



Cartography

Spatial Computing – University of Minnesota



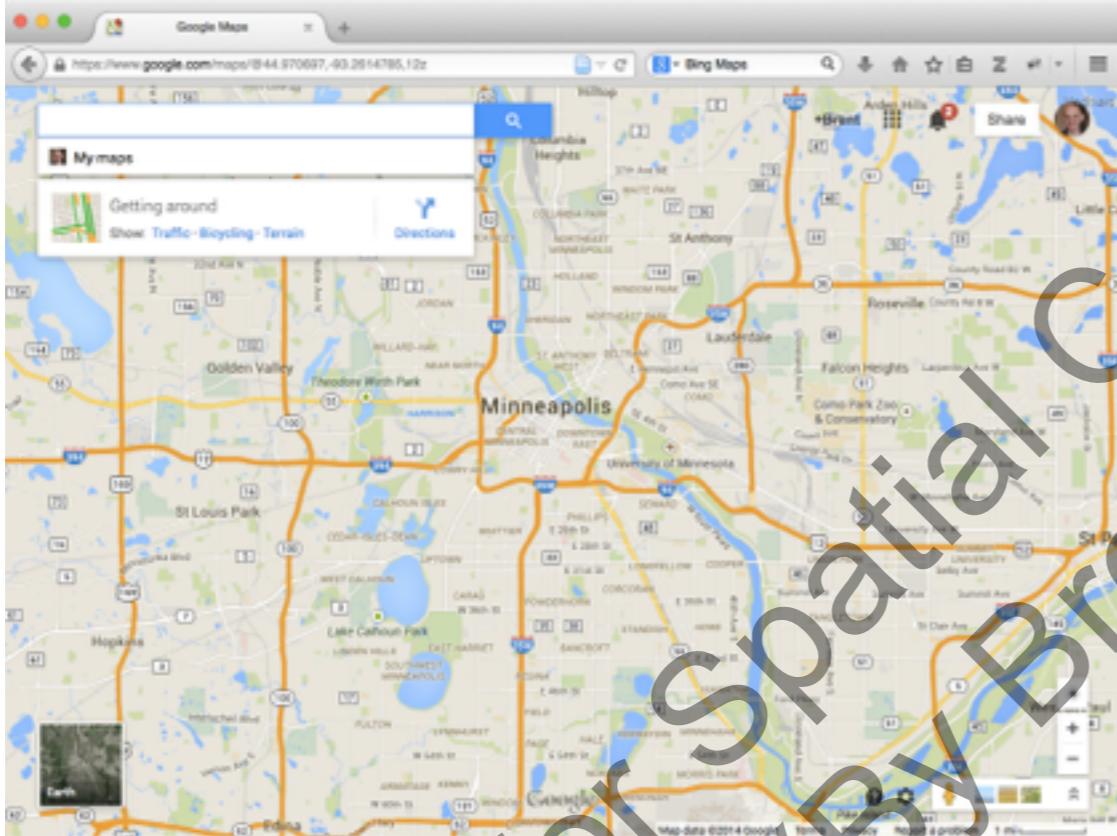
Cartography

Spatial Computing – University of Minnesota

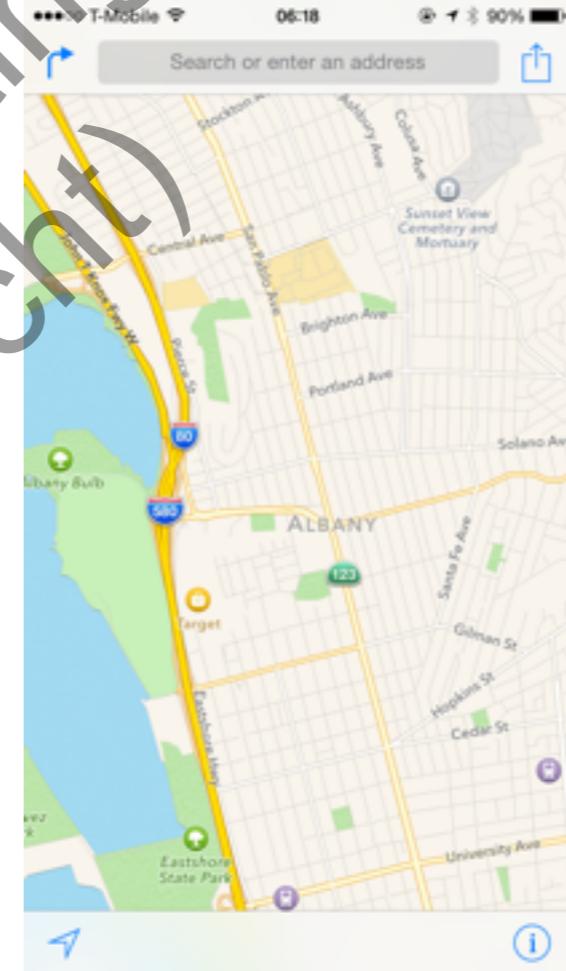
Learning Objectives

1. Understand the drastically **changed** (and changing) **professional context** of modern cartography.
2. Be able to distinguish between and understand the purpose of the two major types of maps: **reference and thematic**.
3. Know the **limitations** of popular online and mobile reference maps. (**Technical track:** Know how to get around them)
4. Be able to distinguish between types of **thematic maps** and choose the correct type for a given **geocommunication** need.
5. Have an understanding of some of the **computing-oriented innovation** going on in cartography (i.e. *spatialization*)

The two types of most commonly-encountered maps for many people:

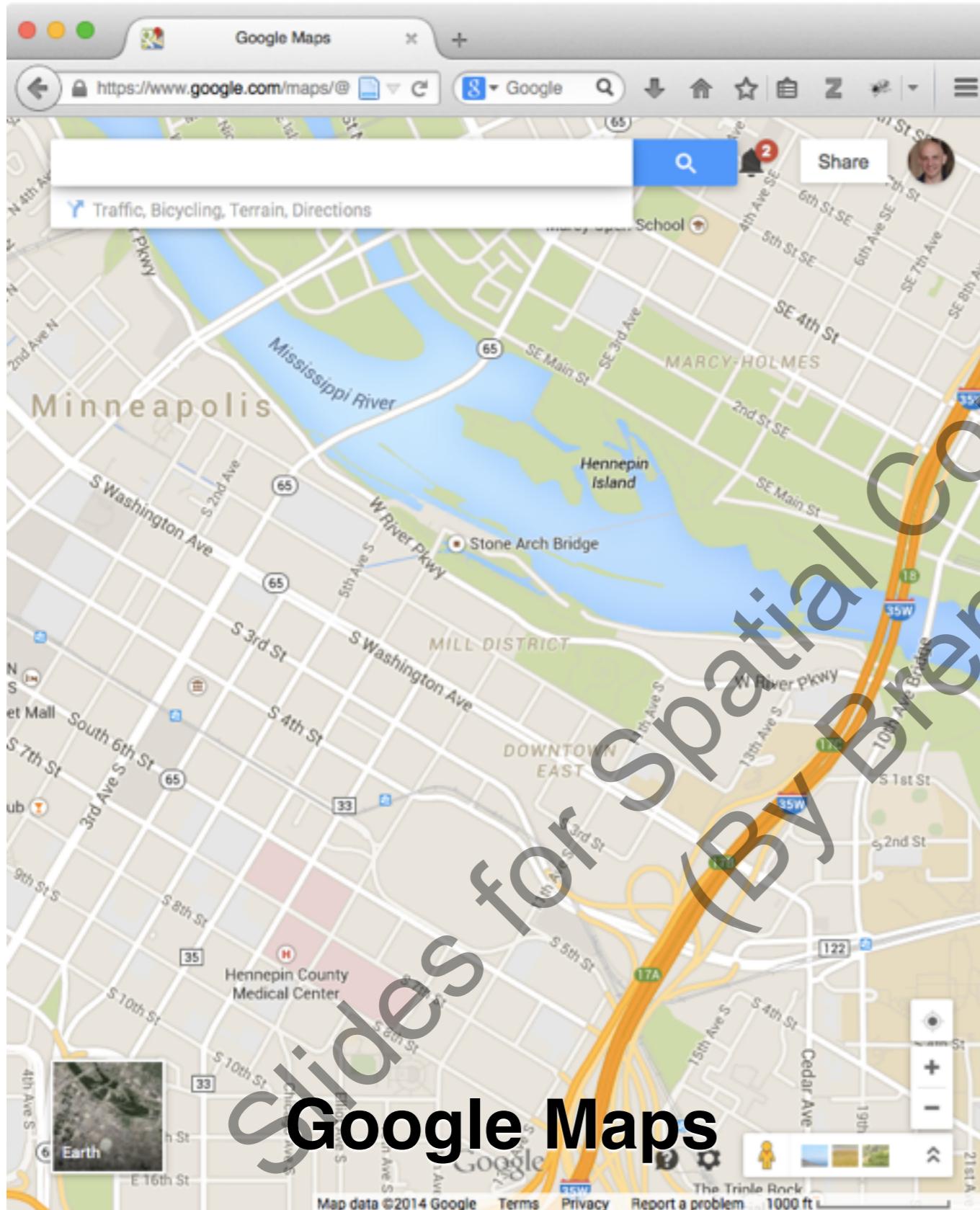


Online maps
(a.k.a. map websites)



Mobile Maps
(a.k.a. map smartphone apps)

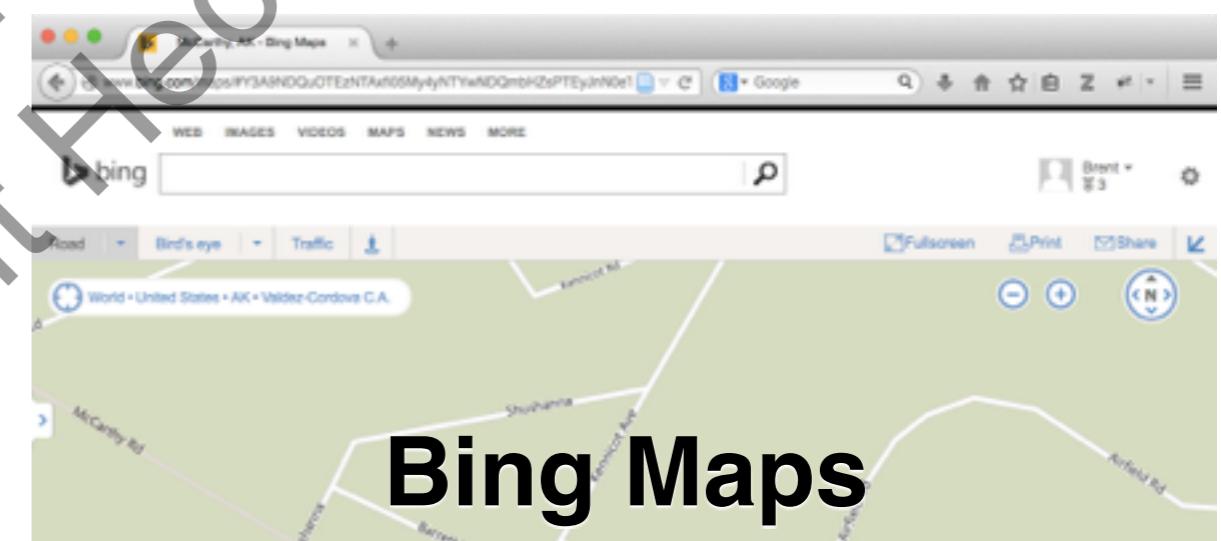
Well-known “online maps” / map websites:



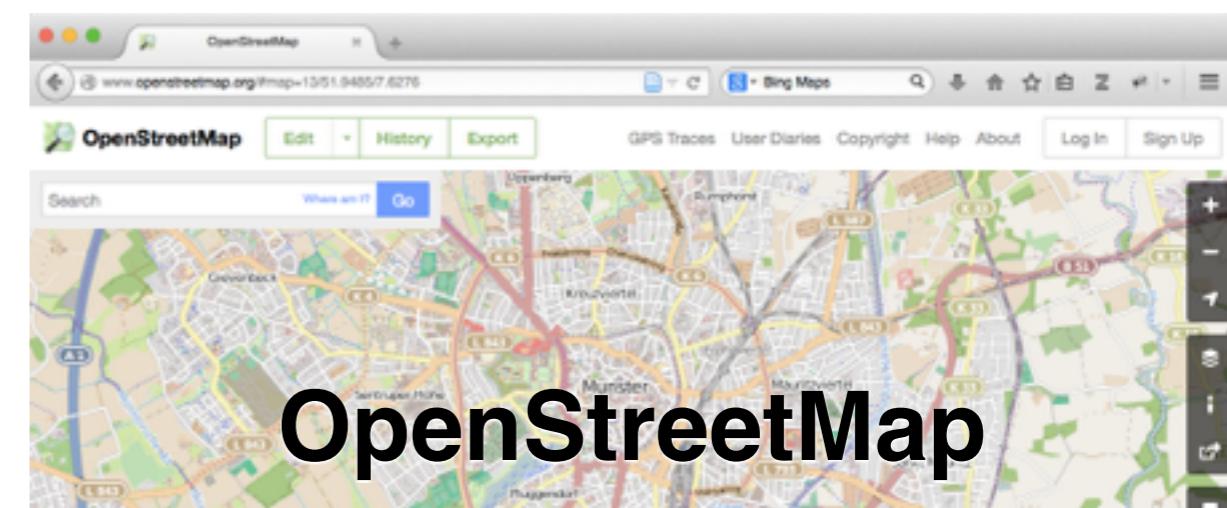
Google Maps



MapQuest



Bing Maps

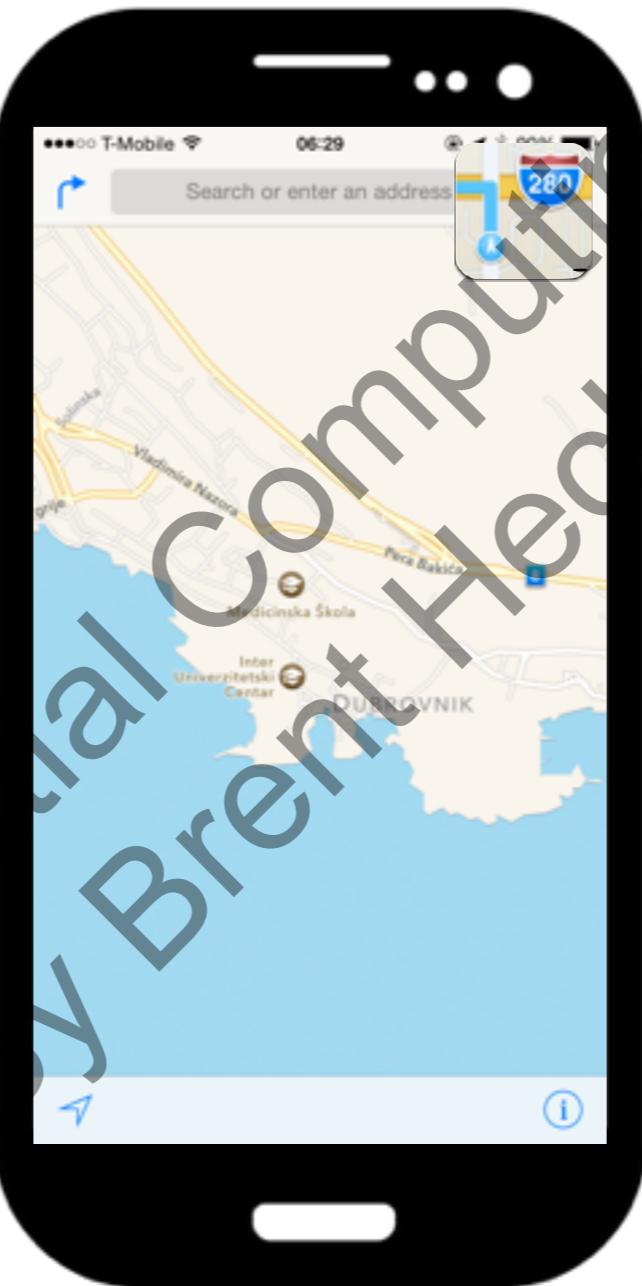


OpenStreetMap

Well-known mobile map apps:



Google Maps app



Apple Maps app



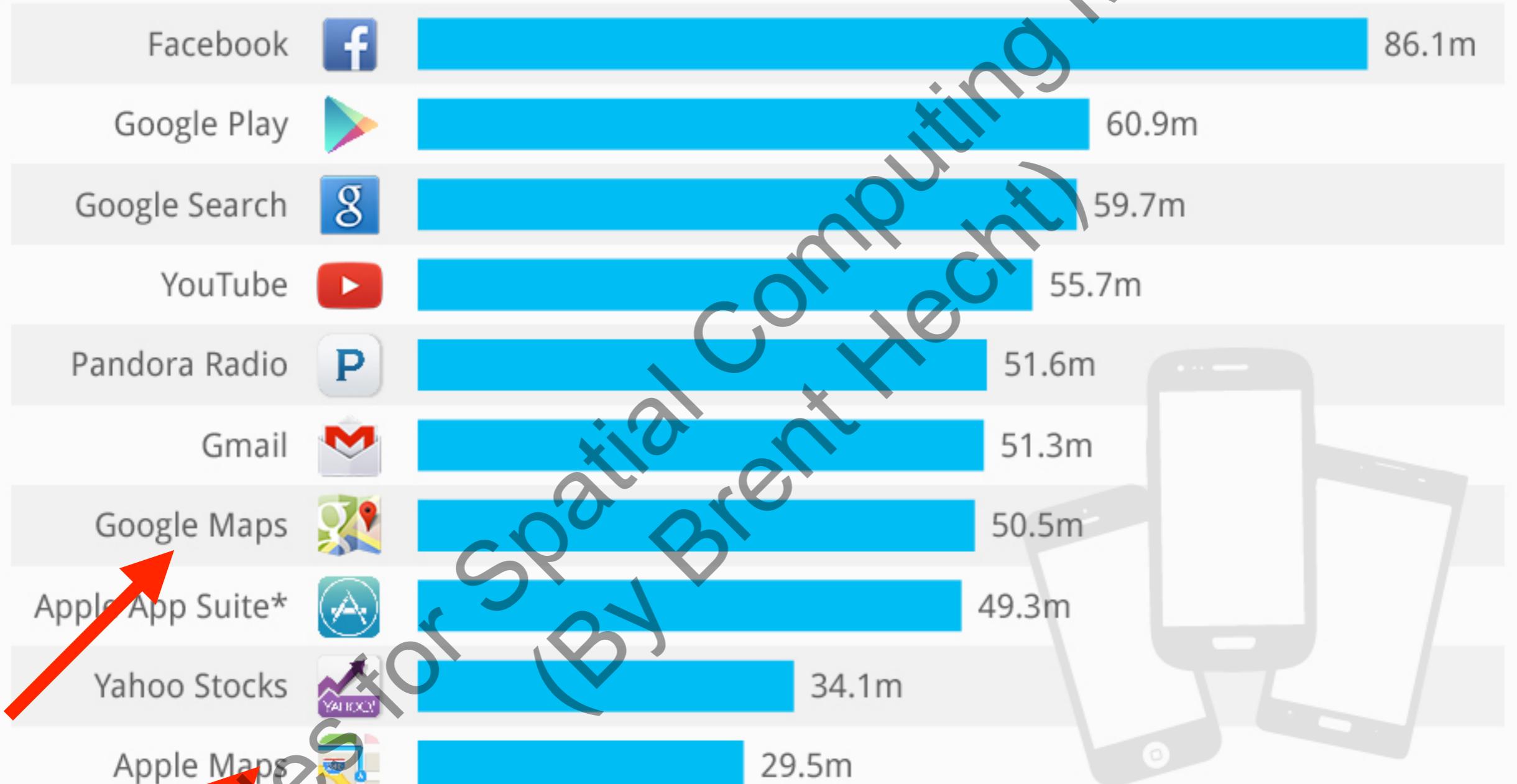
Waze



Nokia HERE Maps

The 10 Most Popular Apps in the U.S.

Average monthly users (18+) of the most popular smartphone apps in the United States in 2013

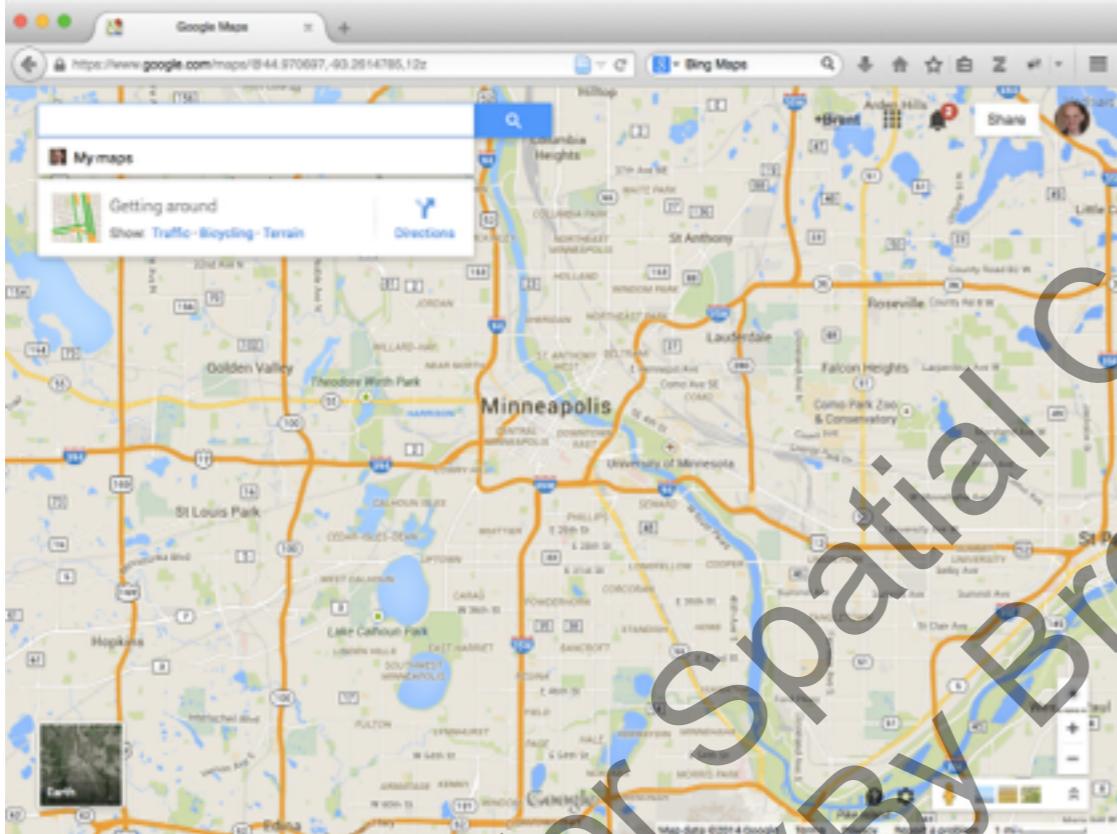


* includes iTunes, App Store and Game Center

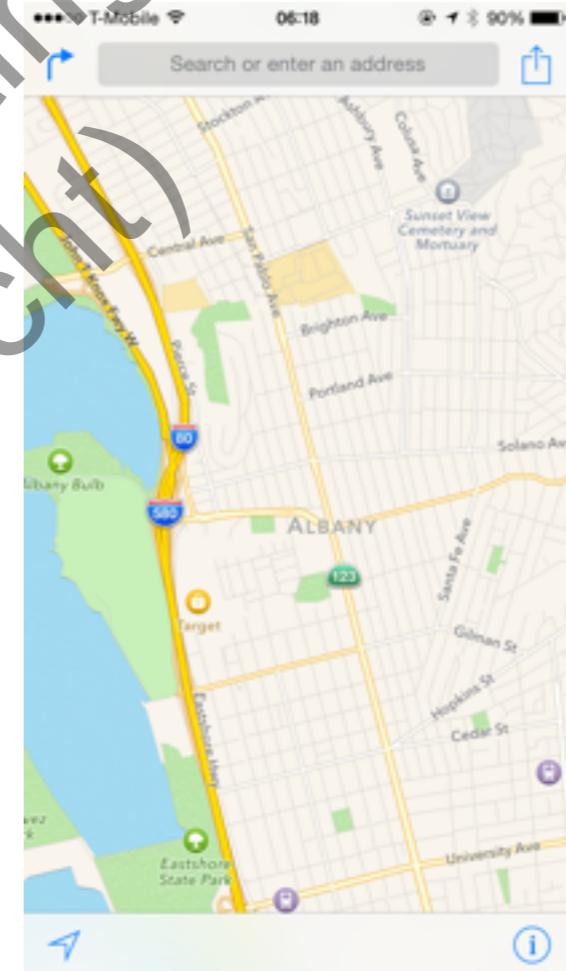
Source: comScore

Mashable statista

The two types of most commonly-encountered maps for many people:



Online maps
(a.k.a. map websites)



Mobile Maps
(a.k.a. map smartphone apps)

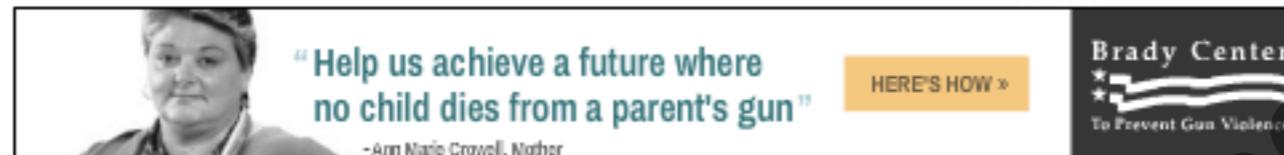
The New York Times

U.S.

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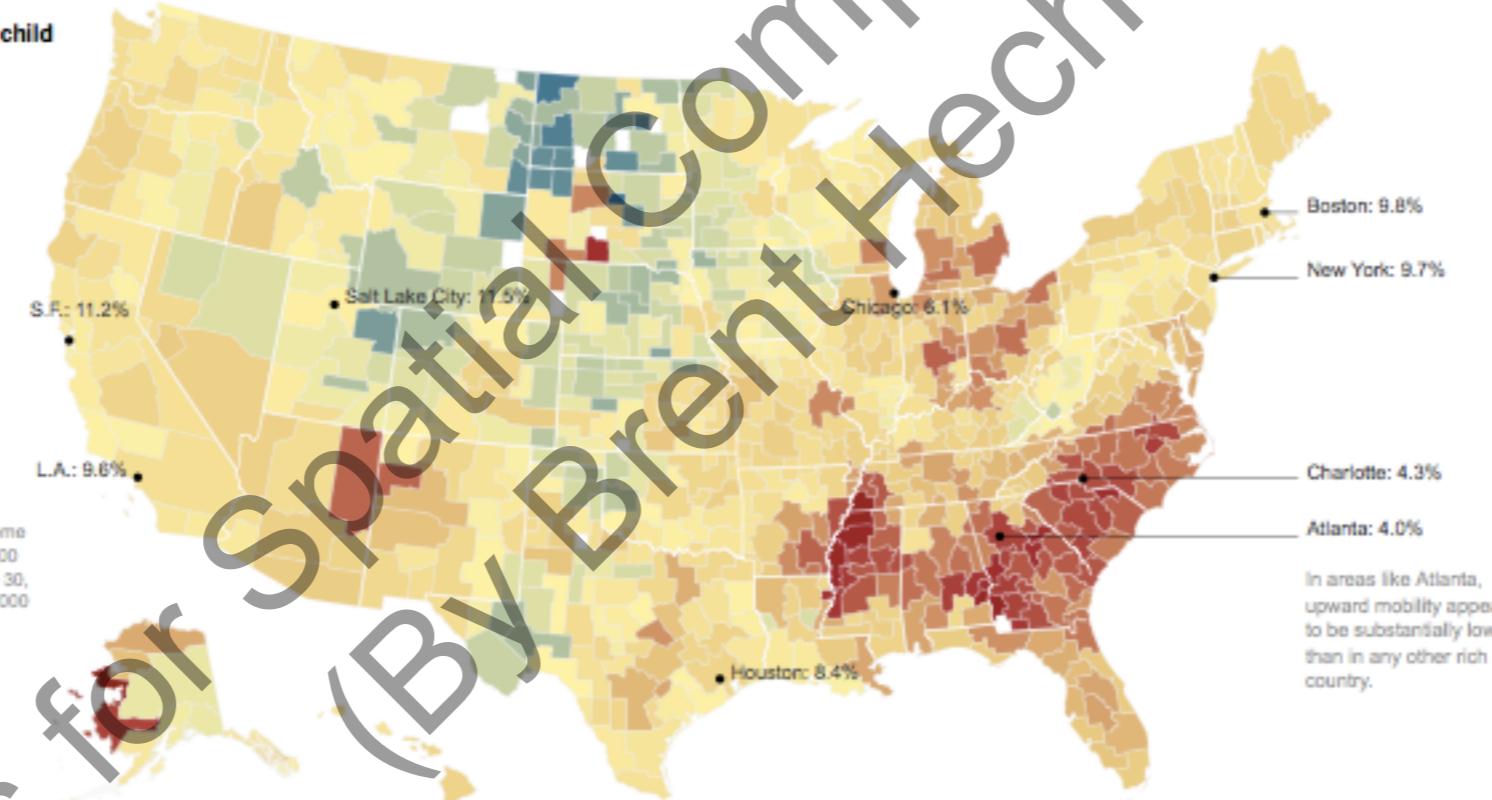
In Climbing Income Ladder, Location Matters

A study finds the odds of rising to another income level are notably low in certain cities, like Atlanta and Charlotte, and much higher in New York and Boston.

The chance a child raised in the bottom fifth rose to the top fifth



The top fifth is equal to family income of more than \$70,000 for the child by age 30, or more than \$100,000 by age 45.



By DAVID LEONHARDT PUBLISHED: JULY 22, 2013 536 COMMENTS

ATLANTA – Stacey Calvin spends almost as much time commuting to her job — on a bus, two trains and another bus — as she does working part-time at a day





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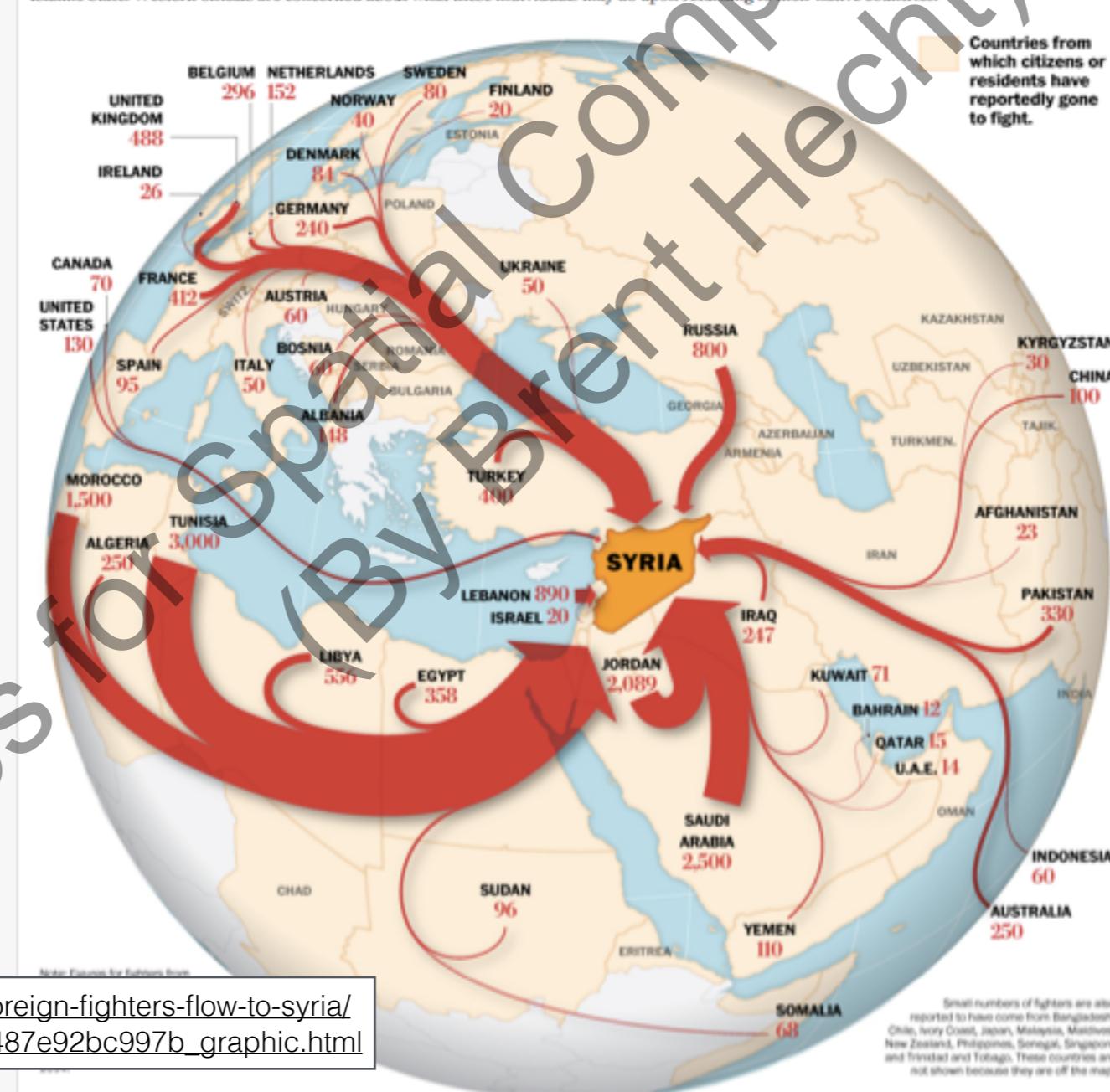
In the News Pistorius sentenced Hannah Graham Federal leave Submarine hunt Airbag defect

MERILL EDGE FINANCIAL

Ad

Foreign fighters flow to Syria

An estimated 15,000 militants from at least 80 nations are believed to have entered Syria to help overthrow the regime of President Bashar al-Assad according the CIA and studies by ISCR and The Soufan Group. Many of these fighters are believed to have joined units that are now part of the Islamic State. Western officials are concerned about what these individuals may do upon returning to their native countries.



MAP: The best places to be ...

www.startribune.com/local/blogs/278443641.html

Google

MAP: The best places to be a Twin Cities transit commuter

Posted by: Eric Roper | Updated: October 7, 2014 - 5:43 PM

7 comments | print

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Slides for Spatial Computing
(By Brent Hecht)

EVERYTHING ON SALE!
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list prices of advertised items

sale 47% off
\$249.99
Metal. Includes headboard, footboard
liner \$224.99

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2 Minneapolis officers praised for saving man stabbed downtown

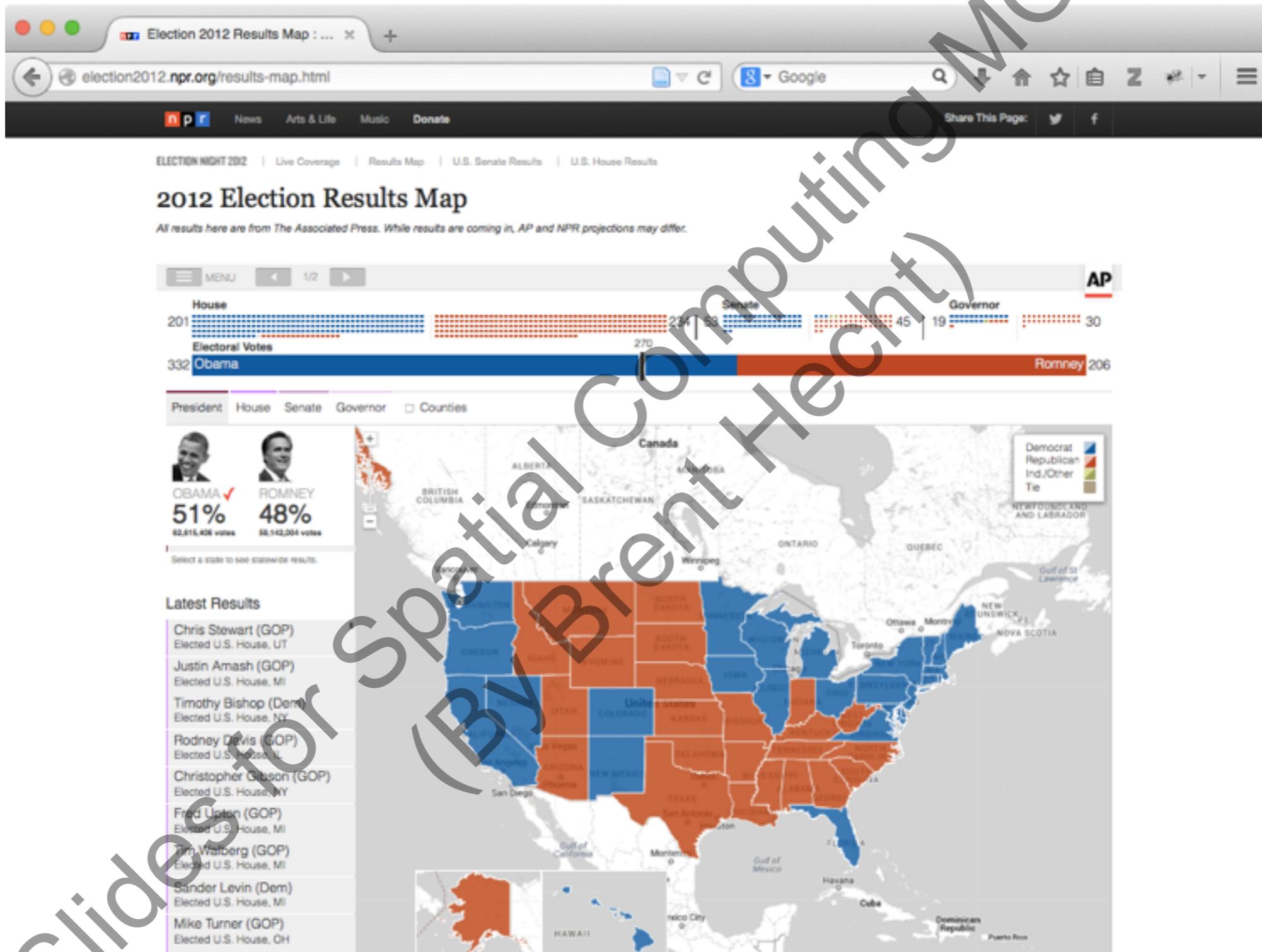
Man with dog shoots up 19 Bar, wounding two before fleeing

Minneapolis seeks high-rise for Nicollet Hotel

<http://www.statista.com/chart/2082/top-smartphone-apps-2013/>

[Click here to see the full map, with a legend.](#)

Election maps:



<http://election2012.npr.org/results-map.html>

Berliner Morgenpost**Bundestagswahl 2013 in Berlin Alle Stimmen der 1709 Wahllokale**

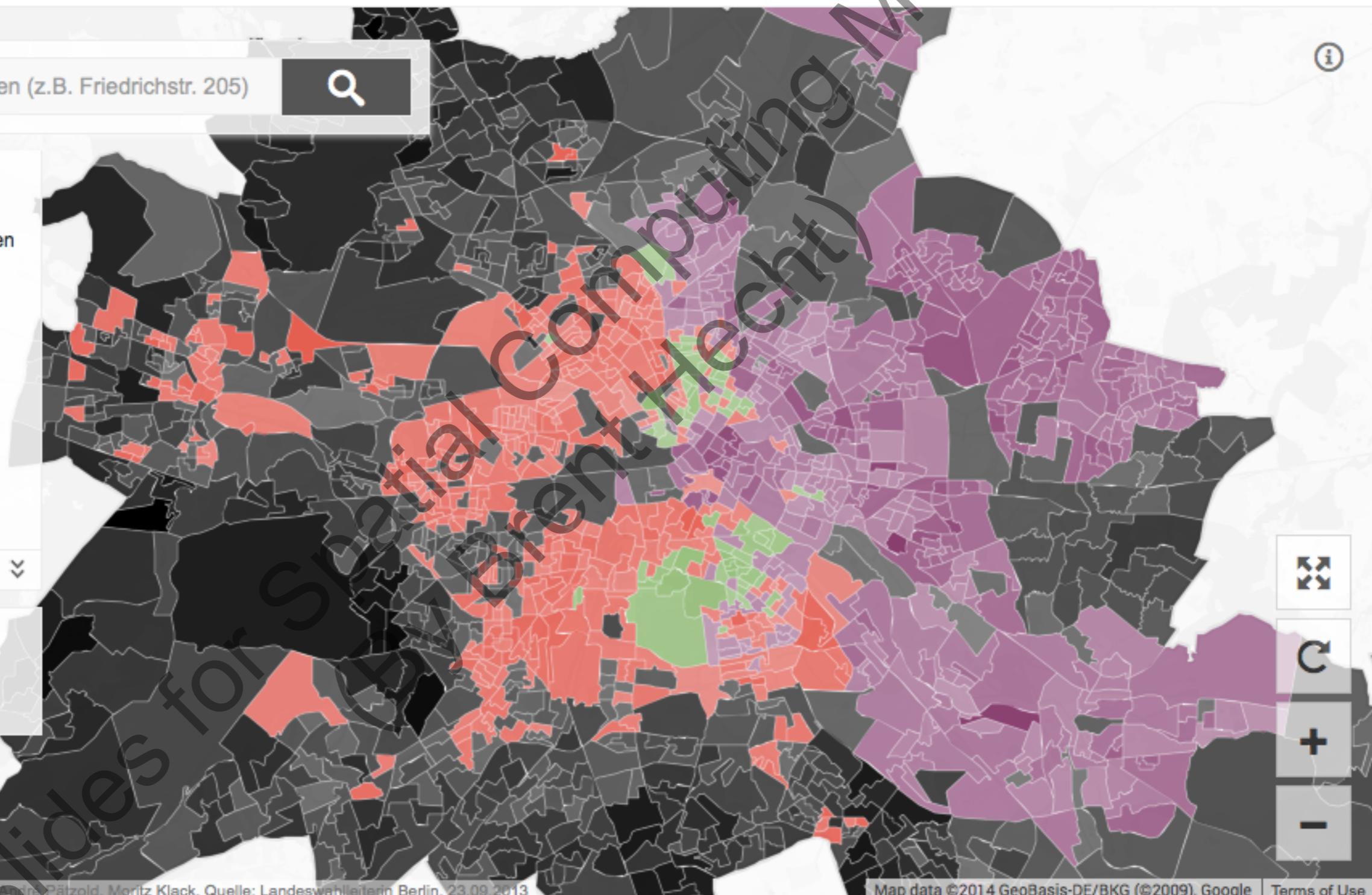
Bitte Adresse eingeben (z.B. Friedrichstr. 205)

**So hat Berlin gewählt
(Zweitstimmen)**

Klicken Sie auf die Parteien
für die Hochburgen (Top
10).

1. ■ CDU 28,5%
2. ■ SPD 24,6%
3. ■ Linke 18,5%
4. ■ Grüne 12,3%
5. ■ AfD 4,9%
6. ■ Piraten 3,6%
7. ■ FDP 3,6%

Sonstige 4,0%



Julius Tröger, Andre Pätzold, Moritz Klack, Quelle: Landeswahlleiterin Berlin, 23.09.2013

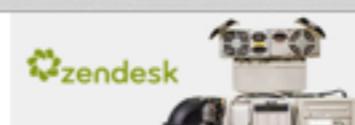
Map data ©2014 GeoBasis-DE/BKG (©2009), Google | Terms of Use

Google

WECHSEL-WÄHLER<http://berlinwahlkarte2013.morgenpost.de/>**KNAPPES ERGEBNIS**

ge

**KLEINPARTEIEN**Hier kommen die
Kleinen groß raus**HARTZ-IV**
Kieze mit den
Langzeitarbeit

Your customer service
technology is looking pretty sad

MODERNIZE

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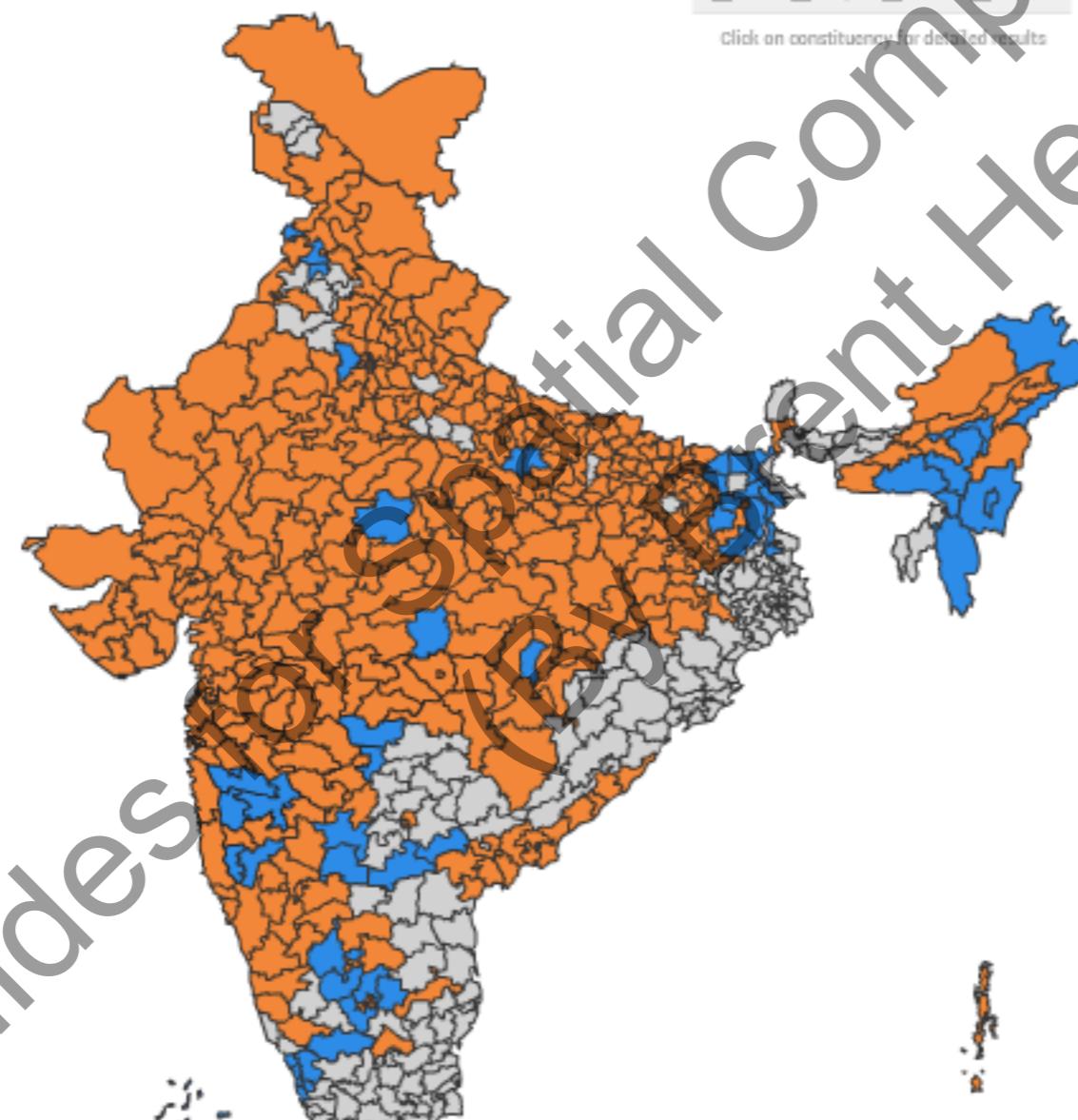
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Maps

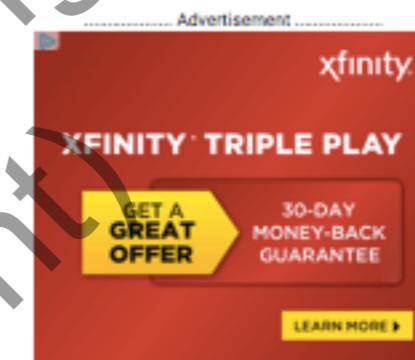
India



BJP+ Congr Others Arvind Kejriwal

Click on constituency for detailed results

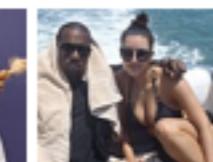
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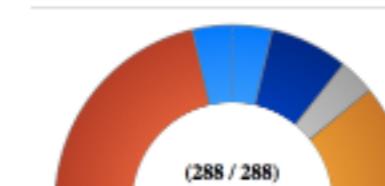
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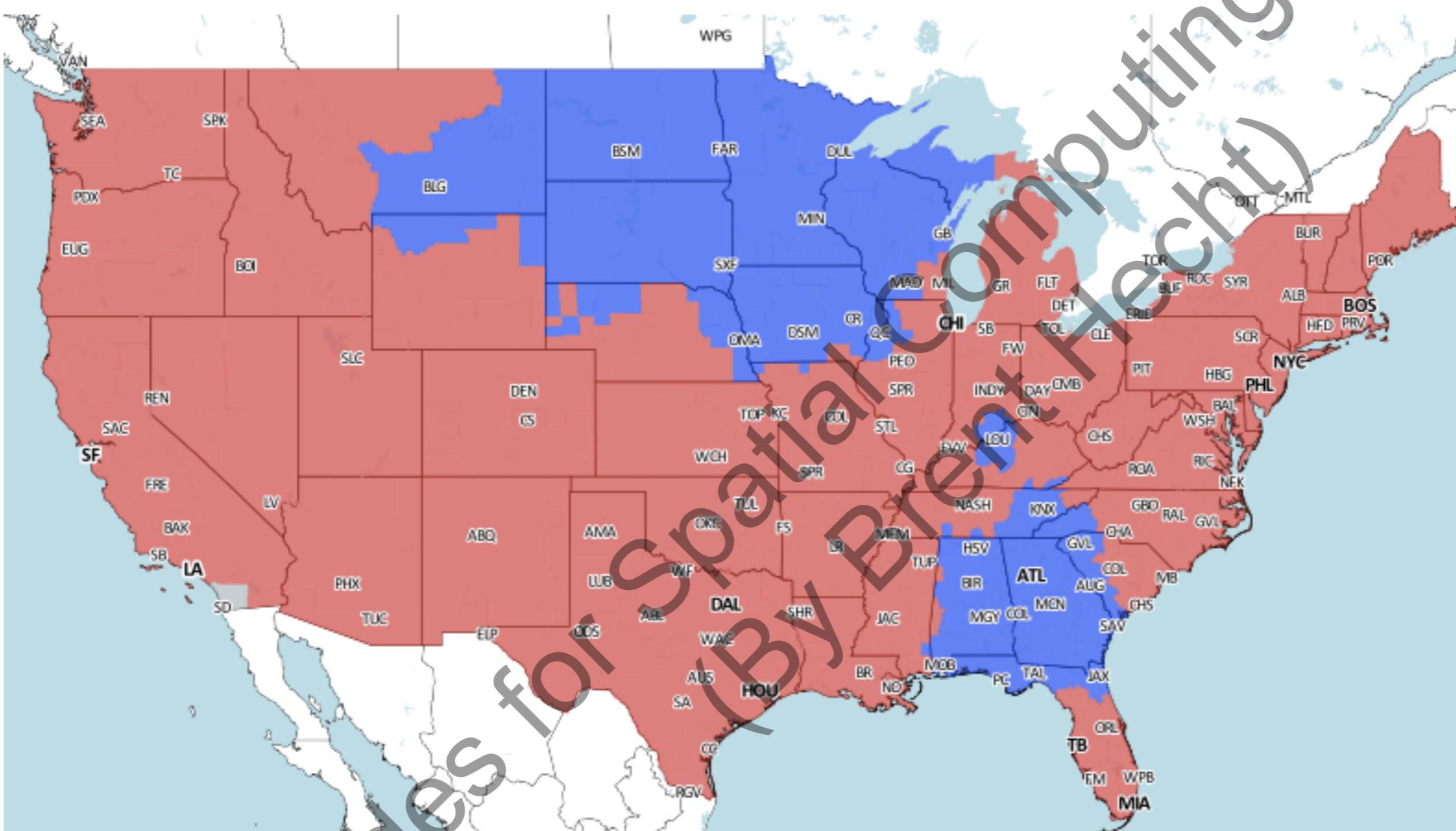
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SS 63 +19

Honolulu HI: GB-CHI to DET-NYJ
Scranton PA: DET-NYJ to TB-PIT

FOX LATE



Philadelphia @ San Francisco -- Joe Buck, Troy Aikman [AK; HI]

Atlanta @ Minnesota -- Chris Myers, Ronde Barber

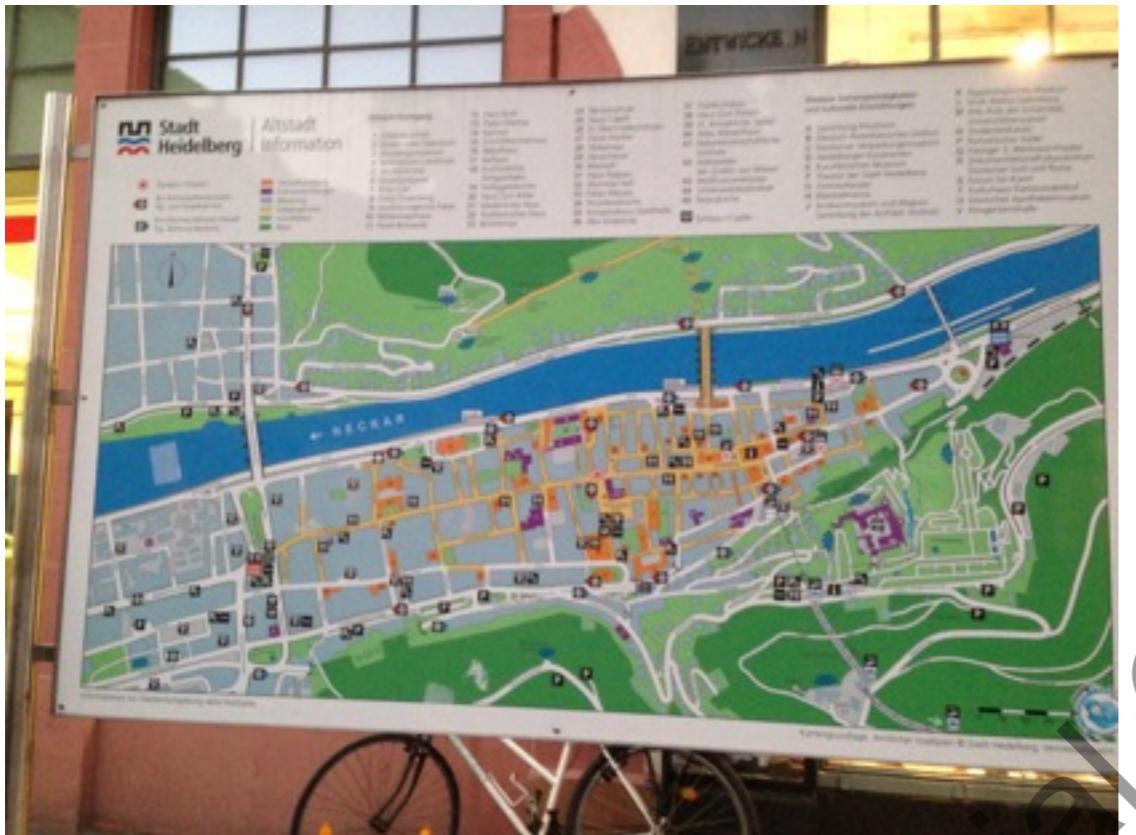
UPDATES:

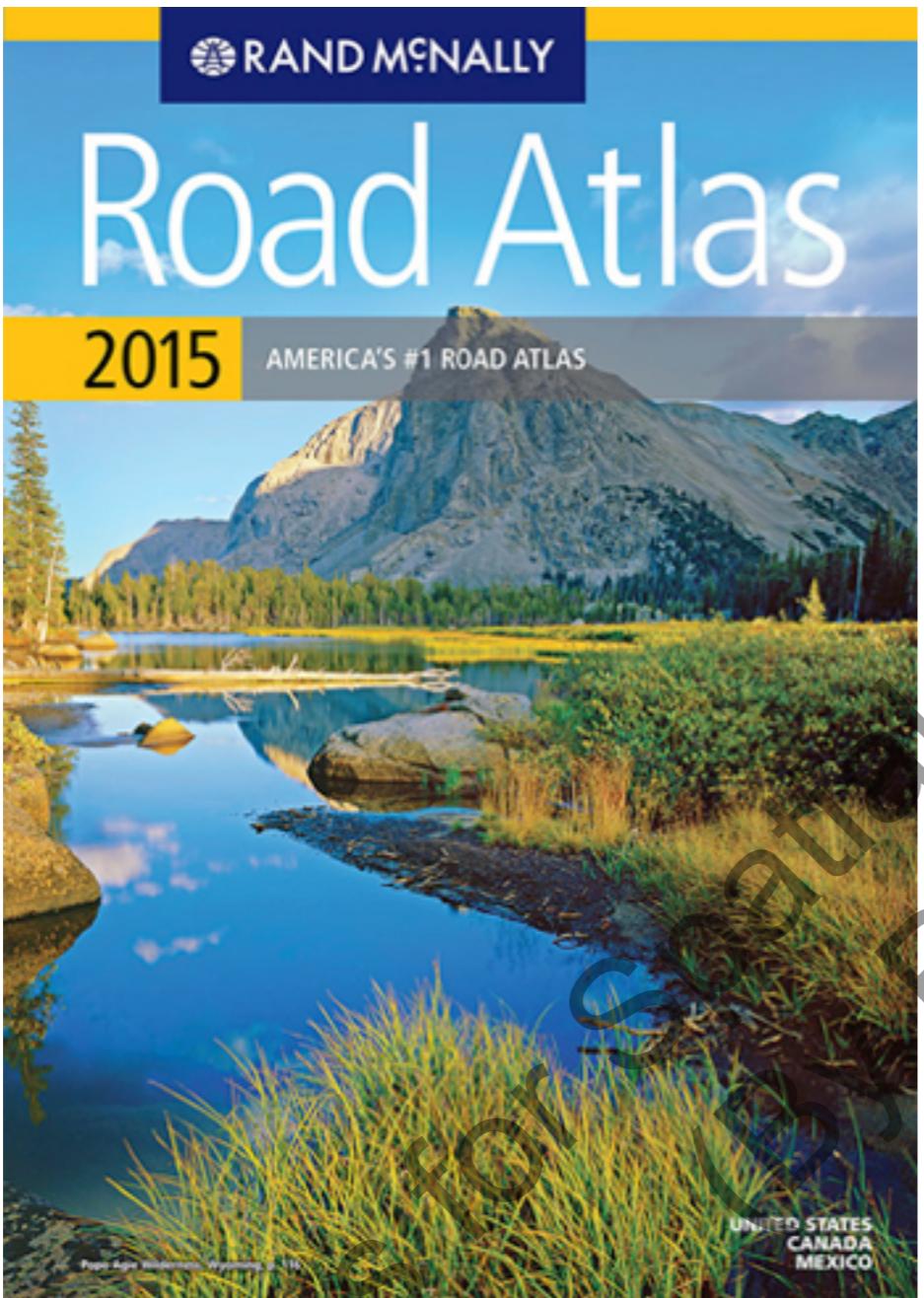
Jacksonville and Panama City FL; Greenville SC; Knoxville TN; Mobile AL; Omaha NE; Cedar Rapids IA; Madison and Wausau WI; Marquette

M

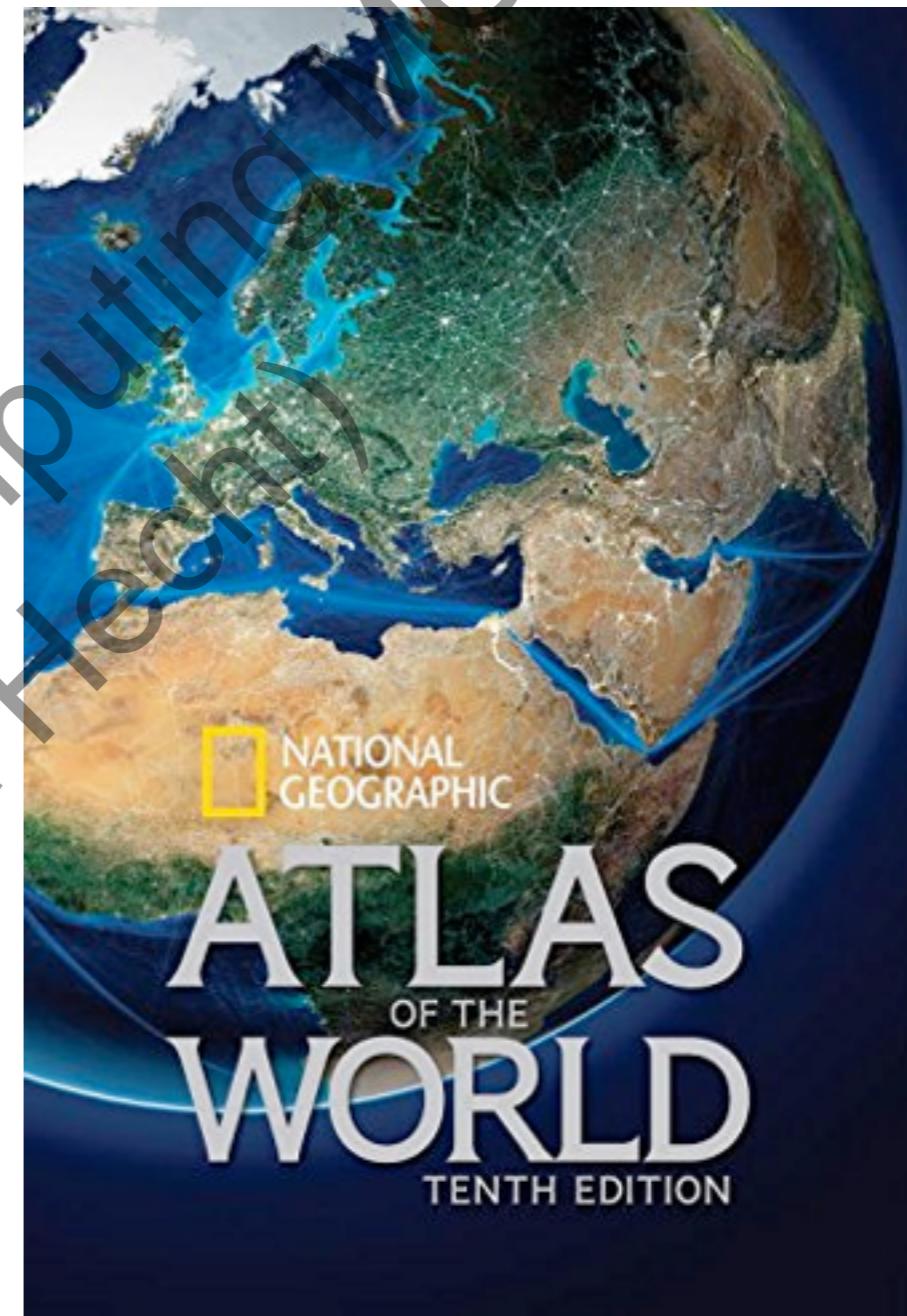
<http://506sports.com/nfl.php?yr=2014&wk=4>

Publicly-displayed local maps:





Road Atlases



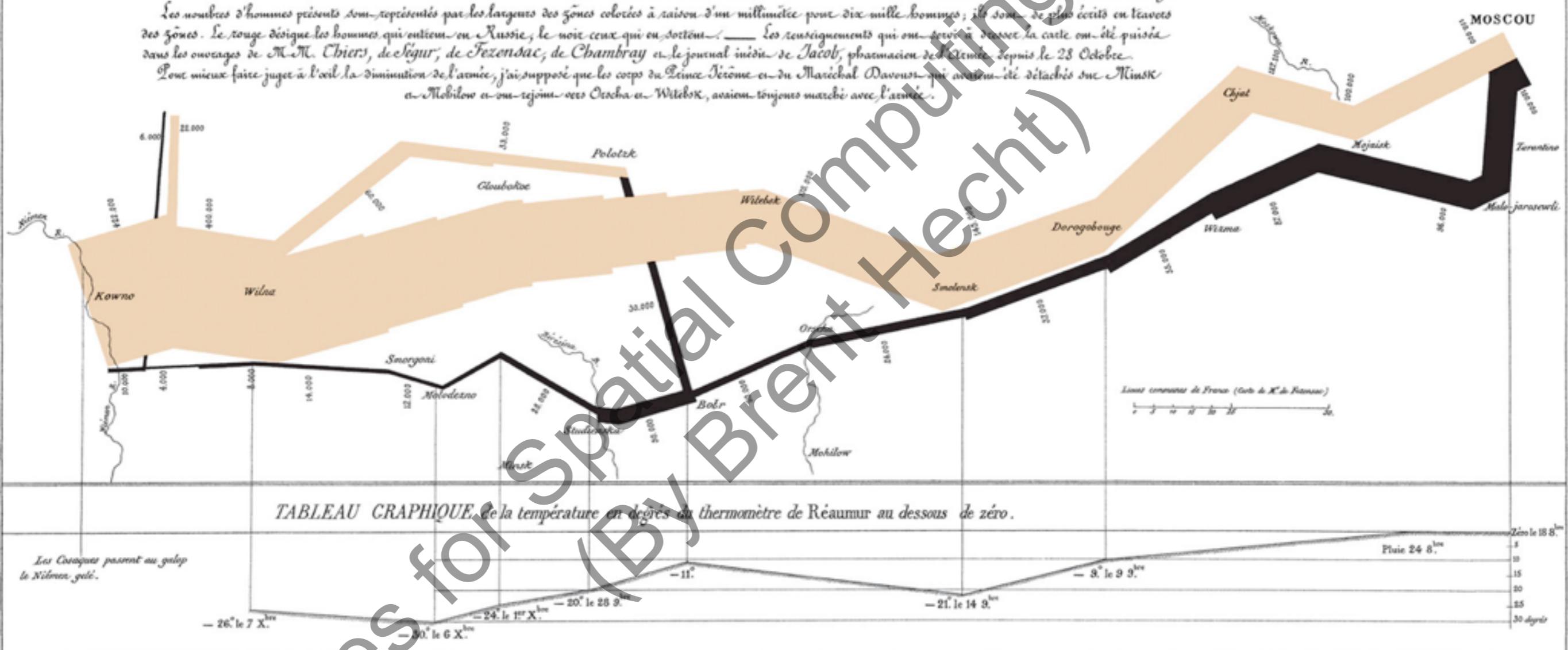
World Atlases

*Carte Figurative des pertes successives en hommes de l'Armée Française dans la Campagne de Russie 1812-1813.
Dessiné par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite*

Paris, le 20 Novembre 1869.

Les nombres d'hommes présentés sont représentés par les larges des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en lettres des zones. Le rouge désigne les hommes qui entrent en Russie; le noir ceux qui en sortent. — Les renseignements qui ont servi à dresser la carte ont été pris dans les ouvrages de M. Chiers, de Séjourné, de Fezenac, de Chambray et le journal médical de Jacob, pharmacien de l'armée depuis le 28 Octobre.

Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Jérôme et du Maréchal Davout, qui avaient été détachés de Minsk à Mohilow et qui rejoignirent Orléans et Witebsk, avaient toujours marché avec l'armée.



Slides for Spatial Computing (By Brent Hecht)

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World's oldest map: Spanish cave has landscape from 14,000 years ago

Archaeologists have discovered what they believe is man's earliest map, dating from almost 14,000 years ago.

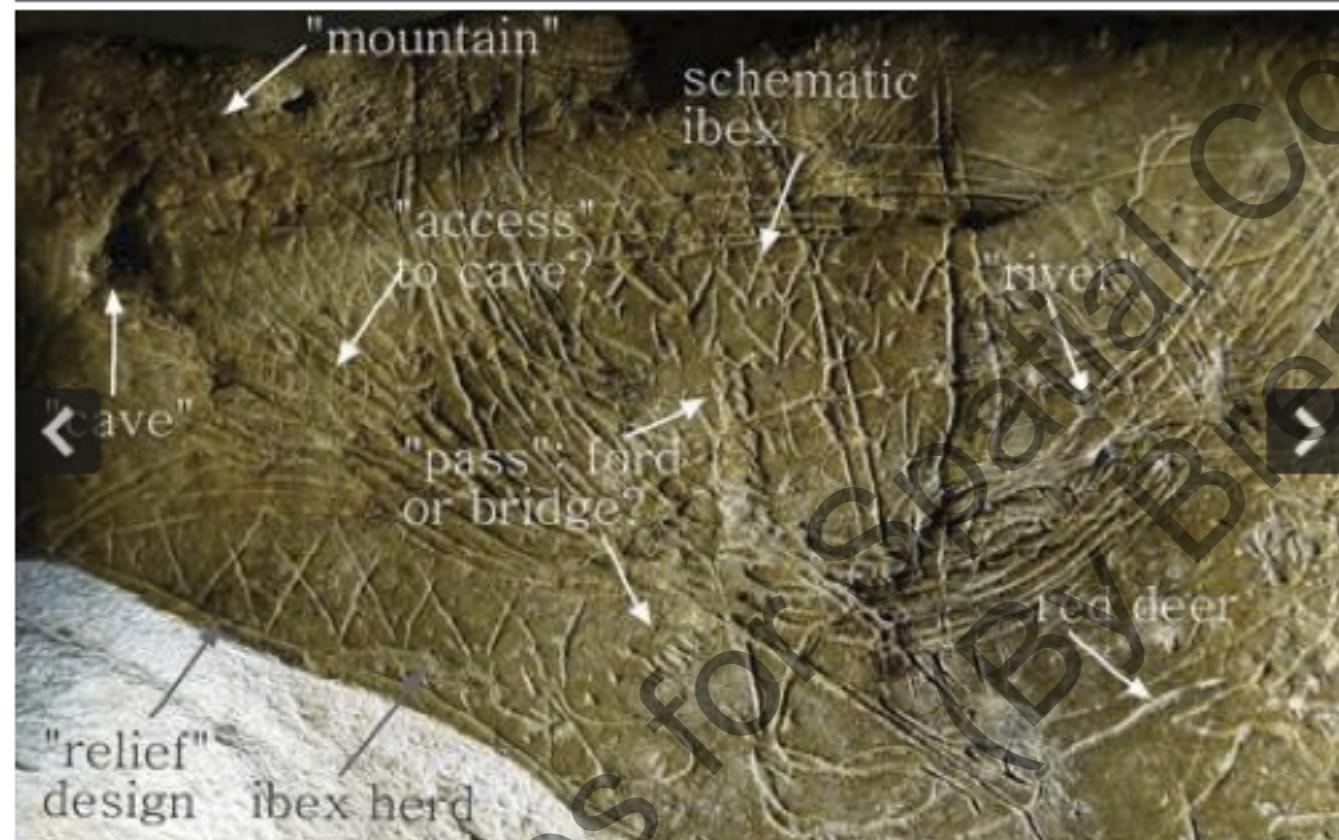


Image 1 of 2

Archaeologists have discovered what they believe is man's earliest map, dating from almost 14,000 years ago. Photo: EPA

By Fiona Govan in Madrid

7:30AM BST 06 Aug 2009

A stone tablet found in a cave in Abauntz in the Navarra region of northern Spain is believed to contain the earliest known representation of

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In Spain



The Telegraph

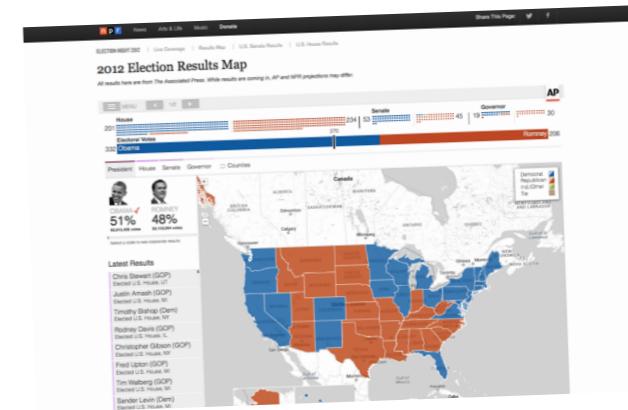
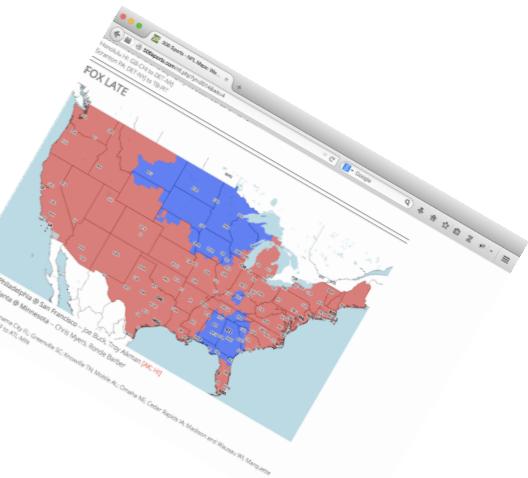
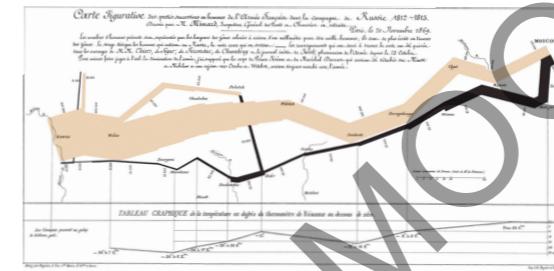
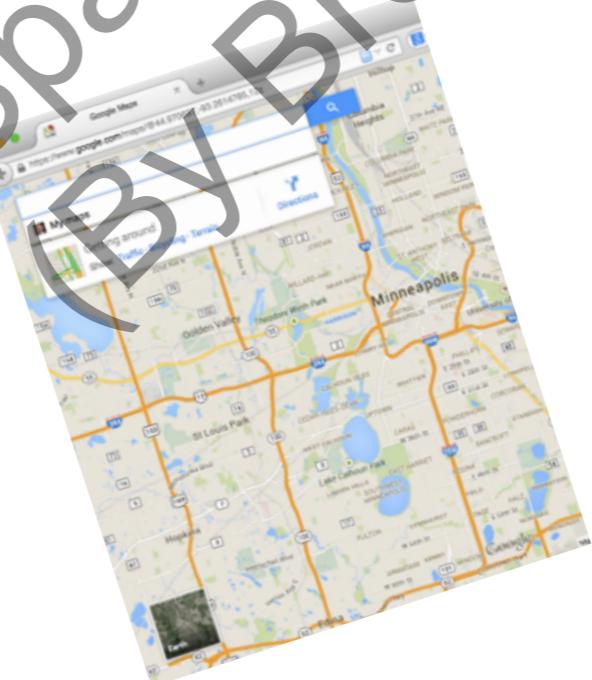
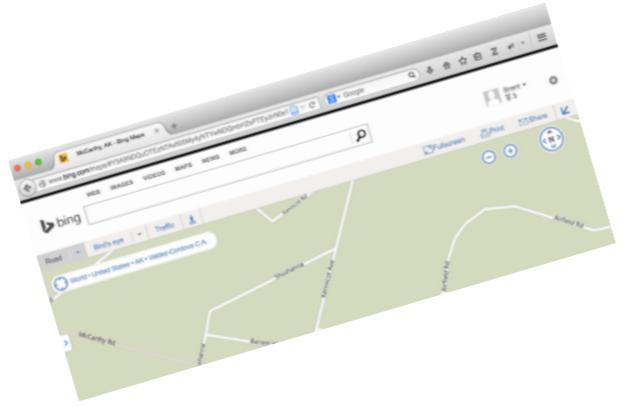
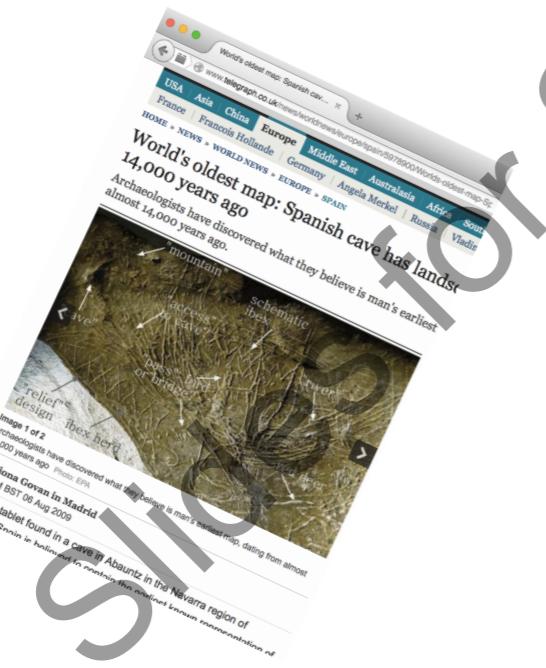
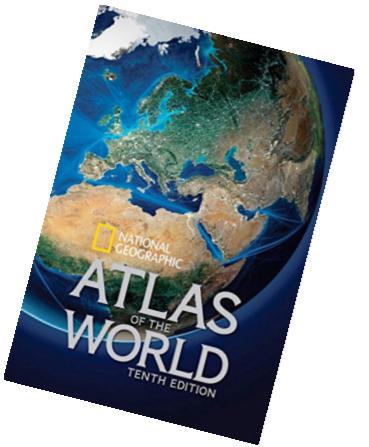
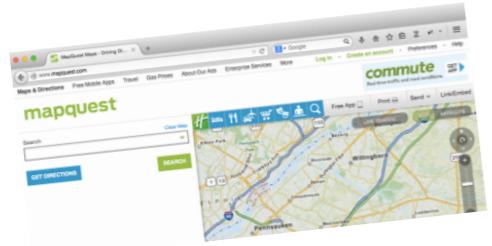
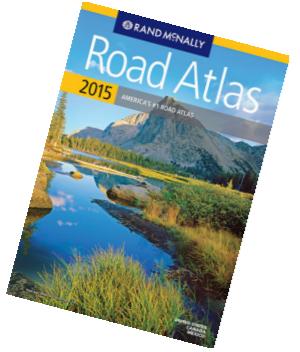
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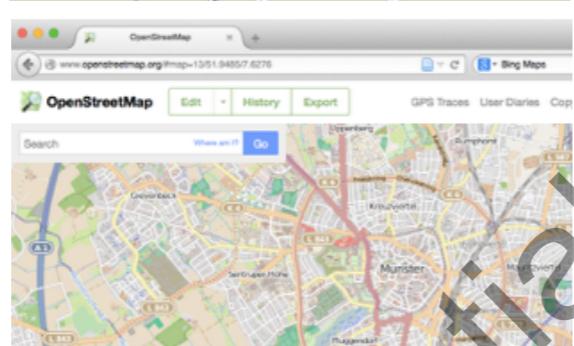
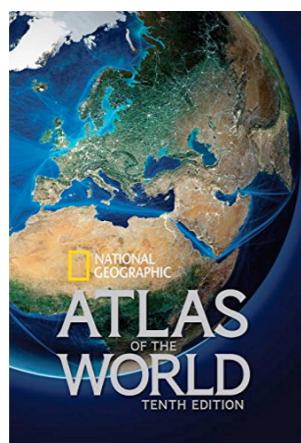
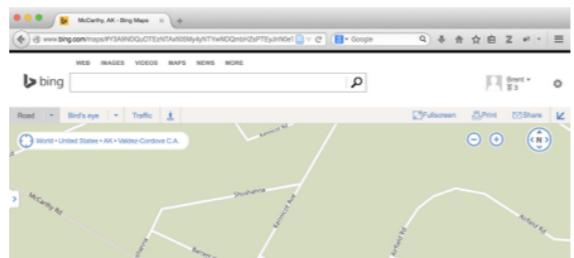
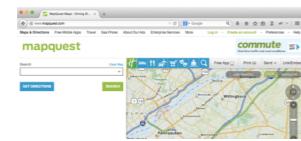
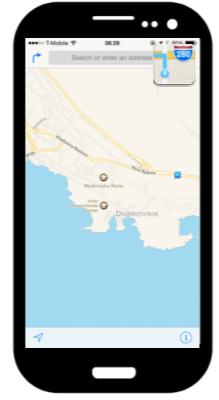
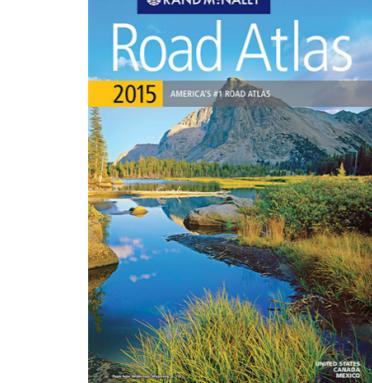


Parks and Recreation available at [xfinity.com/tv](#)
The Hunger Games: Catching Fire available with XFINITY On Demand

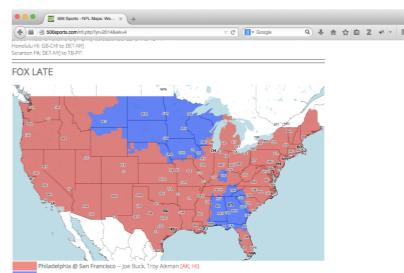
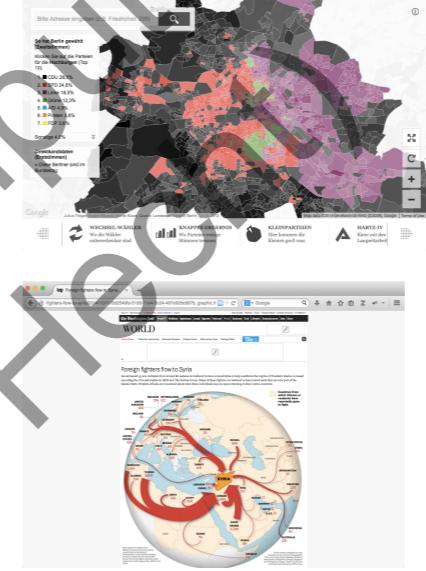
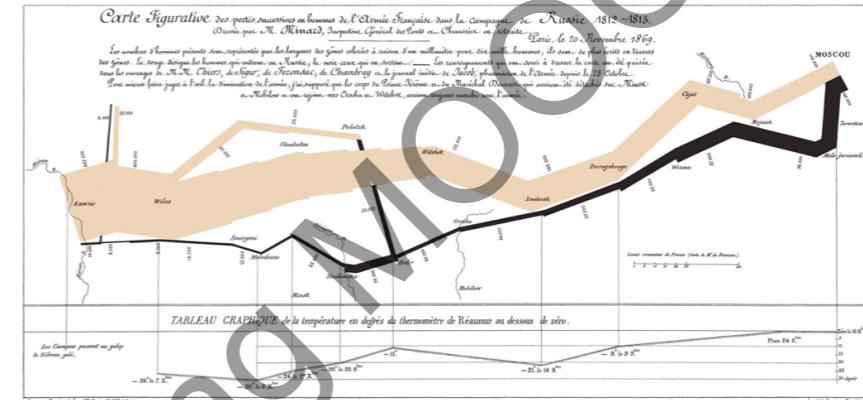
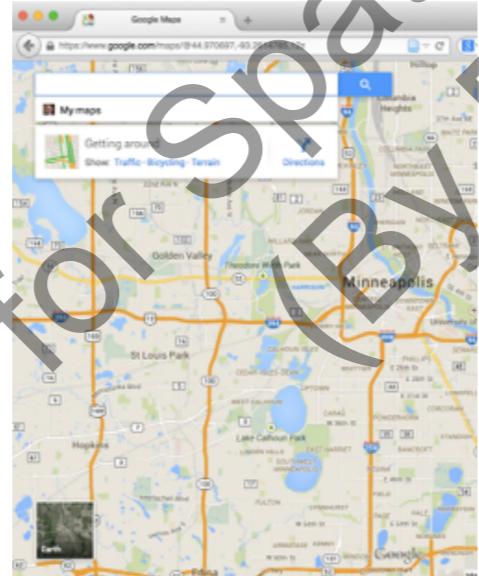


Reference Maps



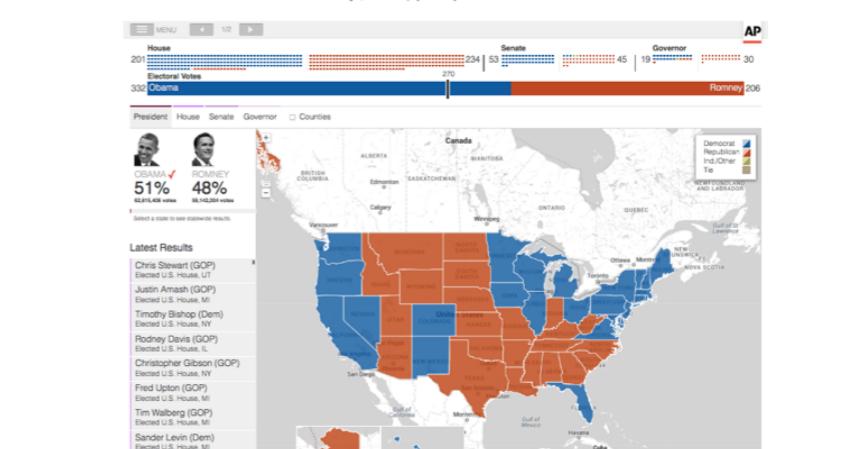


World's oldest map: Spanish cave has landscape 14,000 years ago
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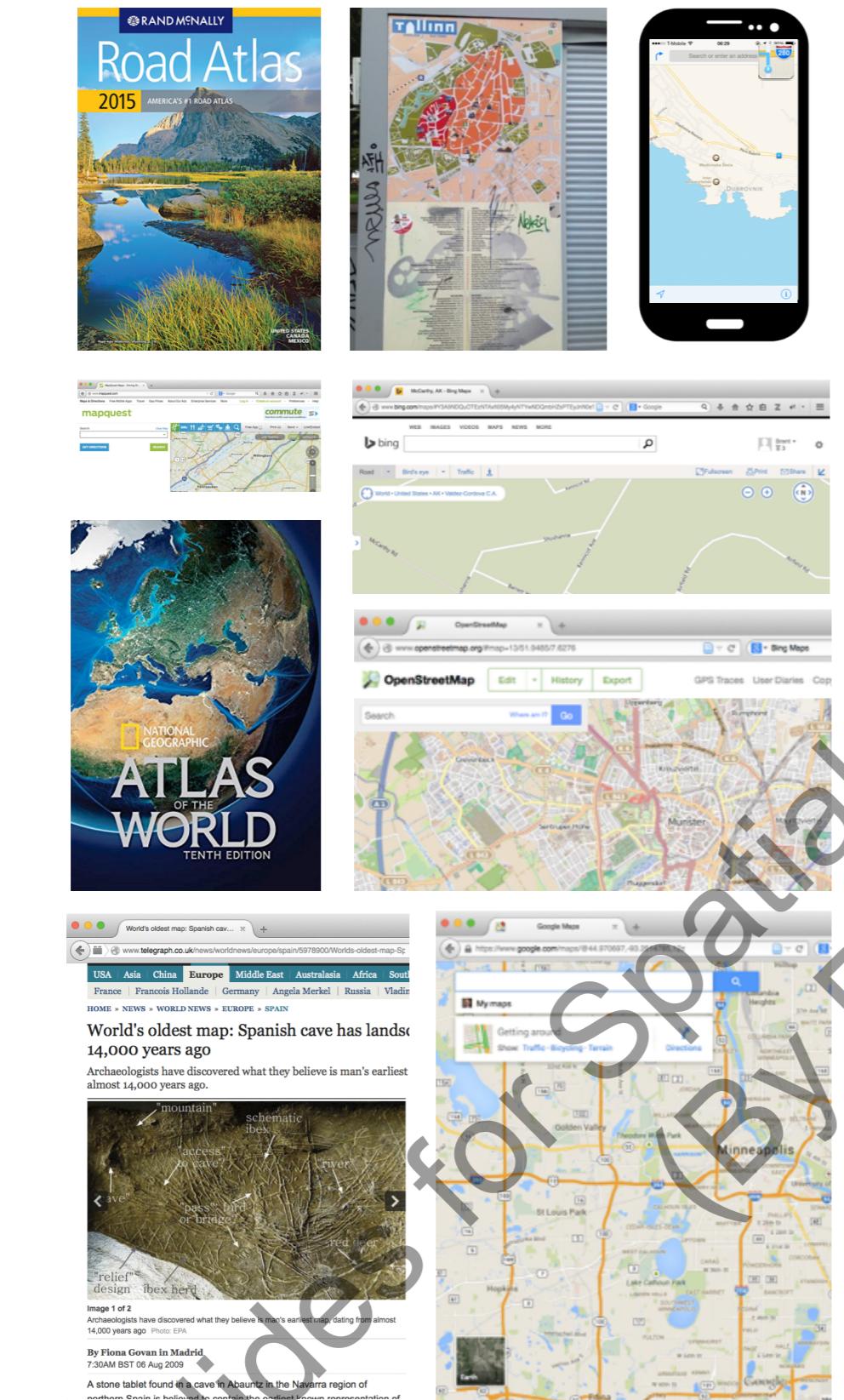
2012 Election Results Map

All results here are from The Associated Press. While results are coming in, AP and NPR projections may differ.



Reference Maps

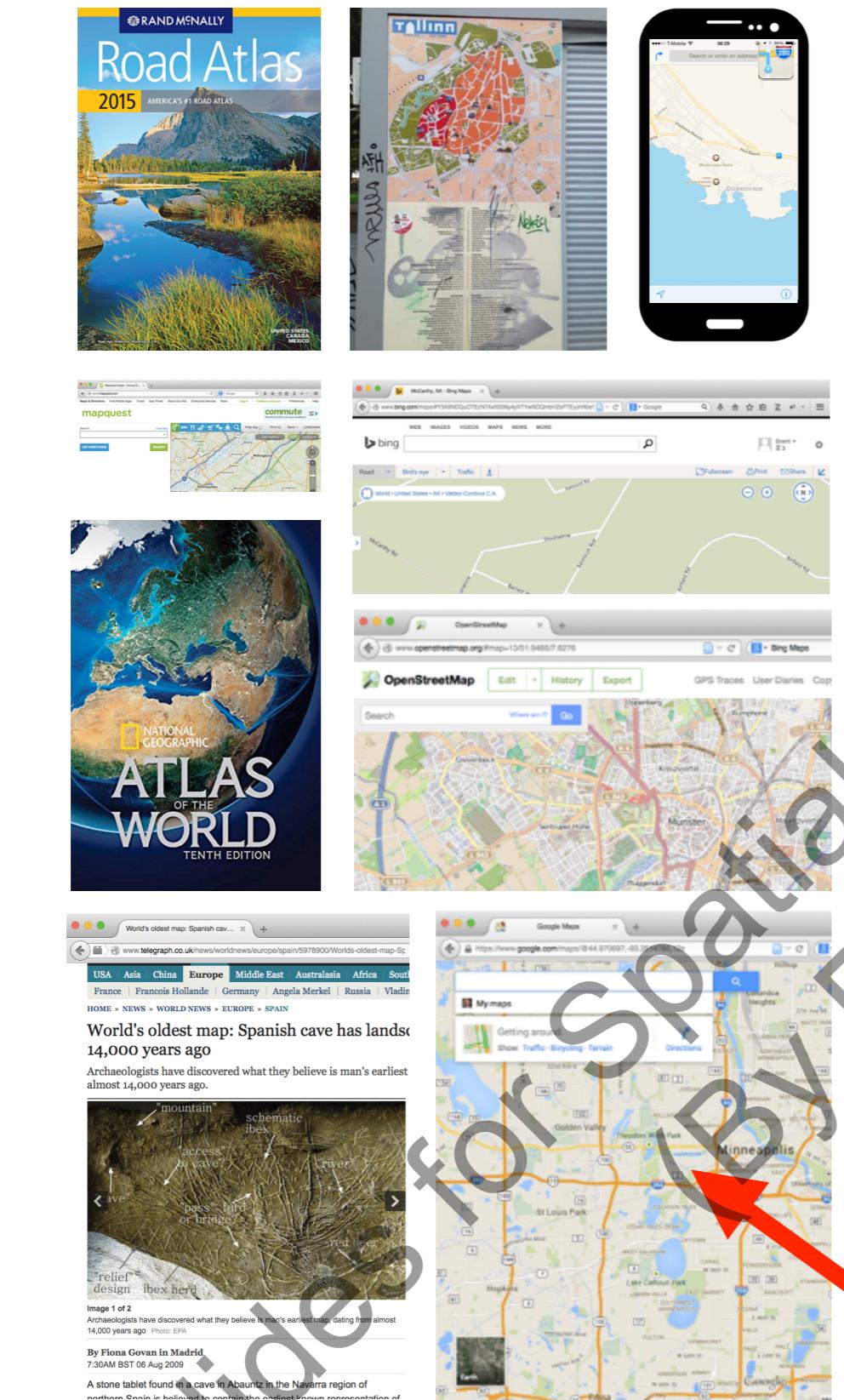
Thematic Maps



Reference Maps

Intended to
 (geo)communicate the
**location of specific
 entities** (and how to get
 to them)

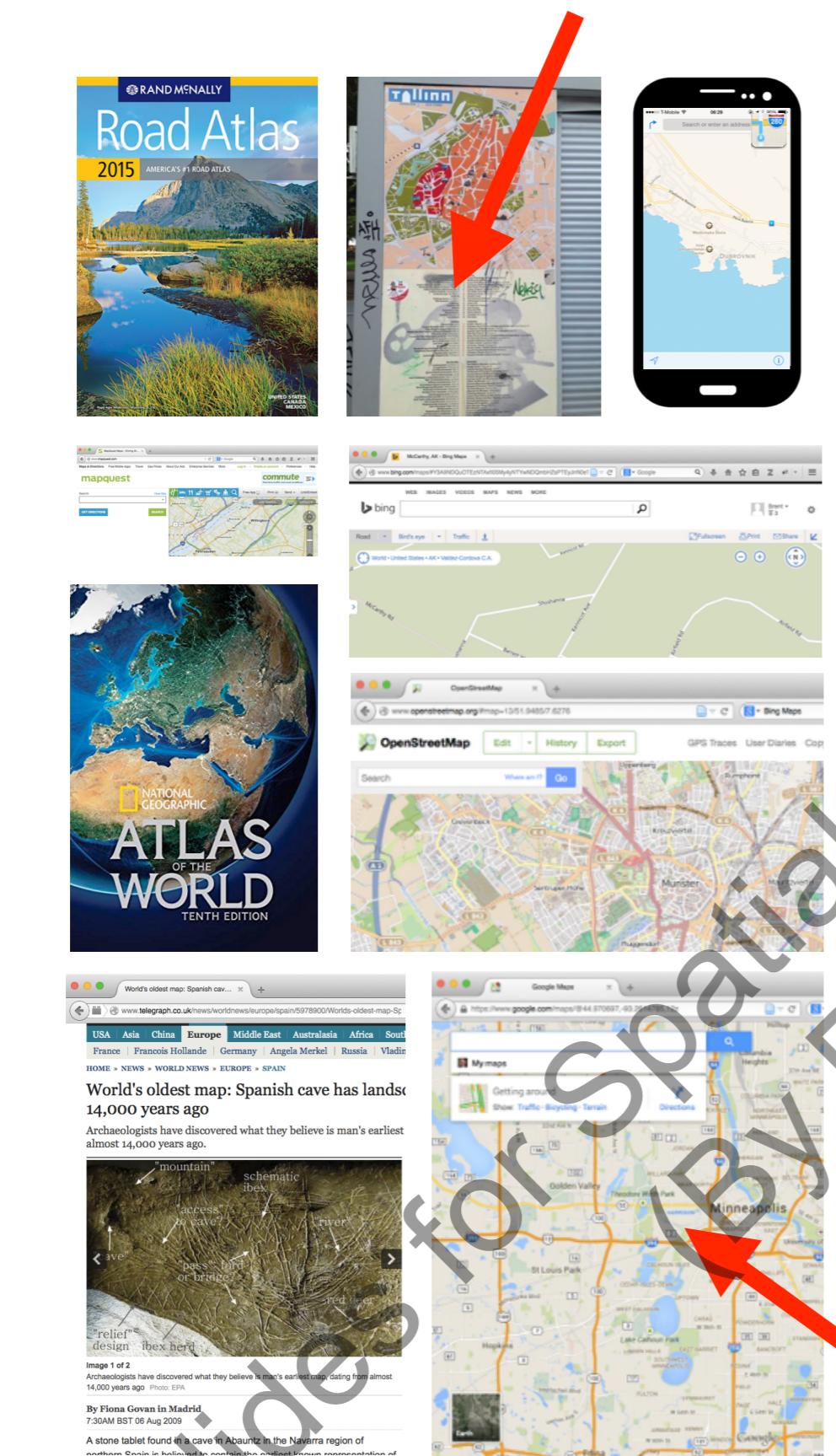
Used primarily for
**navigation and
 orientation**



Reference Maps

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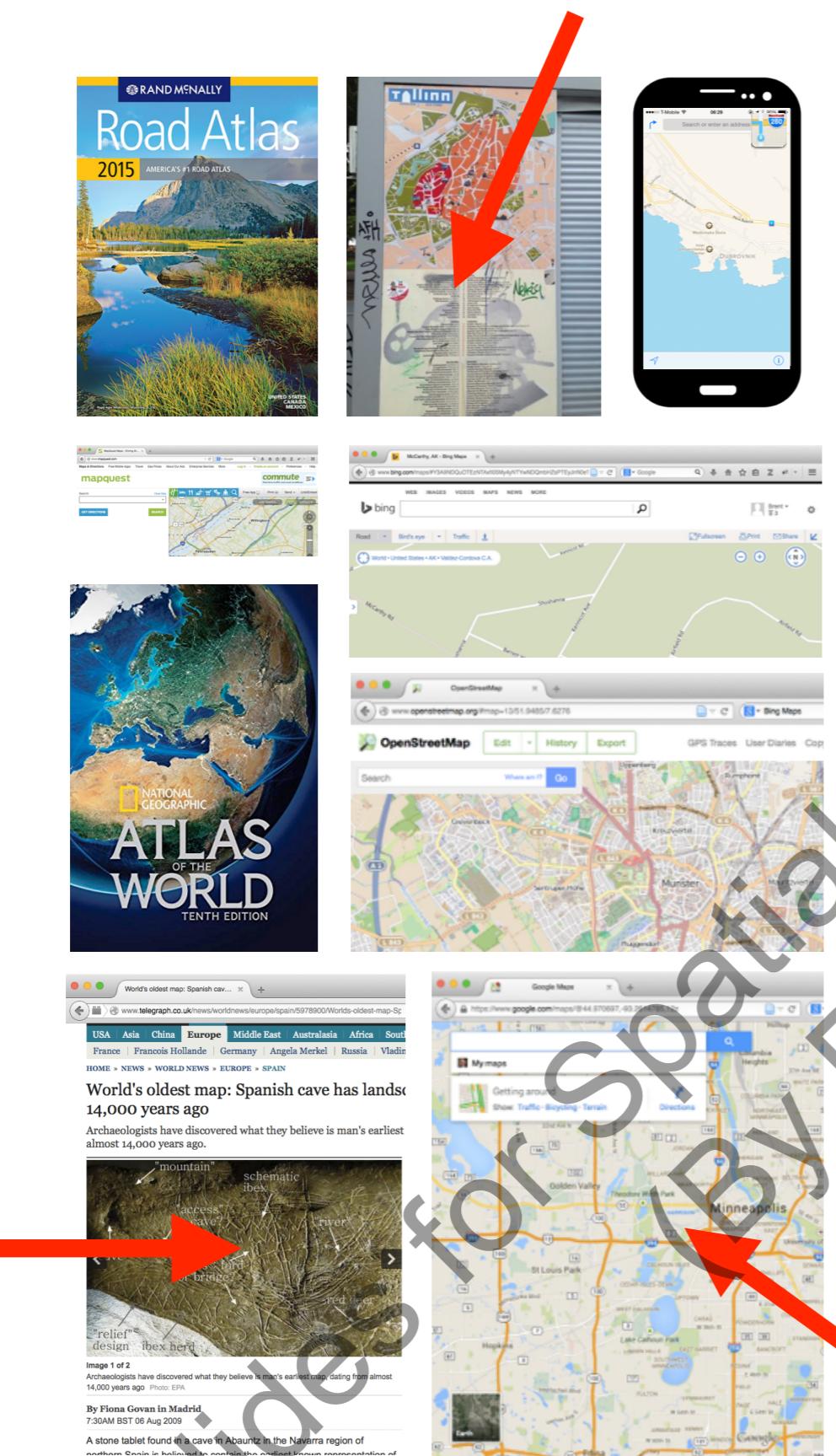
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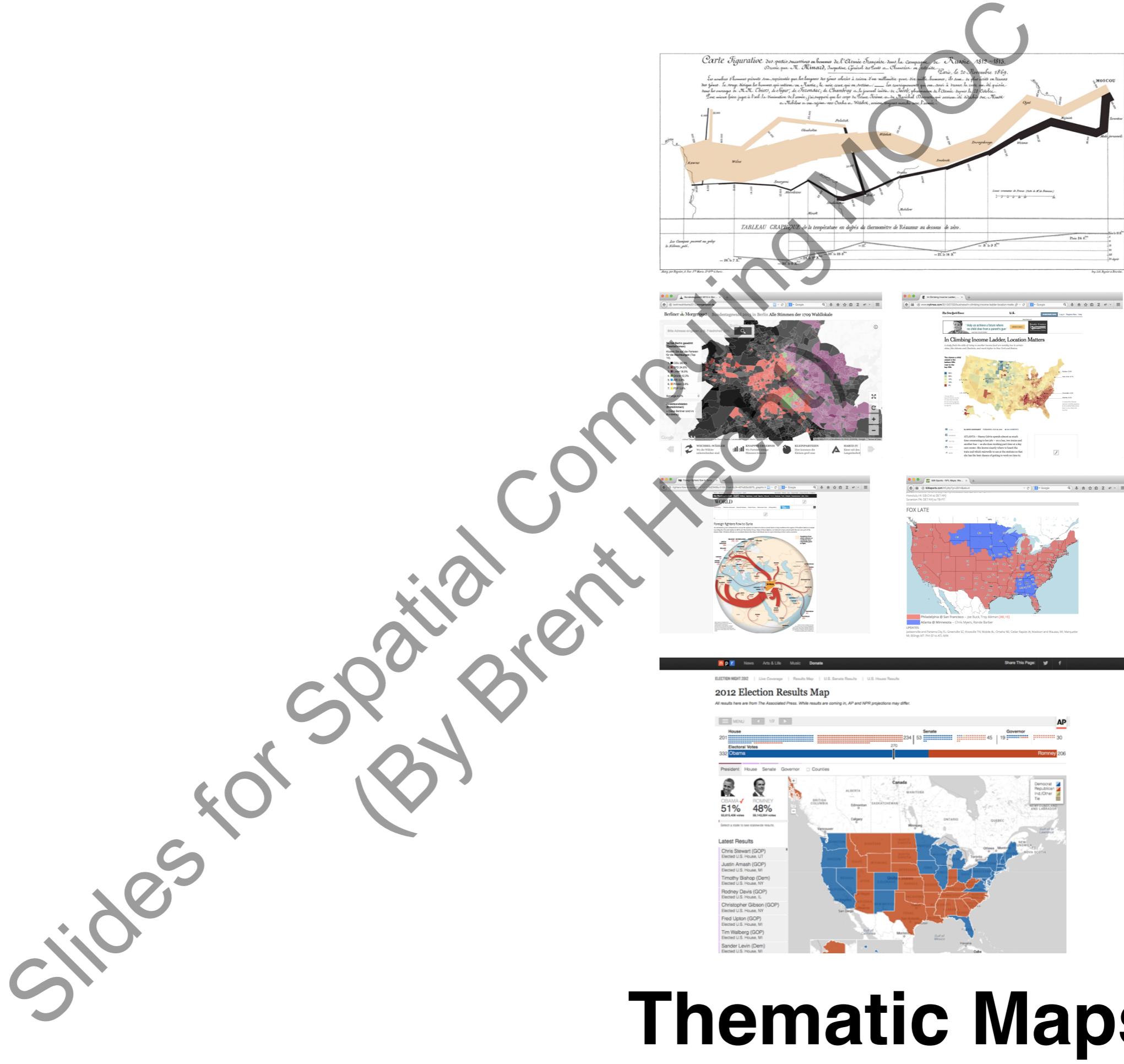
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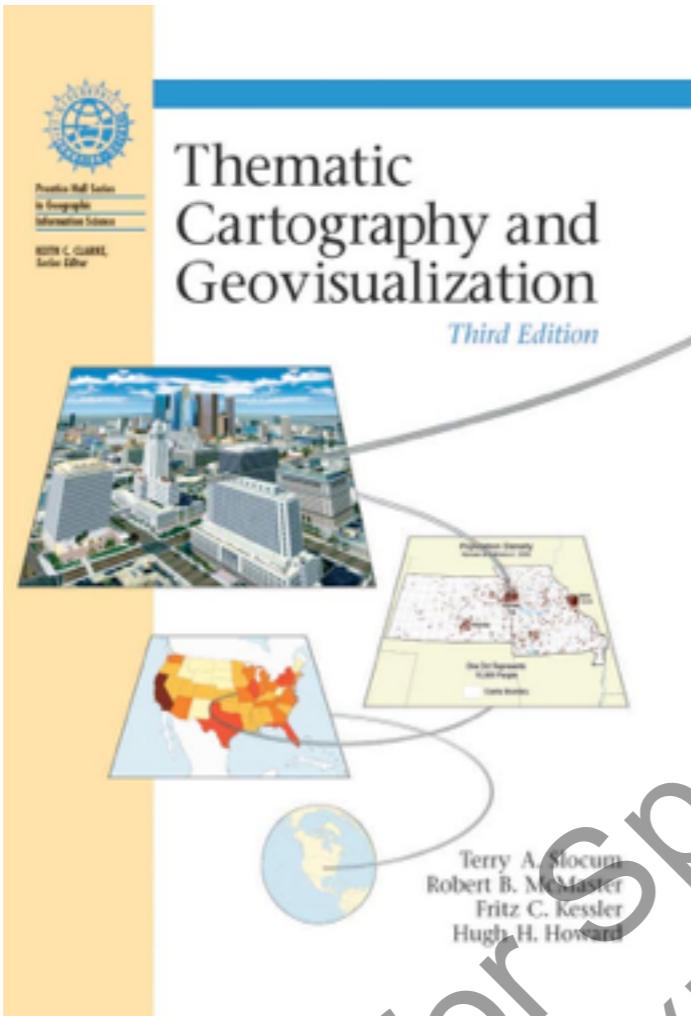


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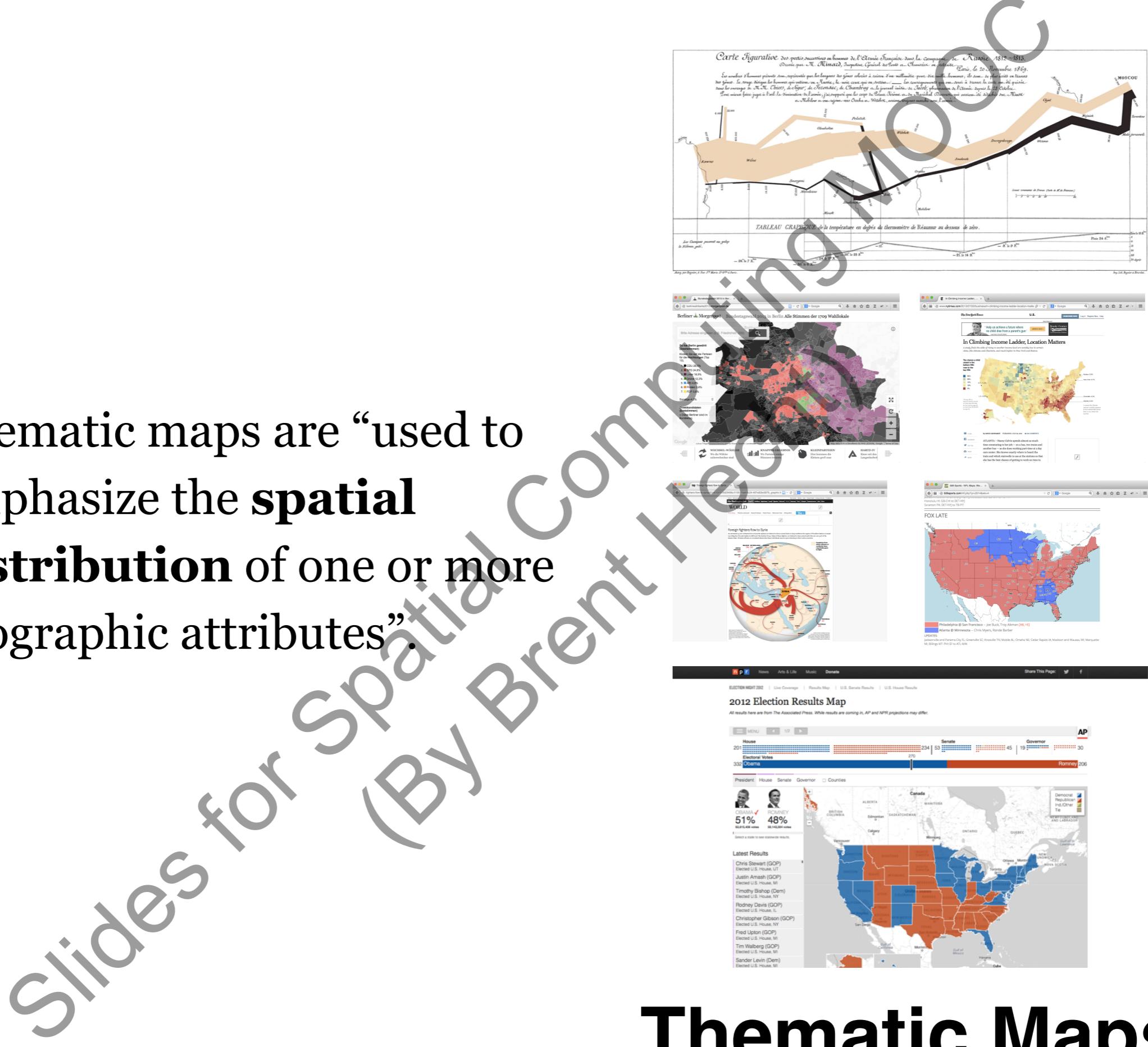


(Slocum et al. 2009)

Thematic maps are “used to emphasize the **spatial distribution** of one or more geographic attributes”.

Slides for Spatial Computing
(By Brigitte Helm)

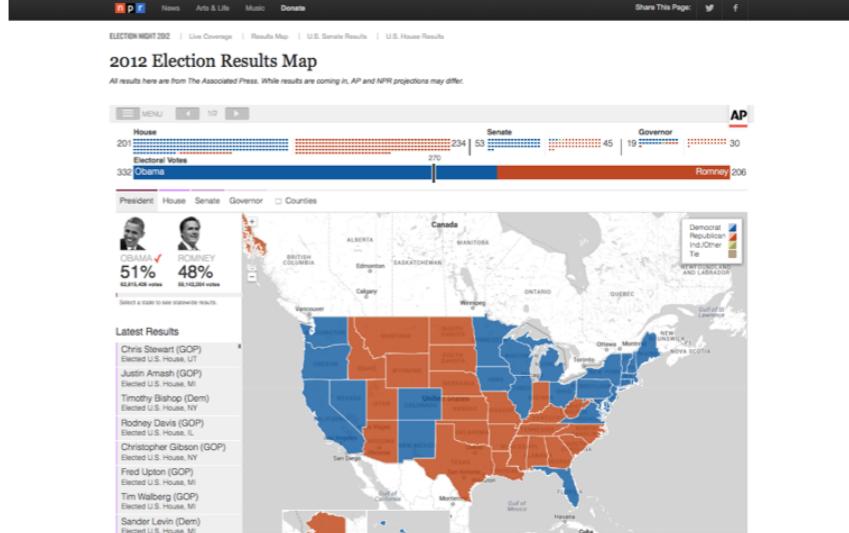
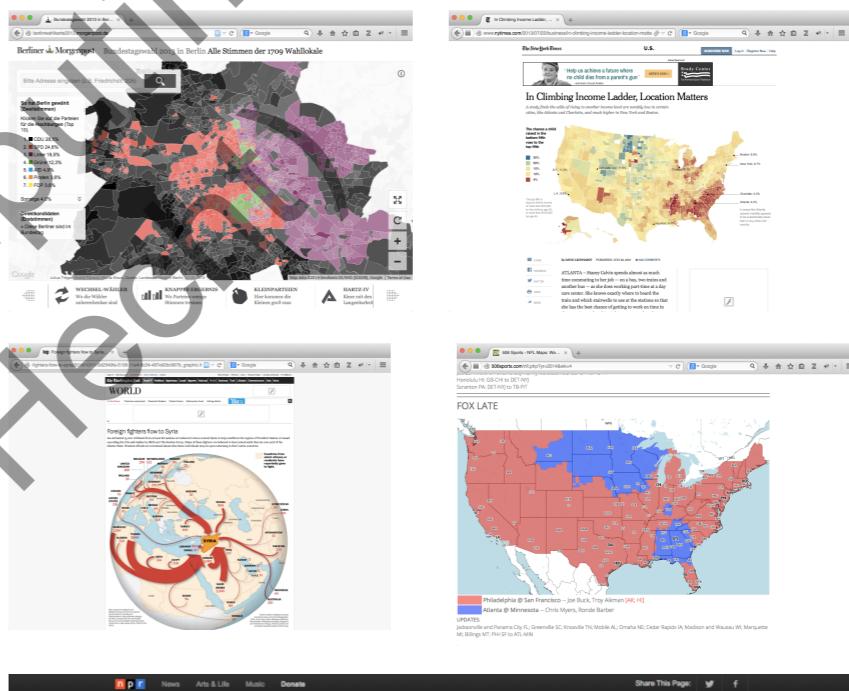
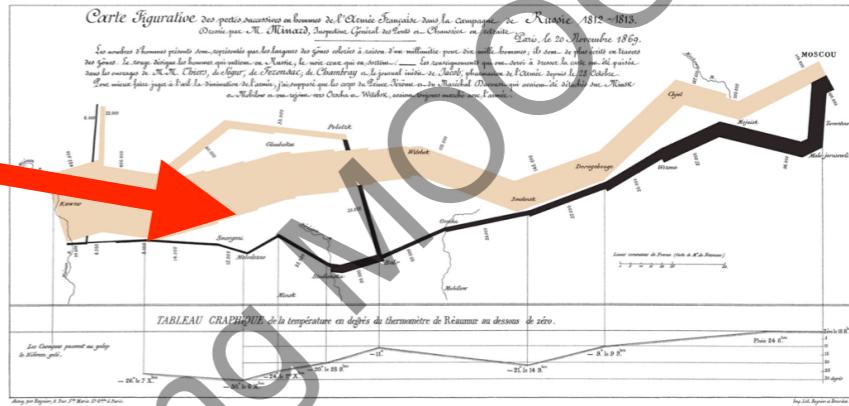
Thematic maps are “used to emphasize the **spatial distribution** of one or more geographic attributes”.



Thematic Maps

The size of an army

Thematic maps are “used to emphasize the **spatial distribution** of one or more geographic attributes”.

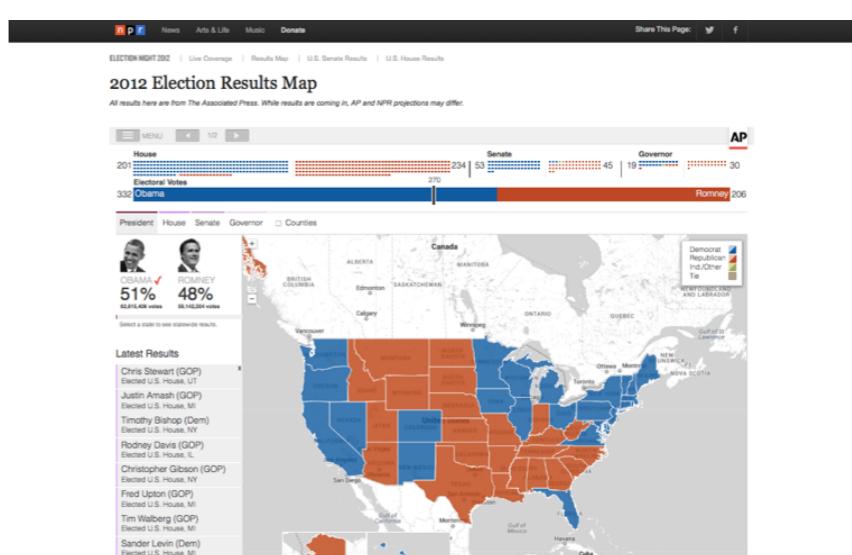
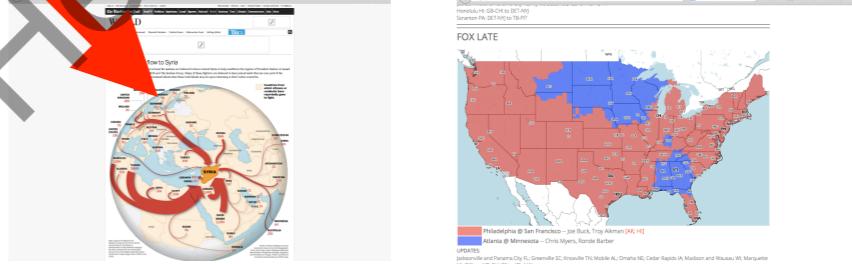
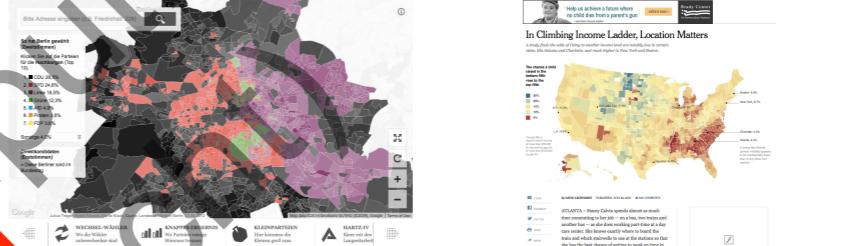
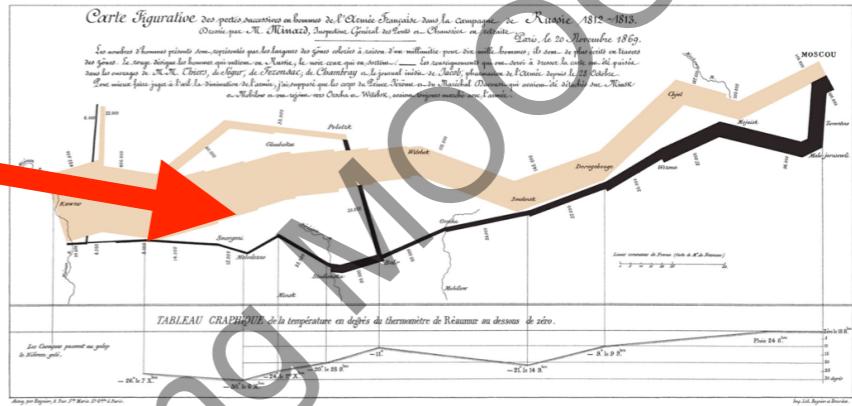


Thematic Maps

The size of an army

Where an army comes from

Thematic maps are “used to emphasize the **spatial distribution** of one or more geographic attributes”.



Slides for Spatial Computing
(By Brent Heaton)

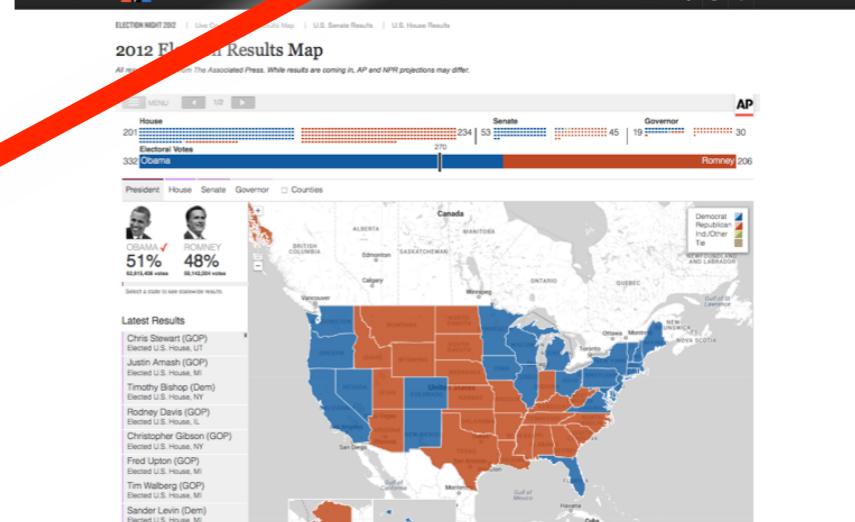
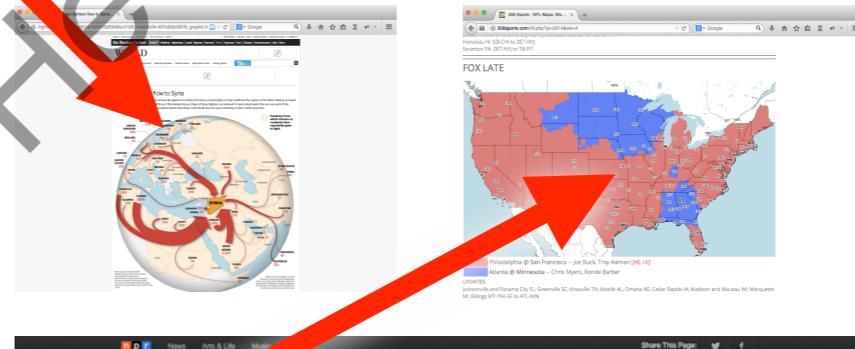
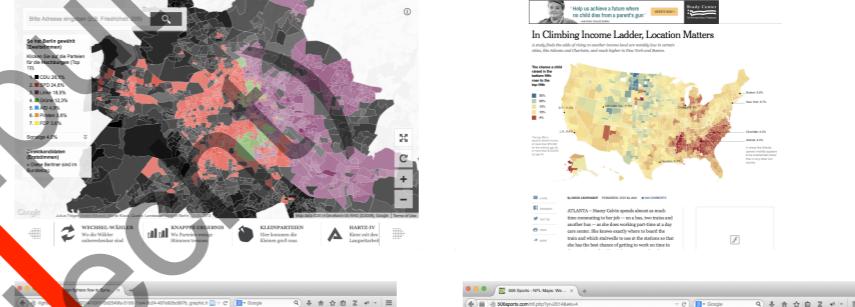
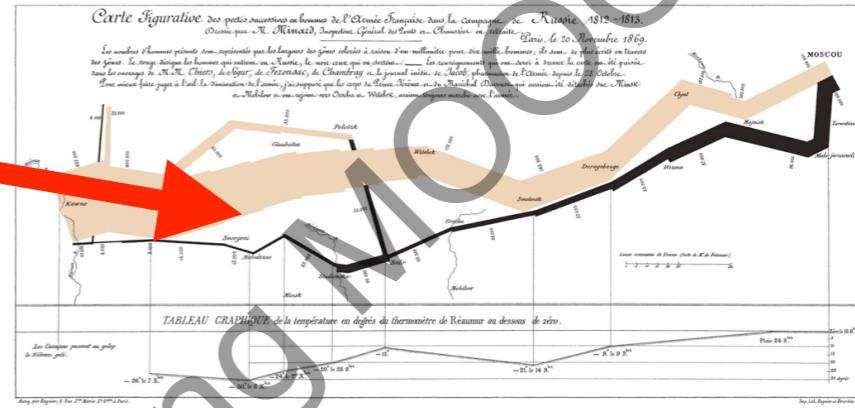
Thematic Maps

The size of an army

Where an army comes from

Thematic maps are “used to emphasize the **spatial distribution** of one or more geographic attributes”.

Which football game is on TV



Thematic Maps

The size of an army

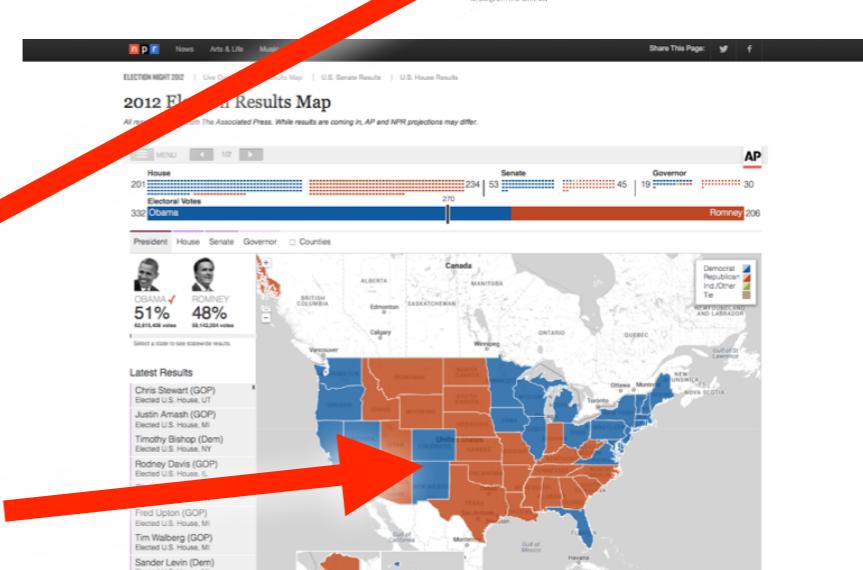
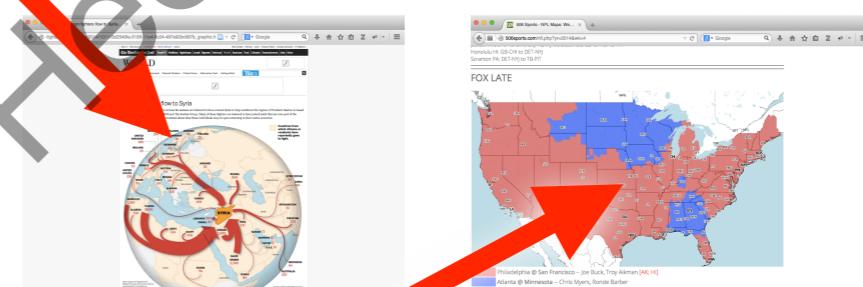
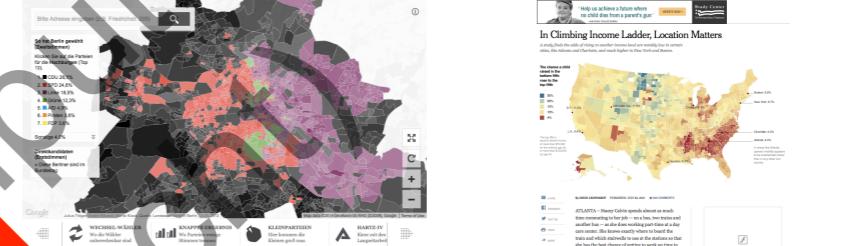
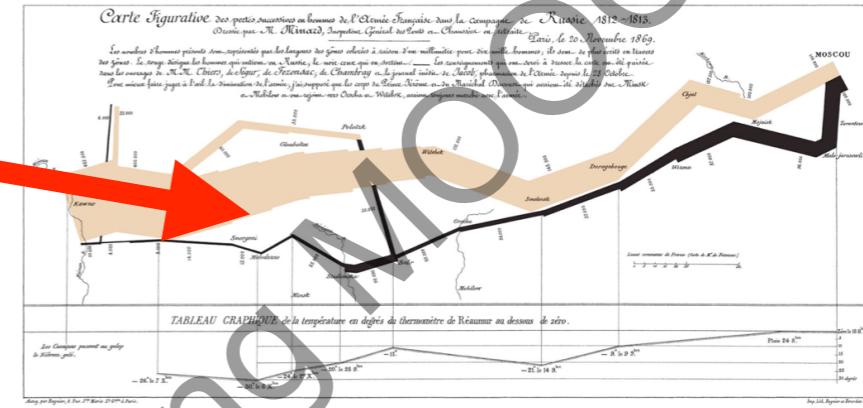
Where an army comes from

Thematic maps are “used to emphasize the **spatial distribution** of one or more geographic attributes”.

Which football game is on TV

Election results

Thematic Maps



Map Types

Intended to
(geo)communicate the
location of specific entities (and how to get to them)

Used primarily for
navigation and
orientation

Reference Maps

Thematic Maps

Thematic maps are
“used to emphasize the
spatial distribution
of one or more
geographic attributes”.



(Muehlenhaus 2013)

Slides for Spatial Computing Mooc
(By Brent Hecht)



(Muehlenhaus 2013)

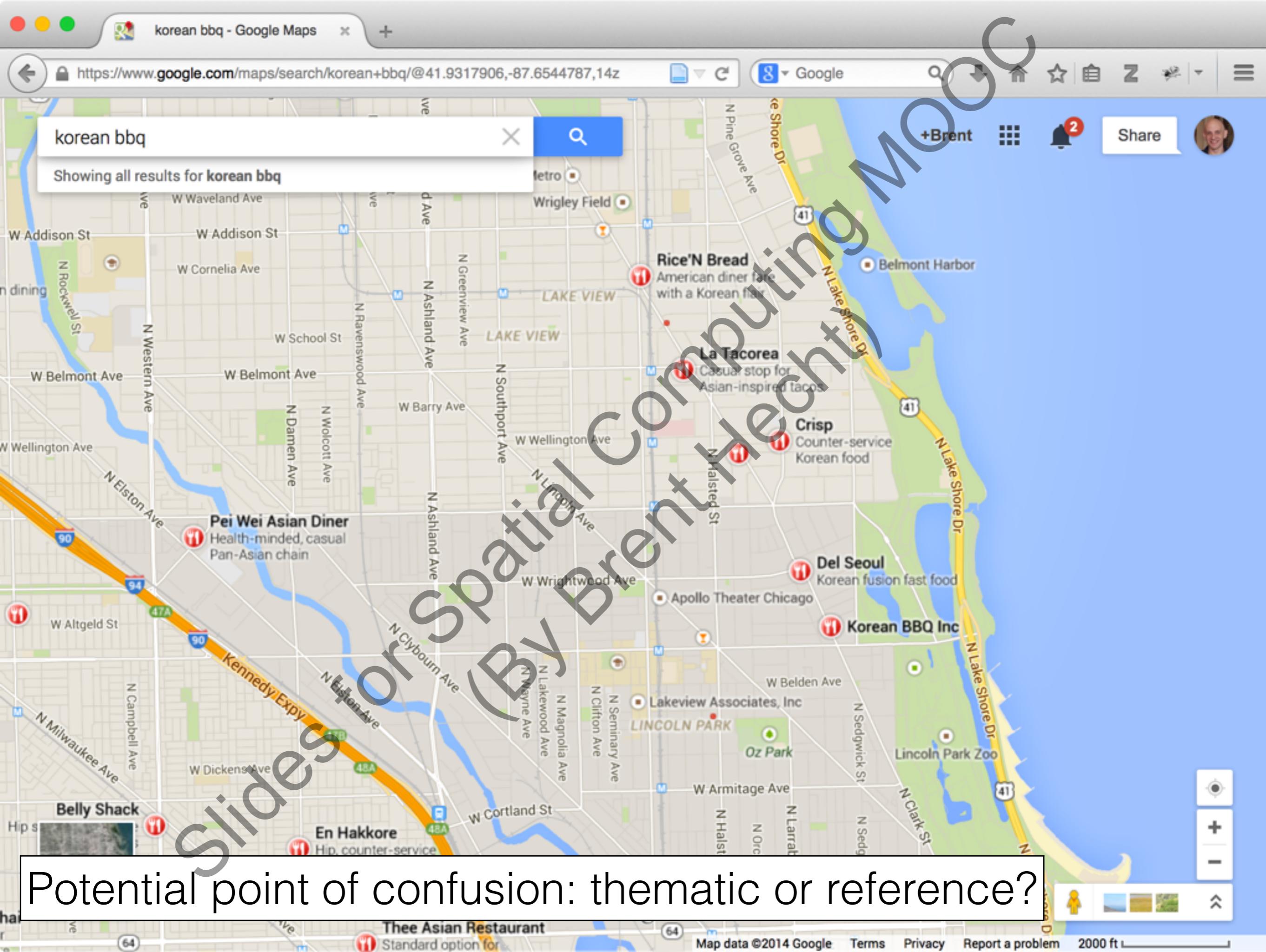
“The last time cartography went through such a **sea change** was with the **advent of thematic mapping**.”

Slides for Spatial Computing
(By Brechtje) (By Brechtje)



(Muehlenhaus 2013)

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(By Brent Hecht)



Potential point of confusion: thematic or reference?

Cartography

Spatial Computing – University of Minnesota

Learning Objectives

1. Understand the drastically **changed** (and changing) **professional context** of modern cartography.
2. Be able to distinguish between and understand the purpose of the two major types of maps: **reference** and **thematic**.
3. Know the **limitations** of popular online and mobile **reference maps**. (Technical track: Know how to get around them)
4. Be able to distinguish between types of **thematic maps** and choose the correct type for a given **geocommunication** need.
5. Have an understanding of some of the **computing-oriented innovation** going on in cartography (i.e. *spatialization*)

Cartography

Spatial Computing – University of Minnesota

Attributions

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