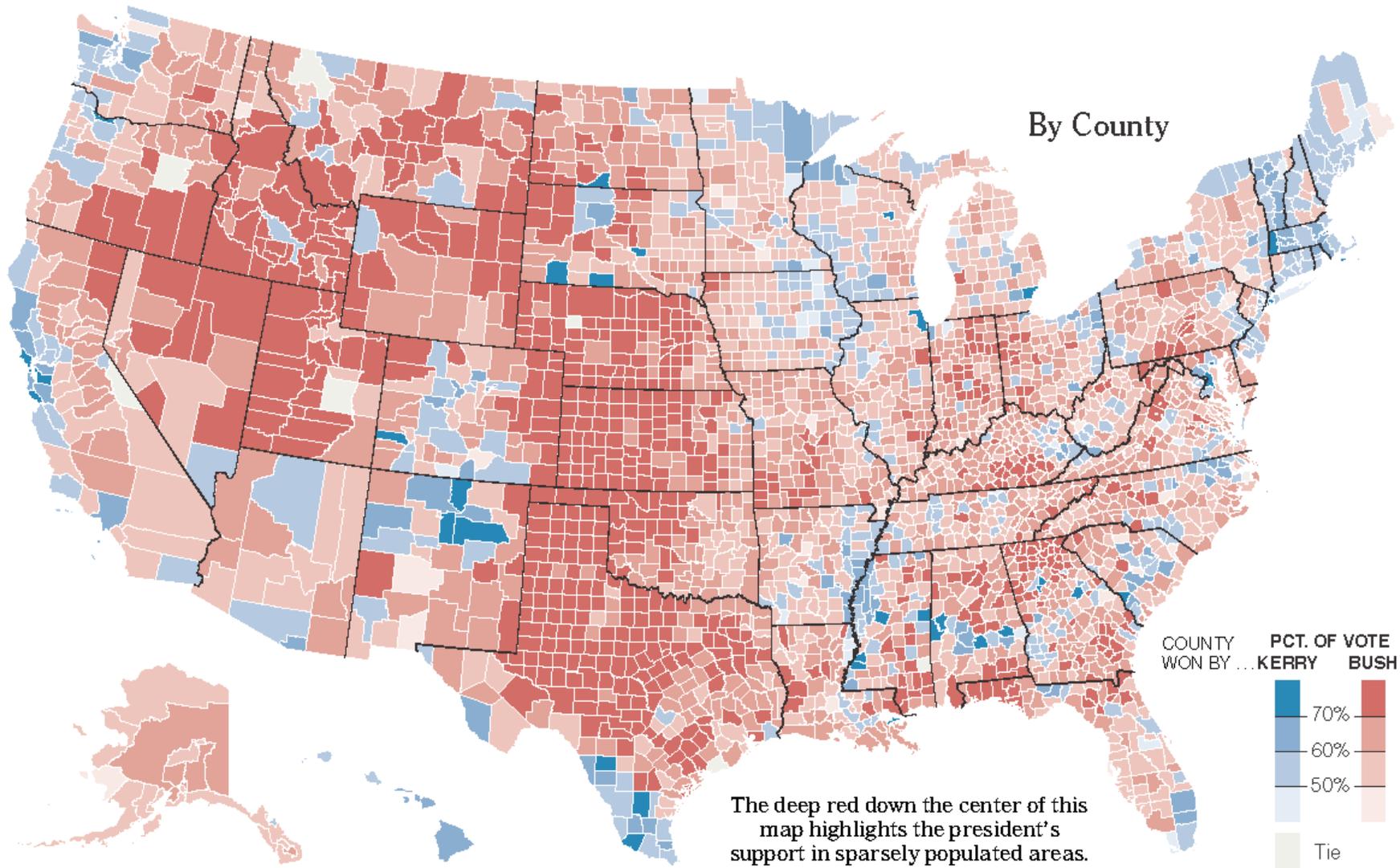
### 2004 Popular Vote



### Amount of red and blue shown on map

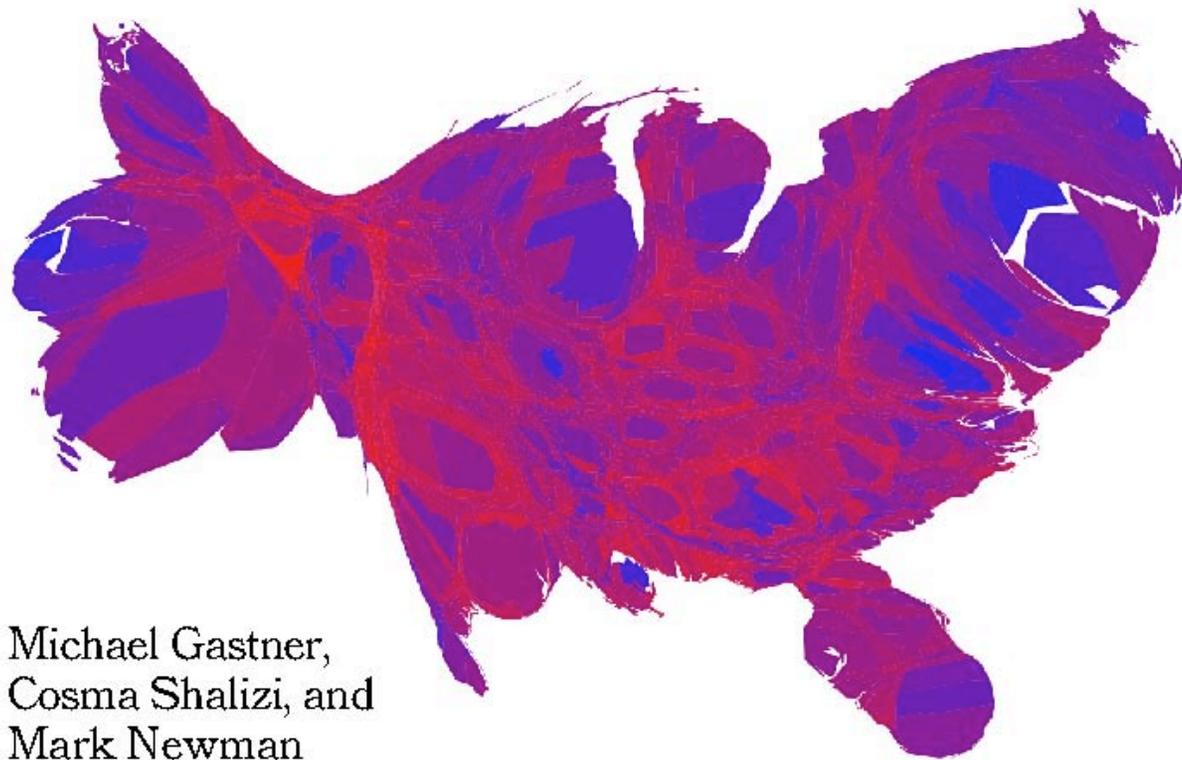


## By County



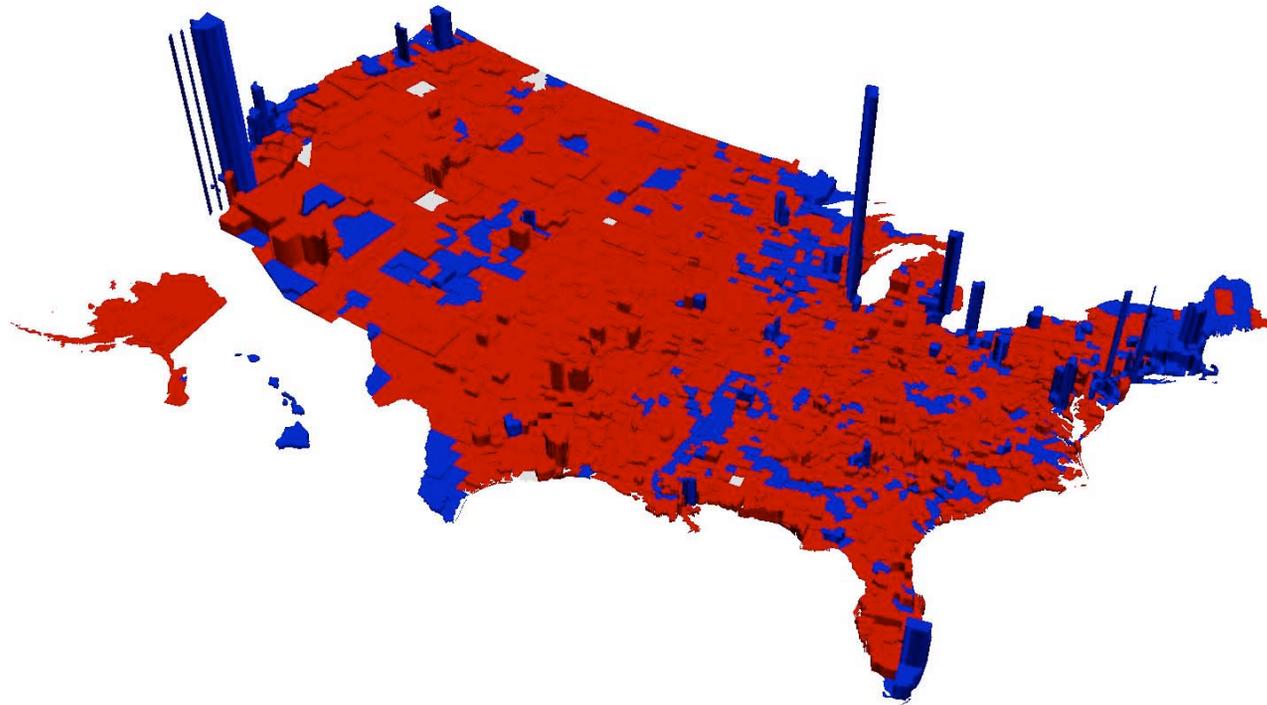
The deep red down the center of this map highlights the president's support in sparsely populated areas.

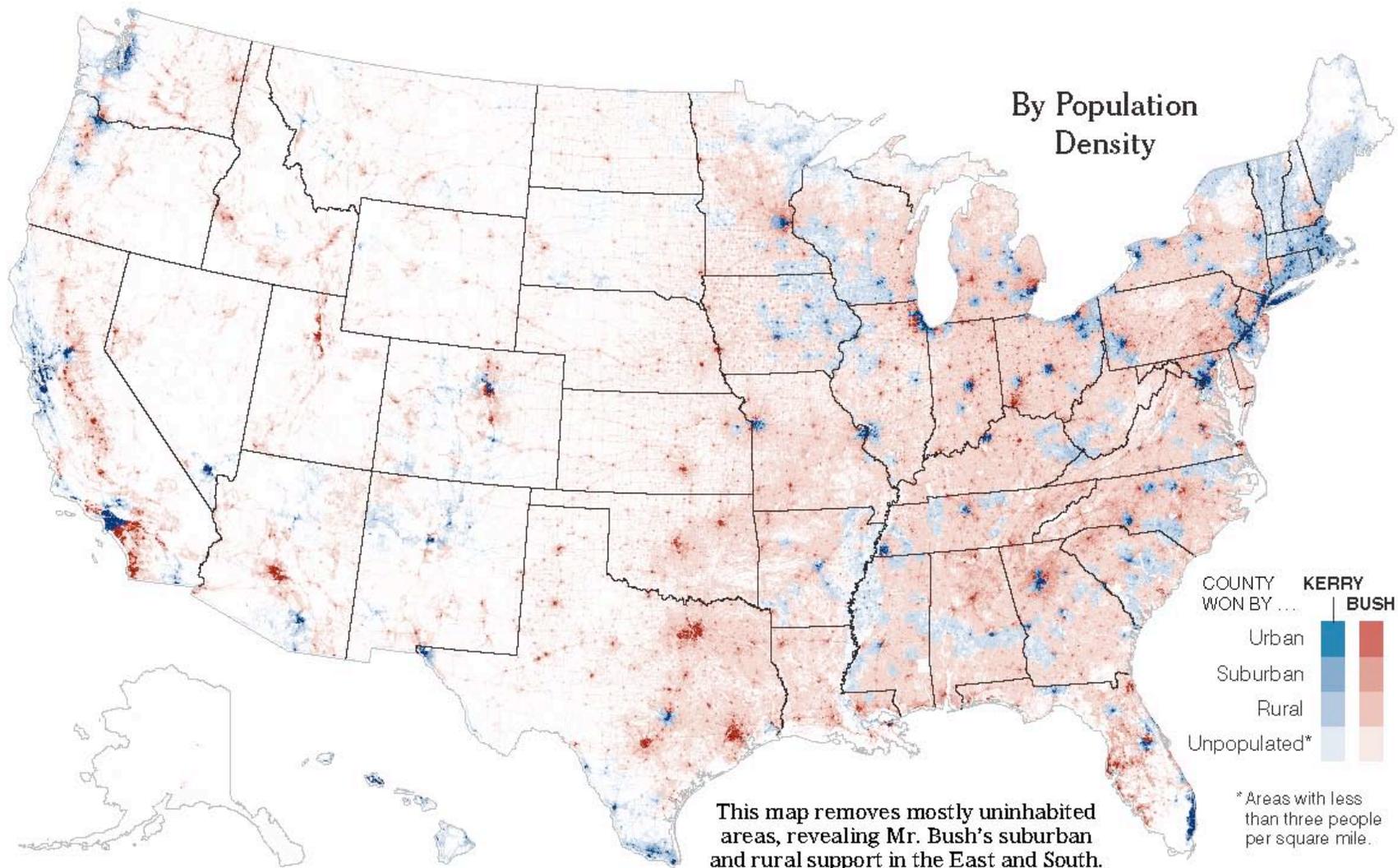
# Cartogram



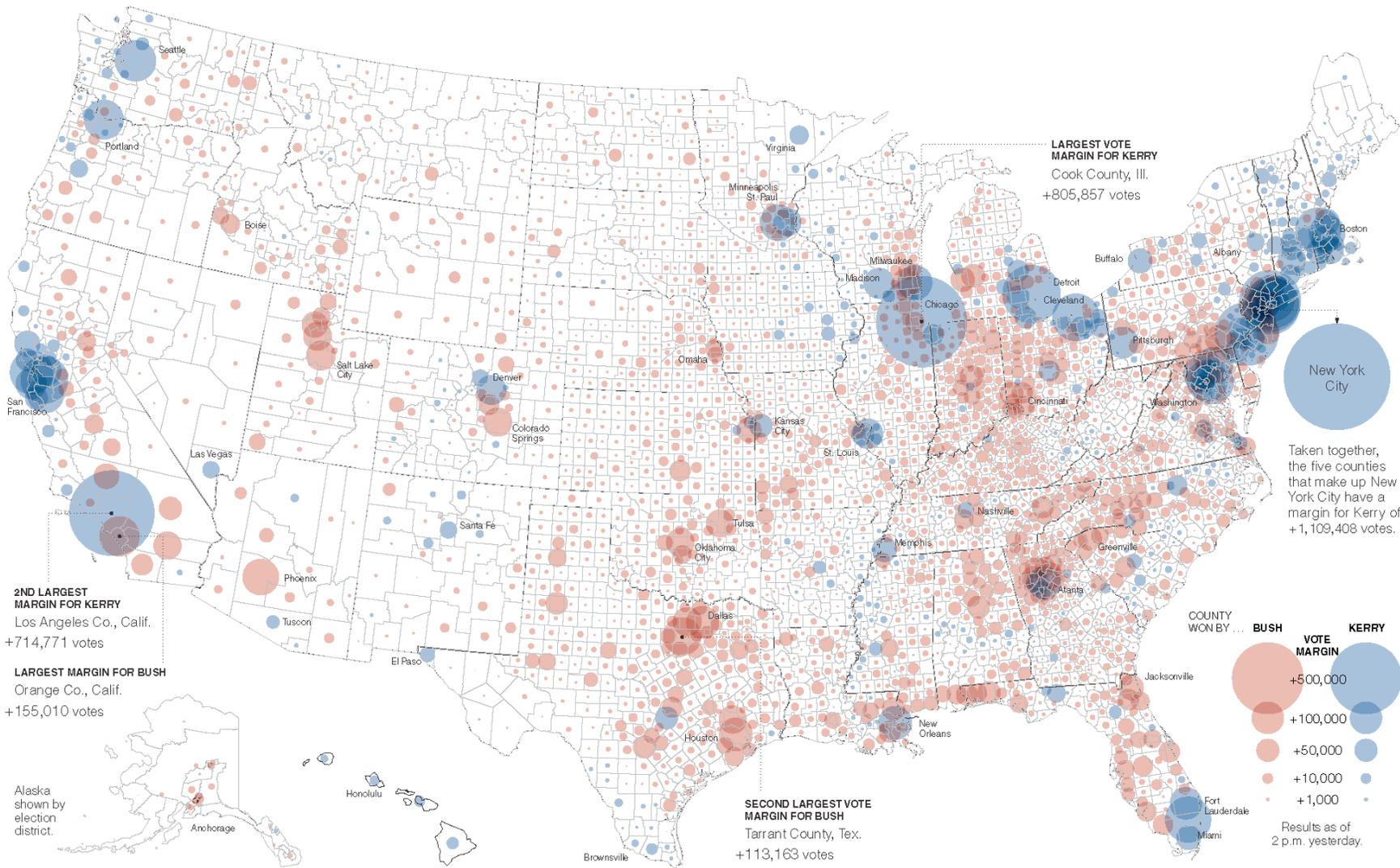
Michael Gastner,  
Cosma Shalizi, and  
Mark Newman  
*University of Michigan*

# 3D





This map removes mostly uninhabited areas, revealing Mr. Bush's suburban and rural support in the East and South.

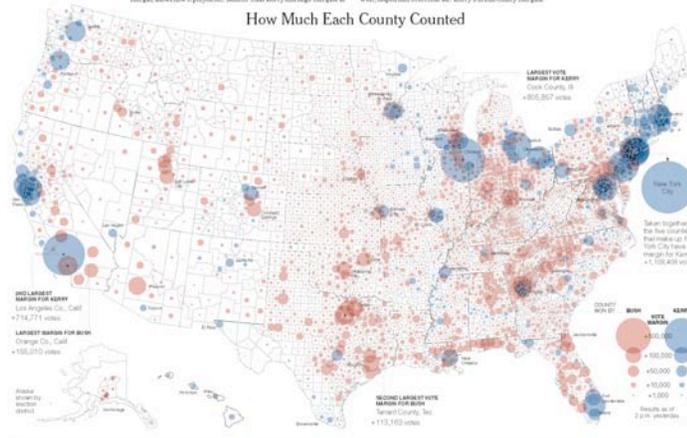


# Different Views

## Red and Blue, the Divided Electorate, in All Its Shades

The simple formula for winning an election is to get more votes than your opponent in as many states as possible. It worked for President Bush. The map below, which uses the size of circles to indicate a candidate's winning margin, shows how it played out. Senator John Kerry had large margins in many counties with large cities, and those margins were enough for him to win some of those states. However, Mr. Bush's victory resulted from narrower margins in suburban and rural counties, as well as the South and West, which have more voters. Kerry's victory in many margins.

How Much Each County Counted

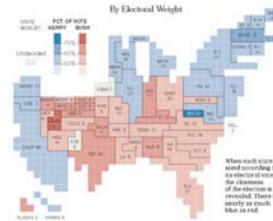


### Two Views of the Electoral Vote

By Geography



By Electoral Weight

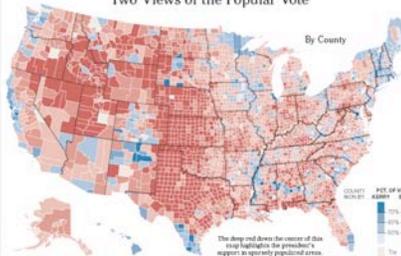


The Electoral Results



### Two Views of the Popular Vote

By County



By Population Density



Source: 2004 results from the Associated Press, analyzed according to the 2003 Division of Elections, population density from Landfall 2001.

Author: Steven Weber, with illustrations by The New York Times.

# Uncover Patterns

## The Words Speakers Use

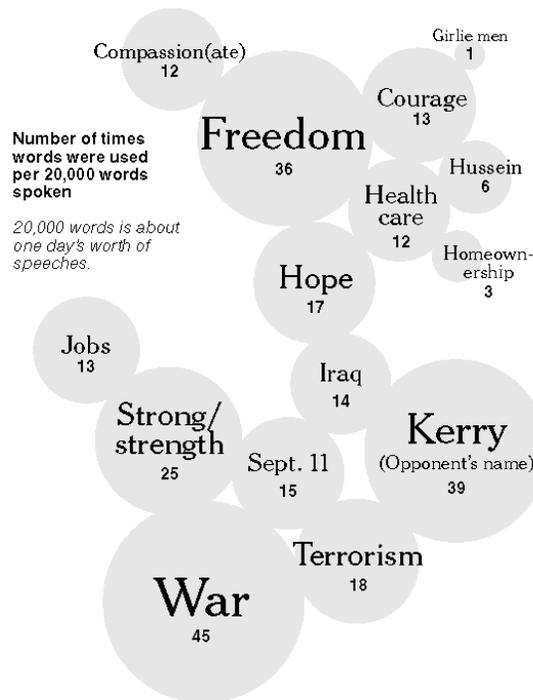
Looking at the number of times words have been used by speakers at each party's convention suggests the different themes the parties have highlighted.

The Republican speakers have used more terms related to terrorism and the war in Iraq, while the Democratic speakers were more likely to mention health care or jobs.

In addition, Republicans were more likely to mention the opposing candidate by name, something the Democrats rarely did.

### Republican Convention

Speakers on Monday, Tuesday and Wednesday



### Democratic Convention

Speakers on all days



SOME OF THE REPUBLICAN SPEAKERS

SOME OF THE DEMOCRATIC SPEAKERS



NUMBER OF TIMES SPEAKERS USED EACH WORD OR PHRASE

John McCain

Rudolph W. Giuliani

Arnold Schwarzenegger

Laura Bush

Zell Miller

Dick Cheney

Bill Clinton

Barack Obama

John Edwards

John Kerry

Opponent's name

12

15

13

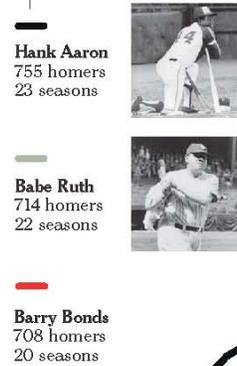
2

# 755

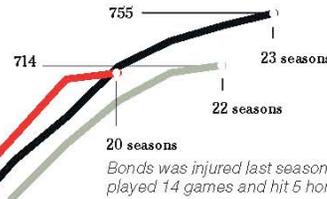
## Steroids or Not, the Pursuit Is On

Barry Bonds is taking aim at the career home run record. He needs only six more to tie Babe Ruth and 47 to equal Hank Aaron.

Lines are cumulative home runs.



**Bonds takes lead**  
Home runs after 16 seasons  
Bonds 567  
Aaron 554  
Ruth 516

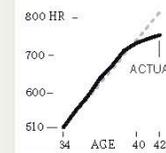


### Homer Pace After Age 34

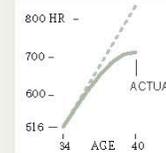
If the accusations are correct, Bonds was 34 in his first season on steroids. Here are projected home run paces for each player after age 34.

----- PROJECTED PACE BASED ON AVERAGE OF PREVIOUS FIVE SEASONS

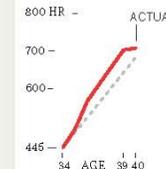
**Aaron**  
Actual homers slightly outpace projected homers for five seasons.



**Ruth**  
Averaged 46.4 homers a season from age 30 to 34. Averaged 42.5 for next four seasons.



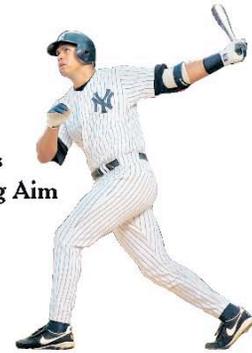
**Bonds**  
From age 35 to 39, he averaged 14 more homers a season than projected.



Note: Ages as of July 1 of each season.

According to allegations in a book about Bonds, he began taking steroids before the 1999 season, his 14th in the league. Two seasons later, he hit 73 home runs, surpassing Aaron's career pace.

### Others Taking Aim



#### Alex Rodriguez

Is ahead of the pace set by all three home run leaders.



#### Albert Pujols

Averaging 40 homers a season, he has started stronger than the three leaders did.



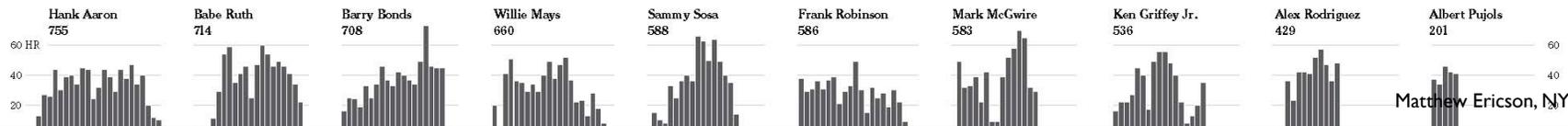
#### Ken Griffey Jr.

Many thought he would be the first to catch Ruth and Aaron until injuries limited his output.



### Differing Paths to the Top of the Charts

The top seven players on the career home run list, along with a look at Griffey (12th), Rodriguez (37th) and Pujols (tied 257th).



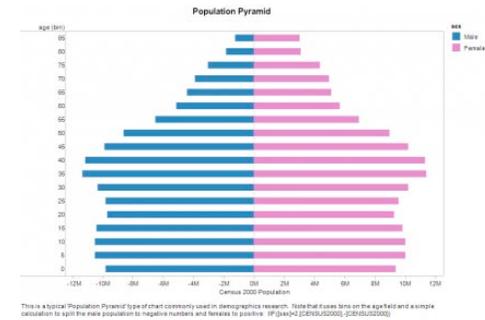
Matthew Ericson, NY Times

# CS 171

- Learn basic design and interaction principles
- Learn about different visualization methods
- Implement an interactive visualization system
- Take your programming a step further  
([processing.org](http://processing.org))

# Topics

- Data and Image Models
- Visual Perception & Cognitive Principles
- Color Encoding
- Visualization Software Design
- Designing 2D Graphs
- Maps & Google Earth
- Higher-dimensional Data
- Unstructured Text and Document Collections
- Trees and Networks
- Particles and Scalar Data
- Vector and Tensor Data
- Scientific Photography
- Animation
- Interaction Techniques
- Empirical Evaluation of Visualizations
- Visualization & The Arts



# Administrivia

- Lectures: M, W, 1:00 - 2:30 pm
- Section: F, 1:00 - 2:30 pm (not mandatory)
- 4 HWs, 1 mid-term
- Final project: Work in teams to create an interactive visualization

*Don't Let it Get to This!!*

*We can Help.*



**CS179: Design of Usable Interactive Systems**  
Mondays and Wednesdays 2:30-4:30  
Spring 2008