6-26-2014

Bits of Research

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OLD DOMINION UNIVERSITY

Bits of Research

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Department of Computer Science

Old Dominion University

June 26, 2014

Outline

- **Bits of Research**
  - **digital preservation and web archiving**
  - information visualization

- Potential Summer Projects
  - Blue Button visualization (health informatics)
  - visualizing aggregate health data
  - exploring large document collections

ODU's WS-DL Group

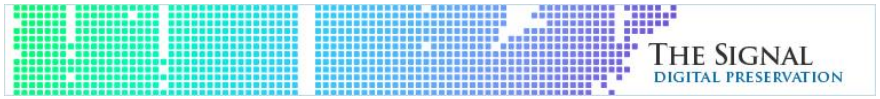
@WebSciDL

http://ws-dl.cs.odu.edu

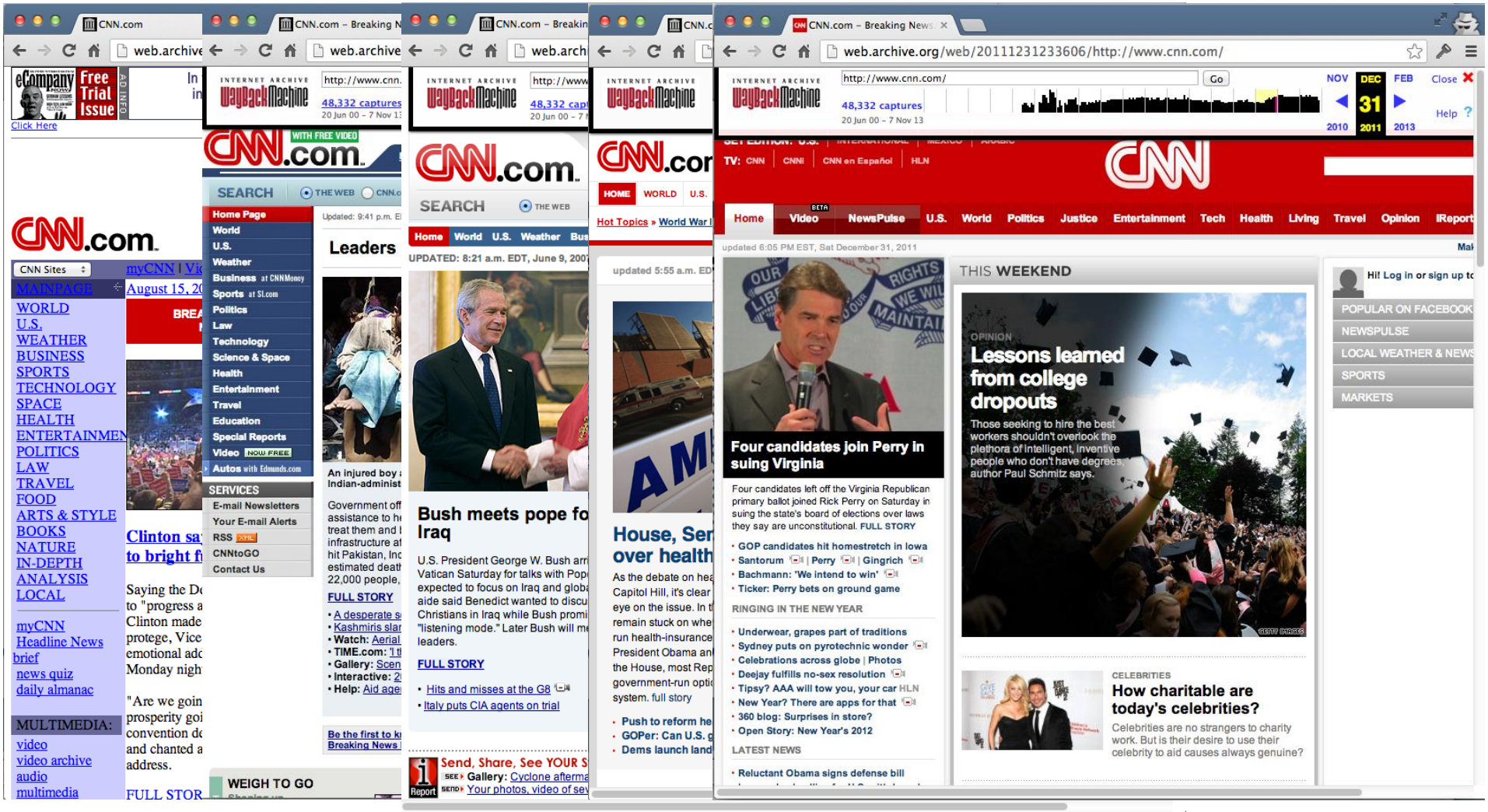
Web Sciences and Digital Libraries

- digital preservation
- web archiving
- web science (social media analysis, web usage analysis)

- Our recent work has been featured in the popular press

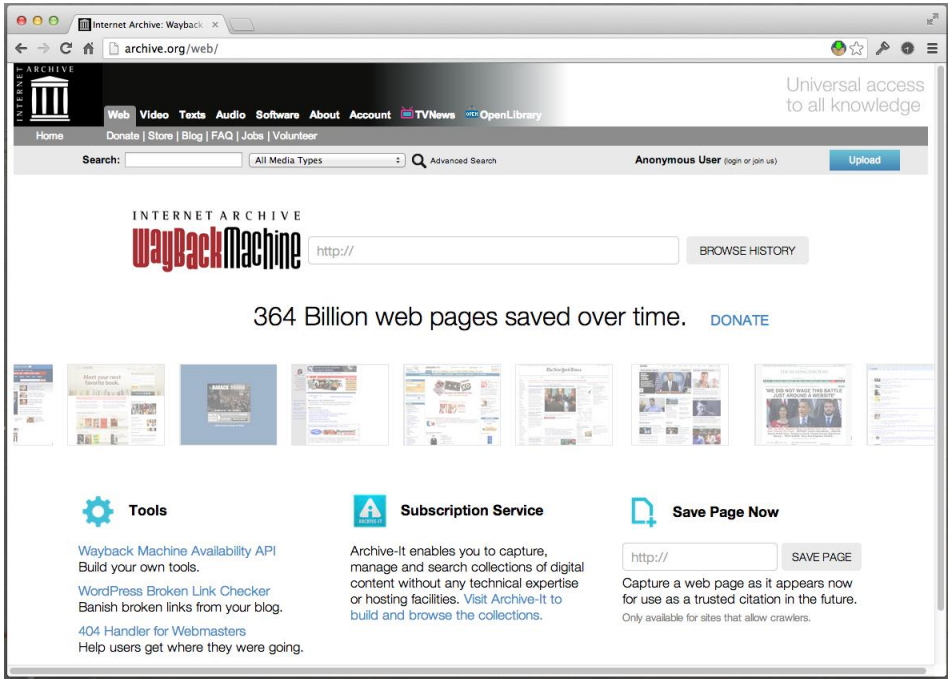


What is a web archive?



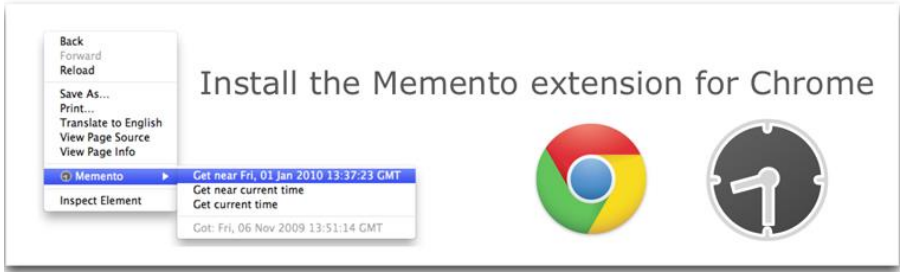
What are some web archives?

How can I access the archives?



MementoFox

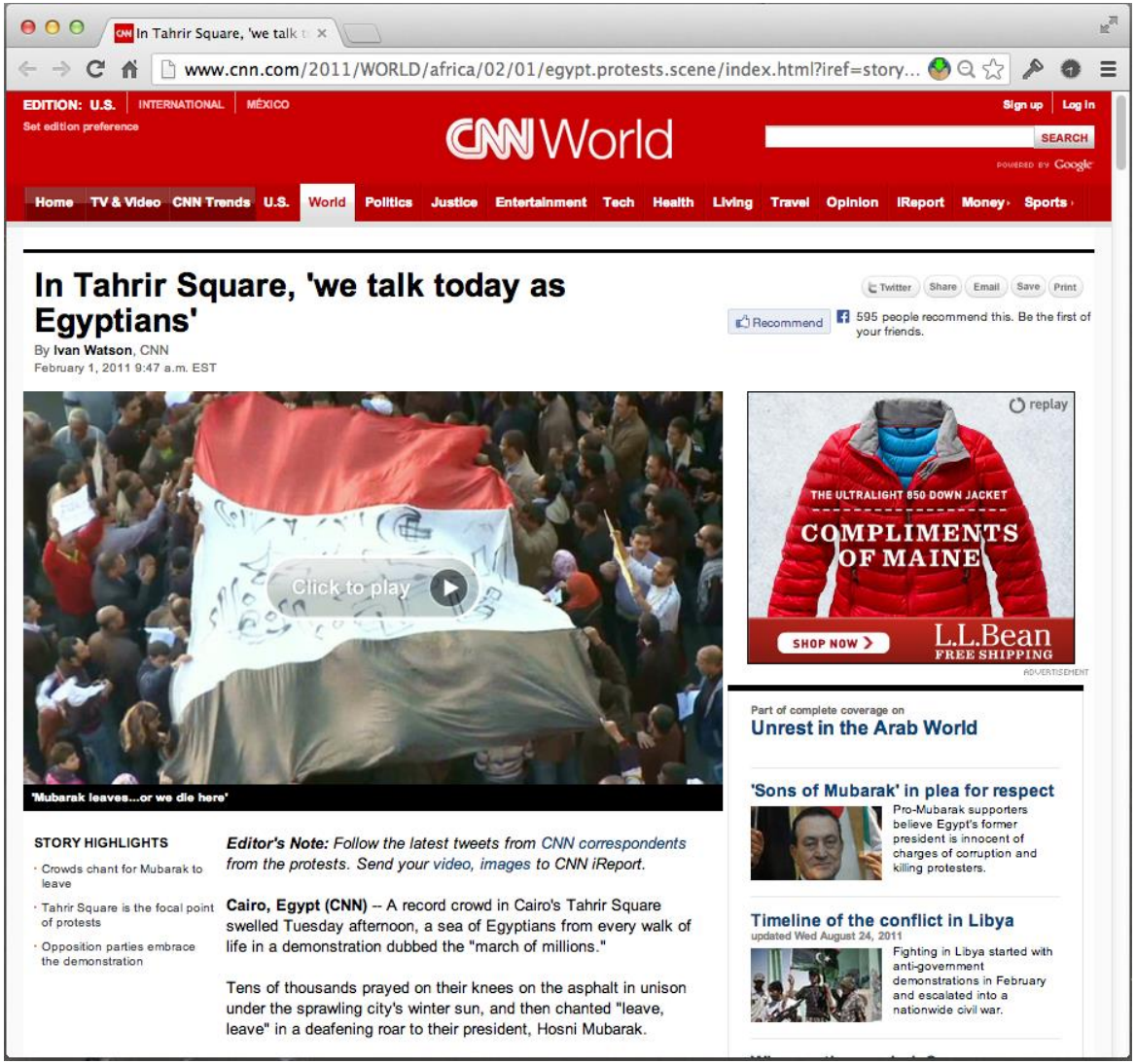
Memento for Chrome



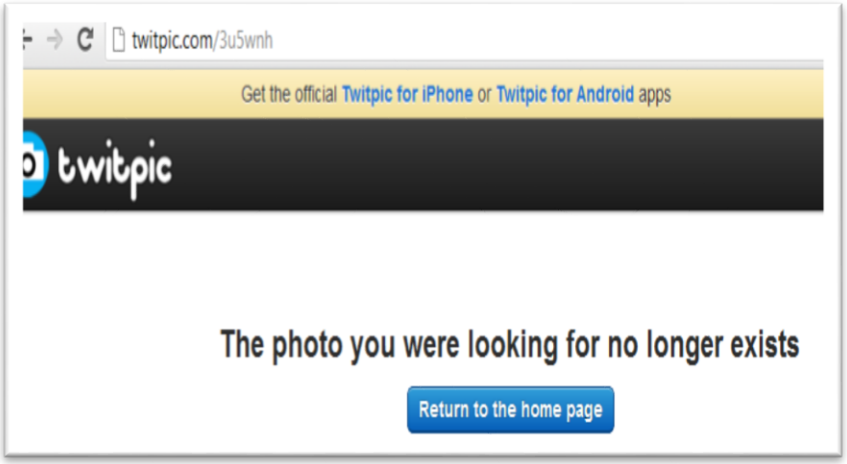
http://www.mementoweb.org/

http://ws-dl.blogspot.com/2010/03/2010-03-19-mementofox-add-on-released.html
http://ws-dl.blogspot.com/2013/10/2013-10-14-right-click-to-past-memento.html

The Web holds our stories



But webpages can disappear

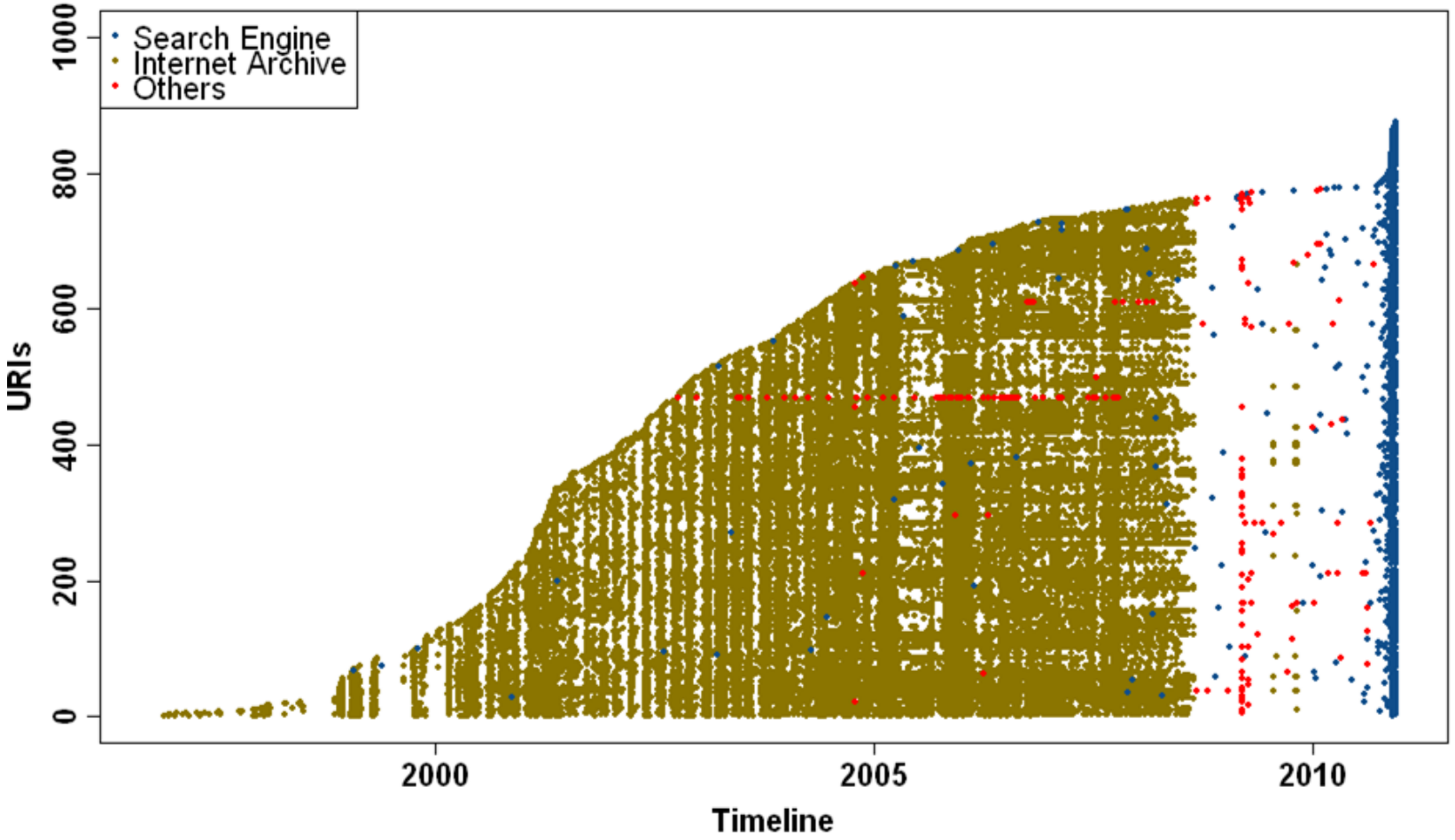


- Average lifespan of a webpage - 50-100 days

- A year after publication, about 11% of content shared on social media will be gone.

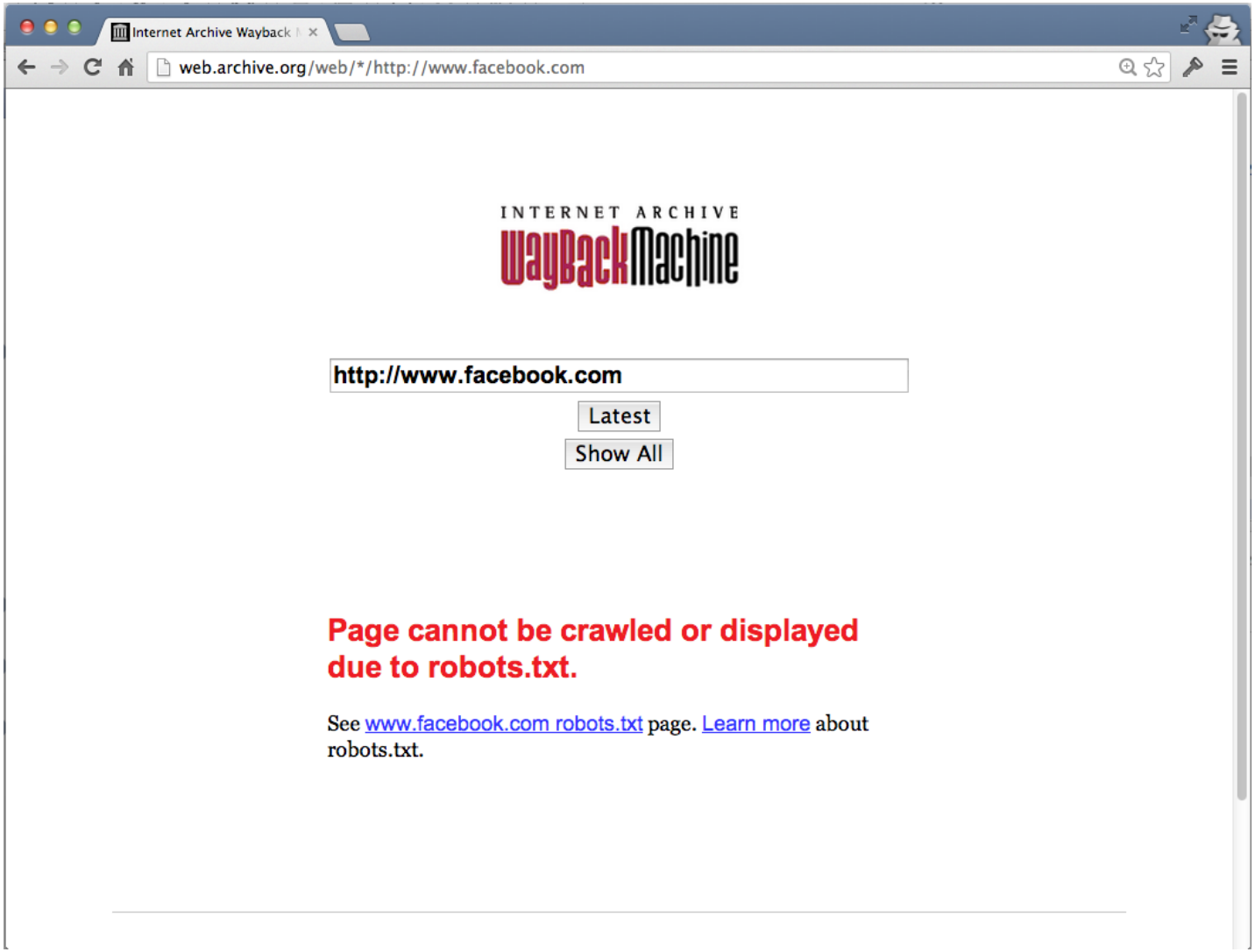
SalahEldeen and Nelson, "Losing My Revolution: How Many Resources Shared on Social Media Have Been Lost?", TPDL 2012
http://ws-dl.blogspot.com/2012/02/2012-02-11-losing-my-revolution-year.html

But maybe it's archived



Ainsworth, AlSum, SalahEldeen, Weigle, and Nelson, "How Much of the Web is Archived?", JCDL 2011
http://ws-dl.blogspot.com/2011/06/2011-06-23-how-much-of-web-is-archived.html

But social media is hard to archive



Our Research Group Goals

- We believe that web archives are valuable cultural resources, and we want everyone to know about them.
- We want to make it easy for people to bridge the gap between the live web and the archives.
- We believe that replaying the past is more compelling than reading a summary.

CNN's coverage of Katrina and the aftermath won a 2006 Peabody Award, the oldest honor in electronic media.

Hurricane Katrina

HURRICANE KATRINA MAIN PAGE

Rebuilding
- Mardi Gras
- Panoramas

People
- Your Stories
- One Family's Story
- Evacuation

Rescue & Relief
- Help Center

Storm & Flood
- Satellite Images

Hurricane Season
Special Report

Editor's Note: This special report was archived in September 2006.

Voices from the Gulf Coast

August 29, 2005: Hurricane Katrina made landfall on the Gulf Coast, destroying lives, leveling homes and leaving thousands of survivors with the same story: We lost everything. One year later, many still coped with Katrina's devastation. Some had moved forward, but for others recovery was at a standstill. CNN.com visited the region to get their stories.

vs.

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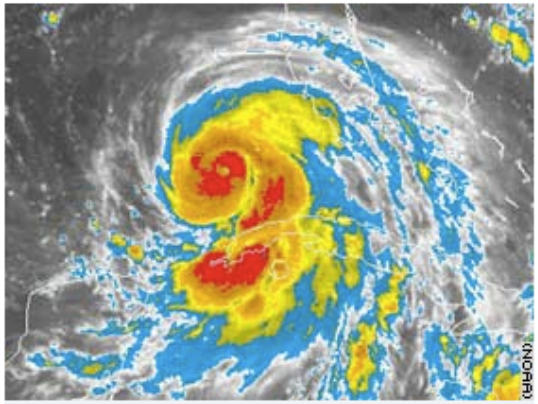
Updated: 11:16 a.m. EDT (15:16 GMT), August 27, 2005

Strengthening Katrina to hammer Gulf Coast



Blamed for at least seven deaths in Florida, powerful Hurricane Katrina is becoming stronger as it churns in the Gulf of Mexico. Forecasts say it's poised to deal a hammer blow to the Mississippi Gulf Coast and southeast Louisiana as a possible Category 4 storm early next week. Meanwhile, residents of southeast Florida are cleaning up after Katrina cut across the state packing strong winds and dumping heavy rain.

FULL STORY

• Watch: Oil rig evacuates | Homes flooded

MORE NEWS

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- 1,000 prisoners released from Iraq prison
- Brothers held again in Natalee Holloway case | Watch
- Vote to save bases in 2 states, lawsuit in third | Watch
- Watch: Anti-Sheehan group takes duel to Texas (2:20)
- Power-packed muscle cars come roaring back
- Oprah 'furious' at funeral snub claim
- U.S. soldier killed in Afghan attack
- Bush counsels patience in viewing Iraq war
- Criminal probe into 17 Paris fire deaths | Gallery | Watch

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Mistaken for a terrorist (2:17)

Soundcheck with Faith Hill (2:35)

Now In The News (11:14 a.m. ET): Your quick news update

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BUSINESS at CNNMoney

Markets: As of close Aug 26

DOW	▼	-53.34	10,397.29
NAS	▼	-13.60	2,120.77
S&P	▼	-7.29	1,205.10

ON CNN TV

Schedule

Dead Wrong: Inside an Intelligence Meltdown

How did U.S. intelligence get it so wrong? CNN investigates how faulty intelligence led to the Iraq

Updated: 11:07 p.m. EDT (03:07 GMT), August 27, 2005

Katrina drives people away from Gulf Coast

People leaving New Orleans pack highways.

Tourists and New Orleans residents are leaving the city as Hurricane Katrina churns closer to Louisiana and Mississippi. Officials fear New Orleans is vulnerable because it sits an average of 6 feet below sea level. Katrina could be a category 4 when it makes landfall. "This is a very, very dangerous hurricane," says hurricane center Director Max Mayfield.

FULL STORY

• Watch: 'Very concerned' | 'Big Easy' prepares

MORE NEWS

Most Popular

- Northwest strikers stay on picket lines
- California files french fry lawsuit
- Dual protests square off in Crawford | Watch
- CNN/Money: Greenspan: End of home boom inevitable
- Encephalitis outbreak hits children, poor | Watch
- Oprah 'furious' at funeral snub claim
- Watch: Will aging rats lead to younger people?
- Tall, twisted building opens
- 'Milkshake murder' trial nears end
- Dutch investigate producer's 'Big Brother' baby plan

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Living longer (2:05)

Nail polish car (:56)

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Reasonable Doubt: Can crime labs be trusted?
DNA has cleared some innocent people. But forensic

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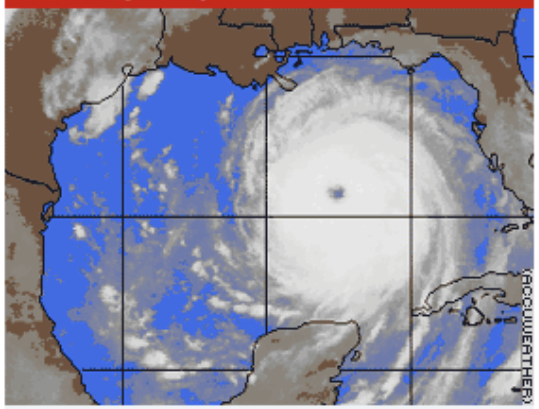
Updated: 10:56 a.m. EDT (14:56 GMT), August 28, 2005

New Orleans orders mandatory evacuation

BREAKING NEWS



With powerful and strengthening Hurricane Katrina headed straight for his city, the mayor of New Orleans today ordered the mandatory evacuation of residents. The Category 5 storm has maximum sustained winds near 175 mph and has already been blamed for nine deaths in South Florida. Looking ahead, Max Mayfield of the National Hurricane Center said: "It has the potential for a large loss of life."

DEVELOPING STORY

MORE NEWS

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- Committee signs Iraq's draft constitution | Watch
- Suicide bomber injures 21 in Israel | Watch
- California files french fry lawsuit
- Dual protests square off in Crawford | Watch
- Watch: Will aging rats lead to younger people?
- 'Milkshake murder' trial nears end
- Report: Swazi princess whipped for loud music
- USS Monitor's cat mystery
- Rap mogul 'Suge' Knight shot at Miami party

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Lap danger (2:48)

Human cannonball crosses border (:48)

Now In The News (10:33 a.m. ET): Your quick news update

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Markets: As of close Aug 26

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DNA has cleared some

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Updated: 7:58 p.m. EDT (23:58 GMT), August 29, 2005

Killer Katrina heading inland

Residents in New Orleans struggle to keep above the rising flood waters.

Killer Katrina heading inland

- Mississippi: Three dead, "unprecedented damage"
- More than 50 rescued from floods in New Orleans
- Katrina downgraded to tropical storm
- Parts of six Louisiana parishes "devastated"
- Oil rig breaks loose, hits Mobile River bridge
- "Life-threatening storm surge flooding" occuring

DEVELOPING STORY

- **Watch:** Wind flogs Mobile | A beaten 'Big Easy'
- **Watch:** Katrina's destructive day | Biloxi battered
- **Gallery:** Photoblog | CNN reporters: In the heart of storm
- **Special Report:** Tracking Katrina | In depth | Gallery
- **Citizen Journalist:** Your e-mails | Gallery | Share your story

MORE NEWS

Most Popular

- New Orleans refugees told stay away | Watch
- Downtown Mobile under water | Watch
- CNN/Money: Wholesale gas prices soar | Watch
- TIME.com: Is global warming fueling Katrina?
- CNN/Money: Storm cost could hit $16B | Watch
- Struggling airlines hit by Katrina groundings
- Eight ex-KPMG execs indicted
- Workers struggle to save seals

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Ripping and roaring through the Gulf (2:27)

The Big Easy takes a battering (2:00)

Now In The News (6:30 p.m. ET): Your quick news update

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BUSINESS at CNNMoney

Markets: 5:16 p.m. ET, Aug 29

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Katrina continuing coverage

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Updated: 5:33 a.m. EDT (09:33 GMT), August 30, 2005

54 DEAD IN MISSISSIPPI

Levee breached in New Orleans

Residents struggle to keep above the rising flood waters.

Levee breached in New Orleans

- Estimated 50 dead in 1 Missisippi county, officials say
- Levee breach in New Orleans forces hospital evacuation
- 1.3 million without power
- Tens of thousands to be homeless for months
- American Red Cross launching its largest relief operation

FULL STORY

- **CNN Access:** My apartment complex is totally leveled
- **Watch:** Rescued from a roof | Water rises to eaves
- **Gallery:** Photoblog | CNN reporters: In the heart of storm
- **Special Report:** Tracking Katrina | In depth | Gallery
- **Citizen journalist:** Your e-mails | Gallery | Share your story

MORE NEWS

Most Popular

- Huge relief effort under way
- 54 die in Mississippi, 50 in one county | Watch
- Louisiana evacuees told stay away | Watch
- Downtown Mobile under water | Watch
- CNN/Money: Wholesale gas prices soar | Watch
- TIME.com: Is global warming fueling Katrina?

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Up close on the devastation in New Orleans (1:57)

A tour of the damage in New Orleans (2:42)

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Updated: 1:44 p.m. EDT (17:44 GMT), August 30, 2005

STATES OF DEVASTATION

This image is no longer available

Floodwaters from Hurricane Katrina cover a portion of New Orleans today.

Death toll rising in Katrina's wake

- **Impact:** Katrina's toll leaves Gulf Coast reeling | Watch
- **People:** Survivor describes harrowing experience| Watch
- **Recovery:** Aid groups sending rescuers, supplies | Watch
- **Assistance:** How to help storm victims | Watch

DEVELOPING STORY

- **Watch:** Screams for help | Day that wouldn't end
- **Watch:** Katrina-spawned tornado destroys farm
- **Watch:** 'Everything is gone' | Rooftop rescue| Katrina's fury
- **Special Report:** Tracking Katrina | Gallery | Map
- **Assisting victims:** Do you want to help?
- **Citizen journalist:** Your e-mails | Gallery | Share your story

MORE NEWS

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- 'Significant' death toll in New Orleans | Watch
- Mississippi governor vows to rebuild | Watch
- Survivors 'screaming for help' | Watch
- Bush cuts short vacation because of Katrina
- CNN/Money: Katrina closes 123 Wal-Marts
- CNN/Money: Oil hits record near $71 | Watch
- Katrina overwhelms weather Web sites

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Rescue efforts under way (2:47)

Water pours into New Orleans (1:19)

Now In The News (1:31 p.m. ET): Your quick news update

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Updated: 6:14 a.m. EDT (10:14 GMT), August 31, 2005

SLIPPING INTO CHAOS

A shotgun-toting New Orleans police officer has a word with a man on Canal Street.

Unrest grows in New Orleans

- Water still rising in Crescent City, with no way out
- Looting, shootings reported
- New Orleans mayor blasts failure to patch levees
- Louisiana governor declares day of prayer
- Critical patients being airlifted, shelters being evacuated
- Paint marks indicate Mississippi homes with bodies

FULL STORY

- **Watch:** Chaotic aftermath | Tragedy, devastation
- **Watch:** The struggle to survive | Nature's fury explained
- **Special Report:** Trail of destruction | Gallery | Map | Blog
- **Citizen journalist:** Your e-mails | Gallery | Share your story
- **Hotlines:** Emergency info | How to help

MORE NEWS

Most Popular

- Mayor blasts failure to patch levee breaches
- Tensions rising in New Orleans | Watch
- Relief efforts mobilizing | Watch
- Victims left with nothing | Watch
- States struggle with destruction | Watch
- Alabama power outage statewide | Watch
- Mississippi expects heavy death toll | Watch

WATCH FREE VIDEO

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Lifted to safety (2:32)

Hurricane Katrina's ongoing aftermath (4:00)

Now In The News: Your quick news update

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Updated: 3:44 p.m. EDT (19:44 GMT), August 31, 2005

HEALTH EMERGENCY

Survivors on an apartment building roof try to get the attention of rescuers.

Health fears as bodies lie in water

- Public health emergency declared; cholera, typhoid fears
- Katrina death toll so far estimated at least 120
- New Orleans mayor says toll in his city will be hundreds
- Superdome evacuees moving to Astrodome

FULL STORY

- **Watch:** Saved by a tree | Dome must be evacuated
- **Watch:** For Slidell, very bad bump in road
- **Special Report:** Trail of destruction | Gallery | Levee system
- **Citizen Journalist:** Your e-mails | Gallery | Share your story
- **Hotlines:** Where to get and give help

MORE NEWS

Most Popular

- Public health threat looming | Watch
- Superdome victims moving to Texas | Watch
- CNN reporters: Heartbreak across the coast
- Feds fan out for storm recovery efforts | Watch
- Wife makes desperate trip with husband's body
- Watch: Wife searches for missing husband

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Health risks post-Katrina (2:18)

Clinging to a tree (3:25)

Now In The News (3:31 p.m. ET): Your quick news update

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Updated: 9:51 p.m. EDT (01:51 GMT), August 31, 2005

GETTING OUT

Buses leave New Orleans with evacuees who had been holed up in the Superdome.

Evacuation of survivors begins

- Public health emergency declared; cholera, typhoid fears
- First evacuee buses leave New Orleans
- Bush: "One of the worst national disasters"
- Extra 10,000 National Guard troops called up

FULL STORY

- **Watch:** Heartbreaking trip home | Searching for bodies
- **Watch:** How the levees broke | Saved by a tree
- **Special Report:** Trail of destruction | Gallery | Levee system
- **Citizen Journalist:** Your e-mails | Gallery | Share your story
- **Hotlines:** Where to get, give help | Tell people you're safe

MORE NEWS

Most Popular

- CNN exclusive: Police unable to aid sick woman
- Babies evacuated from ICU | Watch
- Public health threat looming | Watch
- Superdome evacuees head to Houston | Watch
- Huge sandbags planned for levee leaks |

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Desperate pleas (5:38)

Armed looting in New Orleans (2:30)

Now In The News: Your quick news update

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Updated: 12:30 p.m. EDT (16:30 GMT), September 1, 2005

DESPERATION AND DANGER

Storm victims are stuck without food or water at the New Orleans Convention Center.

Boat rescues suspended

- Boat rescuers asked to stand down due to dangers
- Huge crowd spotted at New Orleans convention center
- Gunfire, looting, small fires disrupt Superdome evacuation
- Citizens holed up in high-rises throng to buses
- Major buildings "pancaking" in Mississippi

DEVELOPING STORY

- **Watch:** 'Nobody in control' | Fires at Superdome
- **Watch:** Newborns rescued | Heartbreaking trip home
- **Special Report:** Trail of destruction | Gallery | Levee system
- **Citizen Journalist:** Your e-mails | Gallery | Share your story
- **Hotlines:** Where to get, give help | Tell people you're safe

MORE NEWS

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- Bush tells victims: 'A lot of help coming'
- CNN/Money: Bush: 'Zero tolerance' on gouging
- Town wiped off the map by Katrina
- CNN exclusive: Police unable to aid sick woman
- Spain MP among stranded in New Orleans
- Federal rescue teams arriving

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FEMA suspends rescue operations (2:34)

Anger and outrage (3:38)

Now In The News (11:48 a.m. ET): Your quick news update

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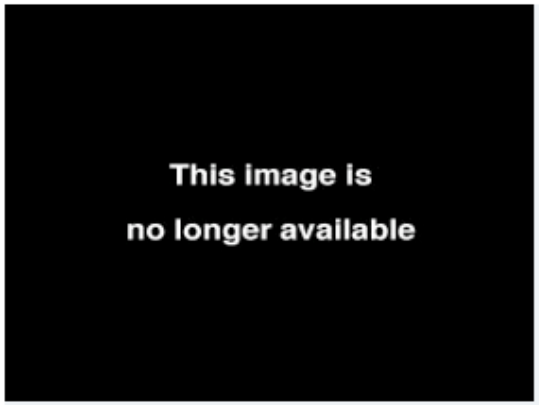
Updated: 12:29 a.m. EDT (04:29 GMT), September 3, 2005

AID IN, PEOPLE OUT



Military personnel distribute food and water Friday at the convention center in New Orleans.

Some hope returns to New Orleans

- Food and medicine arrives for desperate survivors
- 40,000 patients airlifted from hospitals
- Bush sees destruction -- and meets angry mayor
- But thousands still stranded in homes and centers

DEVELOPING STORY

- **Watch:** Fires and floods | Aid rolls in
- **Watch:** Bush: It seems dark right now | The military mission
- **Special Report:** Hurricane Katrina | Street-by-street
- **Citizen Journalist:** Your e-mails | Gallery | Share your story
- **Hotlines:** Where to get, give help | Tell people you're safe
- **CNN TV:** The struggle for New Orleans, on CNN

MORE NEWS

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- What was said vs. What was happening
- Exhausted evacuees pack airport | Watch
- On the Scene: Hopelessness in Mississippi
- Lt. Gen. Honore a 'John Wayne dude' | Watch
- Drying New Orleans could take months | Watch
- Bush admits relief efforts 'not enough' | Watch

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Role of race questioned (2:14)

Medical nightmare (1:49)

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Updated: 6:08 p.m. EDT (22:08 GMT), September 4, 2005

HELICOPTER HEROES

BREAKING NEWS

A U.S. Air Force rescuer is dropped onto a rooftop to help trapped Katrina victims.

Rescuers going roof-to-roof

- AP: Army engineers say police shoot dead its contractors
- Helicopters dropping supplies, picking up survivors
- Convention center mostly evacuated
- Mayor: Police, firefighters traumatized

DEVELOPING STORY

- **Watch:** Coast Guard rescuers | Some refuse to leave
- **Watch:** Mississippi wipe out | Mayor: Officers traumatzied
- **Hotlines:** How to get, give help | Tell people you're safe
- **Citizen Journalist:** Your e-mails | Gallery | Share you story
- **Special Report:** Timeline | New Orleans: Block by block
- **On CNN TV:** Dr. Phil on healing after Katrina, 9 p.m. ET

MORE NEWS

Most Popular

- Chief Justice Rehnquist dies at 80 | Watch
- Manning brothers team up for relief | Watch
- New Orleans couple weds in Mississippi shelter
- Mobile hospital stopped by red tape
- Misery has company at Mississippi motels
- Evacuees anguished at leaving pets behind

WATCH FREE VIDEO

Browse/Search

Misery in Mississippi (2:16)

Musical tribute to New Orleans (3:08)

Now In The News (5:52 p.m. ET): Your quick news update

Featured Video | More Video Picks

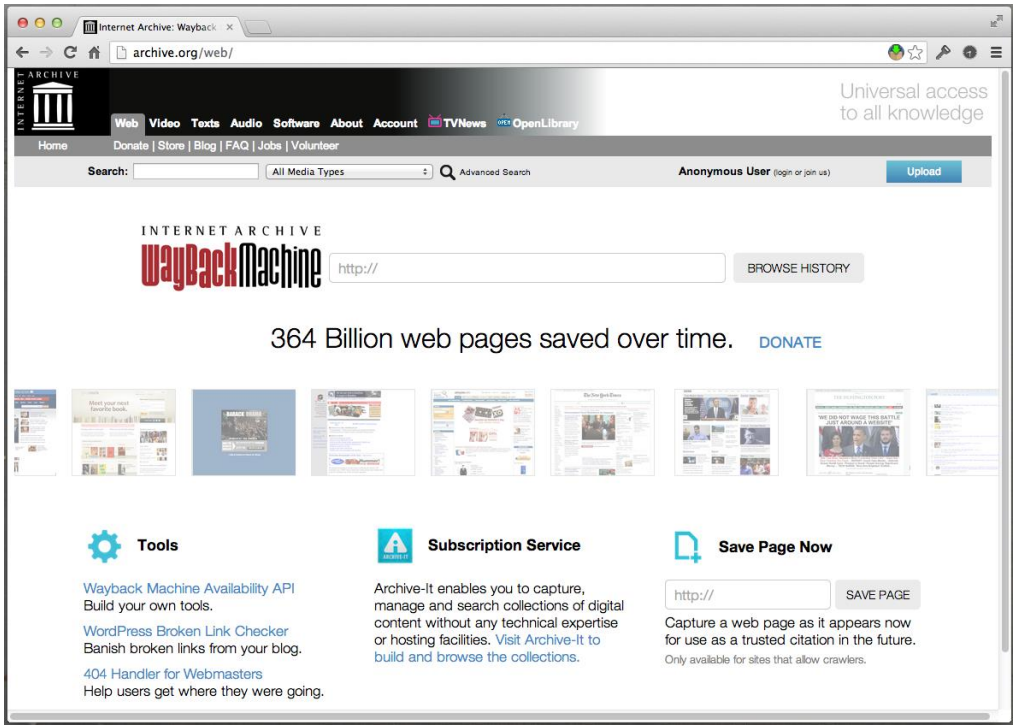
Replaying the past can be more compelling than just a summary

Overview of Current Projects

- What is archived?
  - how much of the web is archived?
  - how much of the Arabic web is archived?
  - what domains does each archive hold?
- How do people use web archives?
  - access patterns for humans and robots
  - what languages do they look for?
- How well are web pages archived?
  - archivability of webpages
  - damage of archived pages
  - tools to allow users to create their own archives
- Improving access for users
  - telling stories with web archives
  - archive visualization

How do people use web archives?

- We obtained a year's worth (2012) of requests to the Internet Archive's Wayback Machine
  - client IPs anonymized



How do people use web archives?

- First, there are a lot of robots (*aka* bots) who access the archive
  - 10 bot sessions for every 1 human session
  - maybe people don't know about the archive?
- Typical human sessions are pretty short
  - people aren't spending lots of time in the archive

AlNoamany, Weigle, and Nelson, "Access Patterns for Robots and Humans in Web Archives", JCDL 2013

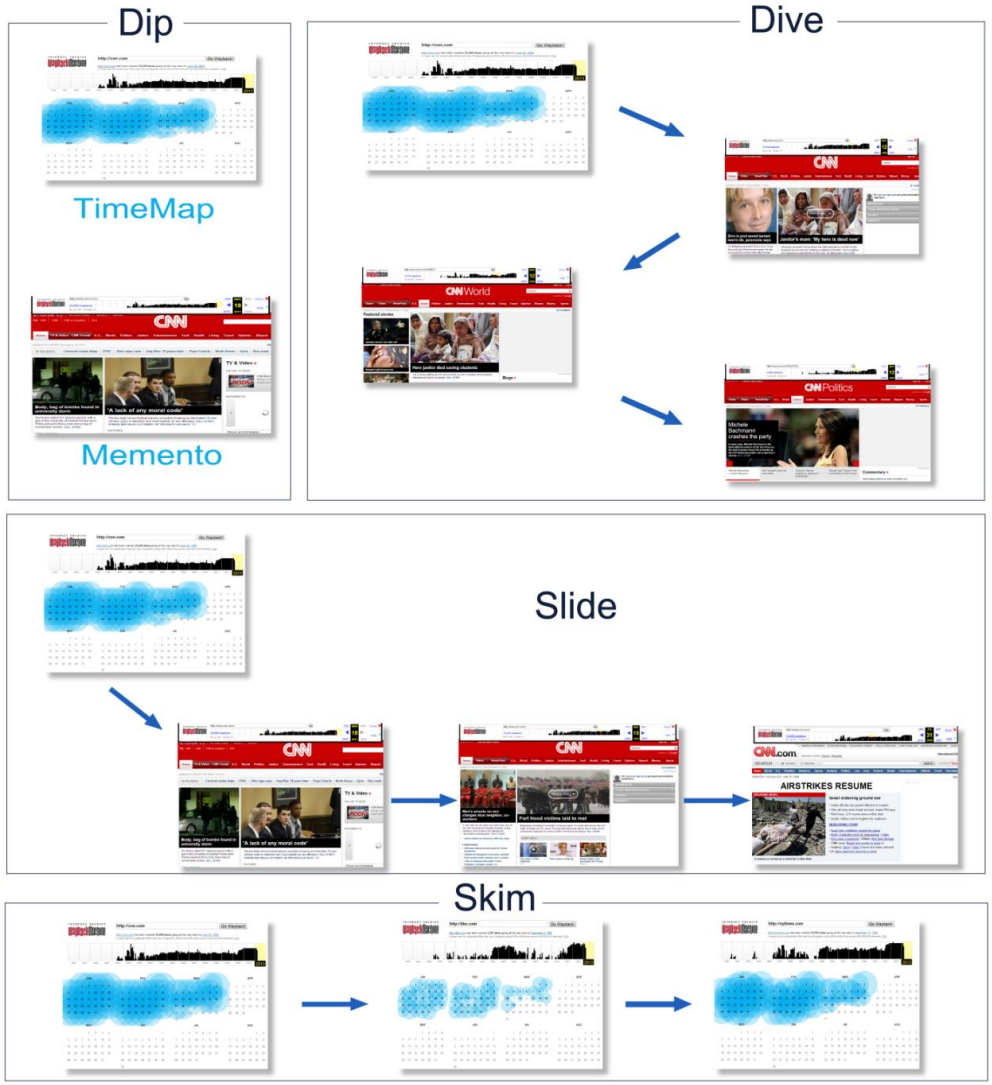
How do people use web archives?

- 65% of the requested archived pages no longer exist on the live web

- People use the archive because the pages they are interested in no longer exist

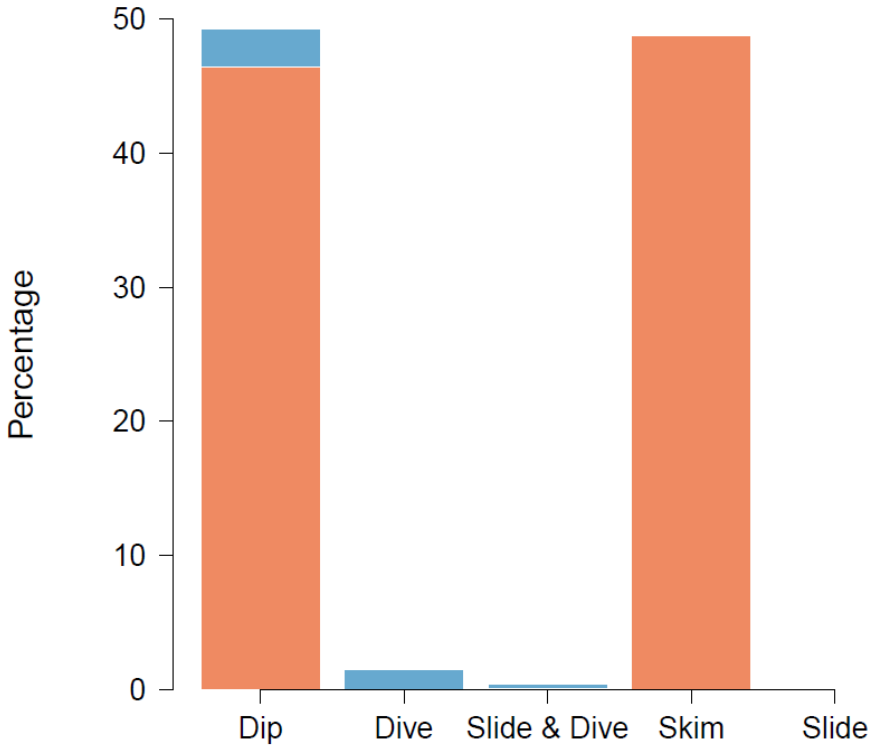
AlNoamany, AlSum, Weigle, and Nelson, "Who and What Links to the Internet Archive", *IJDL, to appear,* 2013

User Access Patterns

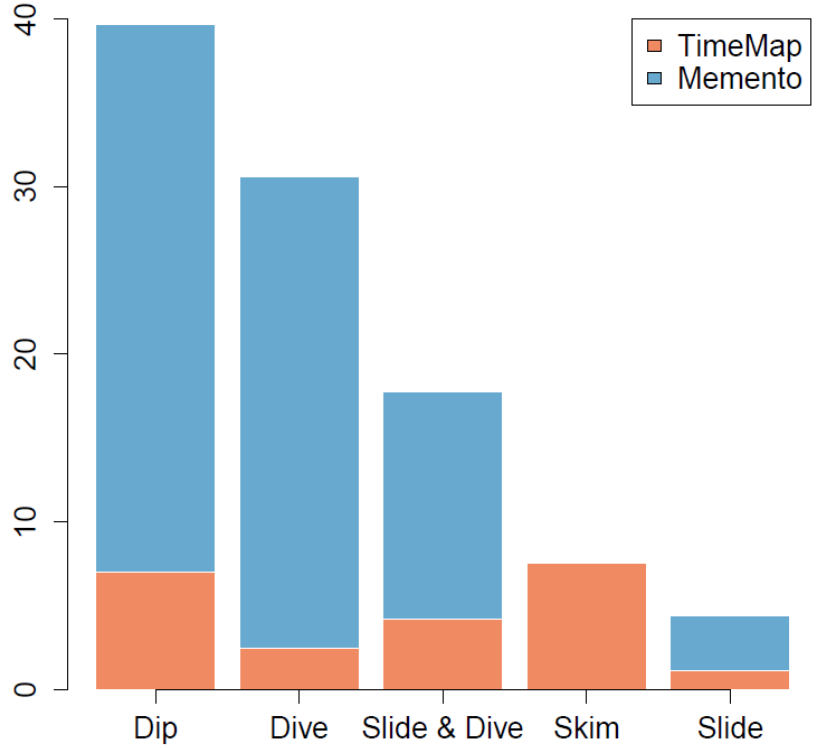


AlNoamany, Weigle, and Nelson, "Access Patterns for Robots and Humans in Web Archives", JCDL 2013

Everybody Dips, Humans Dive, Robots Skim



Robots (34,203 sessions)



Humans (3,431 sessions)

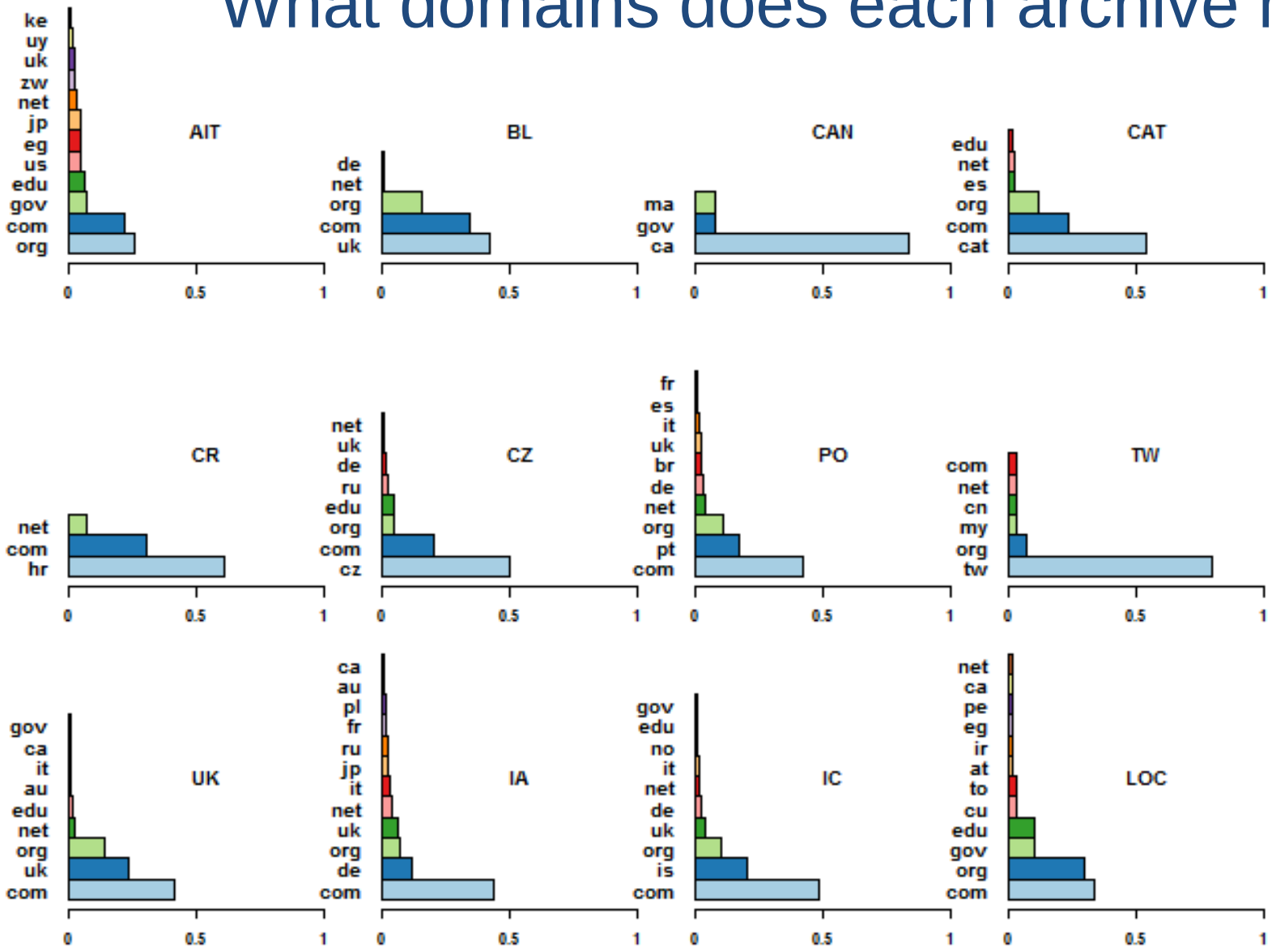
AlNoamany, Weigle, and Nelson, "Access Patterns for Robots and Humans in Web Archives", JCDL 2013

What domains does each archive hold?

	Archive Name	FullText search	Website
IA	Internet Archive		web.archive.org
LoC	Library of Congress		www.loc.gov/lcwa
IC	Icelandic Web Archive		vefsafn.is
CAN	Library & Archives Canada	x	www.collectionscanada.gc.ca
BL	British Library	x	www.webarchive.org.uk/ukwa
UK	UK Gov. Web Archive	x	webarchive.nationalarchives.gov.uk
PO	Portuguese Web Archive	x	arquivo.pt
CAT	Web Archive of Catalonia	x	www.padi.cat
CR	Croatian Web Archive	x	haw.nsk.hr
CZ	Archive of the Czech Web	x	webarchiv.cz
TW	National Taiwan University	x	webarchive.lib.ntu.edu.tw
AIT	Archive-It	x	www.archive-it.org

AlSum, Weigle, Nelson and Van de Sompel, "Profiling Web Archive Coverage for Top-Level Domain and Content Language," TPDL 2013.

What domains does each archive hold?



AlSum, Weigle, Nelson and Van de Sompel, "Profiling Web Archive Coverage for Top-Level Domain and Content Language," TPDL 2013.

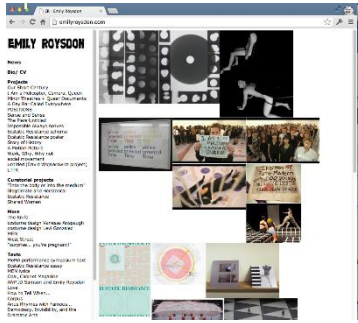
Sometimes the live web "leaks" into the archive

http://ws-dl.blogspot.com/2012/10/2012-10-10-zombies-in-archives.html

Archive What I See Now

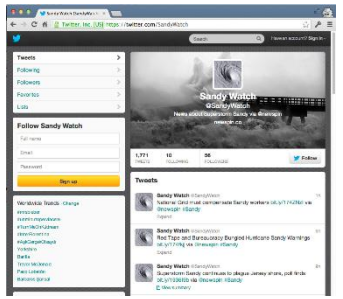
- Standard web archiving tools are difficult for non IT experts.
- "Save Page As" is not suitable for archiving purposes.
- Pages are behind authentication.
- Pages change quickly, but current state needs archiving.

Archive



What I See

Now

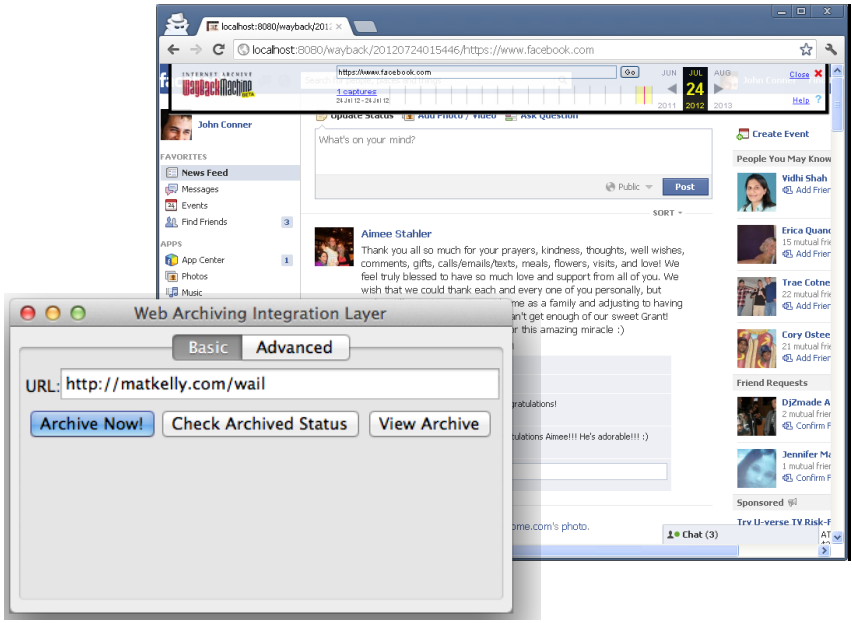


http://bit.ly/wc-wail

WARCreate and WAIL

- WARCreate
  - generate archive of any webpage, right from your browser

- WAIL
  - gathers institutional-strength archiving tools into simple package/GUI
  - run your own Wayback Machine



http://bit.ly/wc-wail

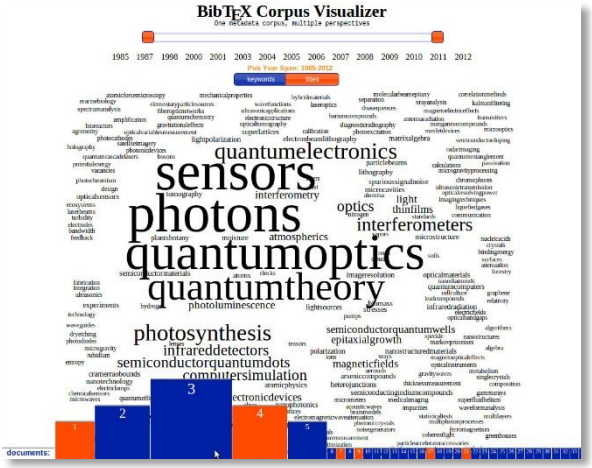
Outline

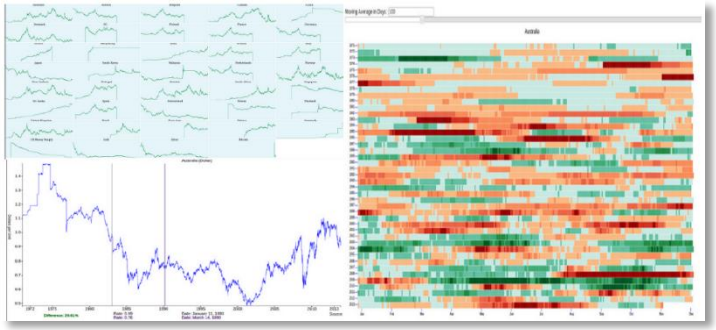
- **Bits of Research**
  - digital preservation and web archiving
  - **information visualization**

- Potential Summer Projects
  - Blue Button visualization (health informatics)
  - visualizing aggregate health data
  - exploring large document collections

What is Information Visualization?

- "The purpose of information visualization is insight, not pictures" -Ben Shneiderman
- Interactive representation of non-physically based data
- Concerned with how people think, human perception
- Has ties to cognitive science, psychology, data mining

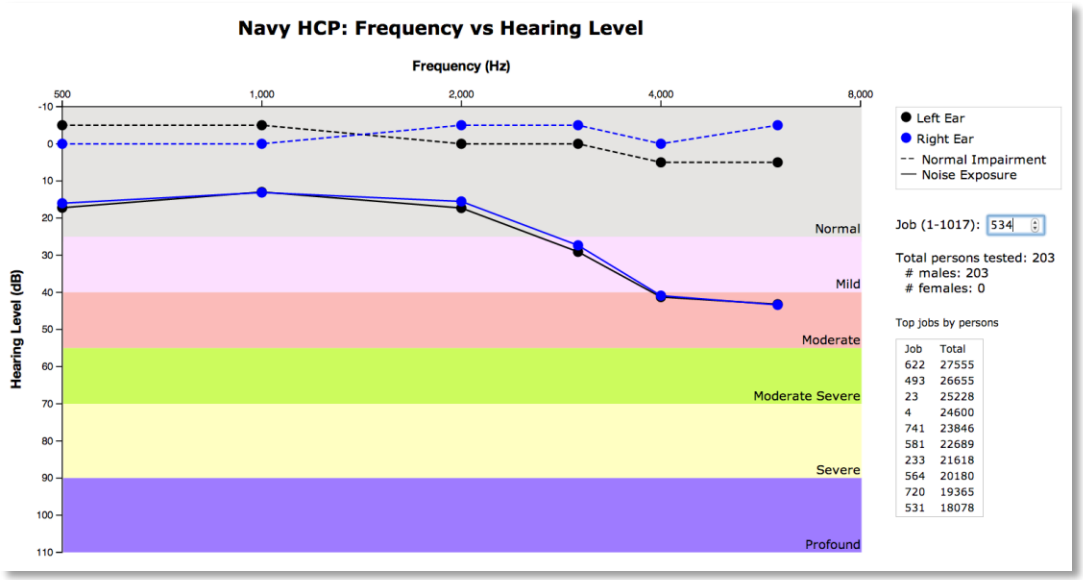


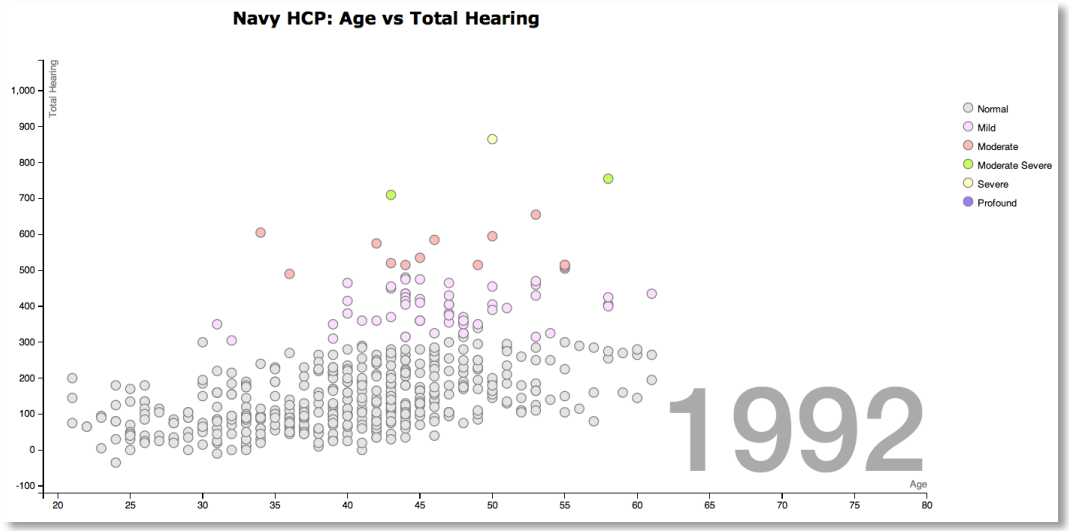


Info Vis Research Is Collaborative

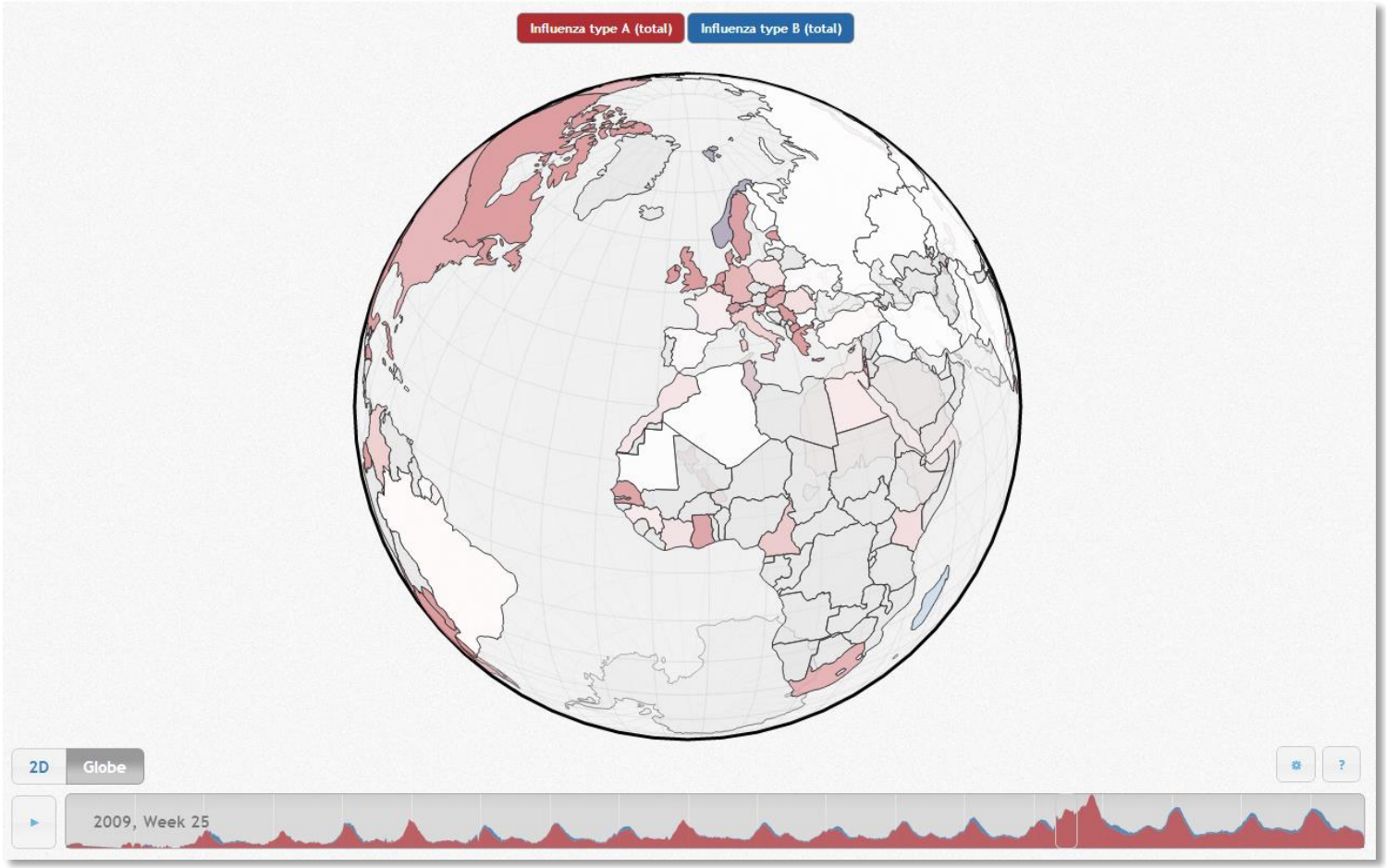
- Must have data and problems to solve
- Must work with experts in other domains
  - medical doctors - hearing data analysis
  - social scientists - welfare data record linkage
  - technology analysts - trends in scientific research
  - web archivists - viewing collections of web archives

Navy Hearing Conservation Program

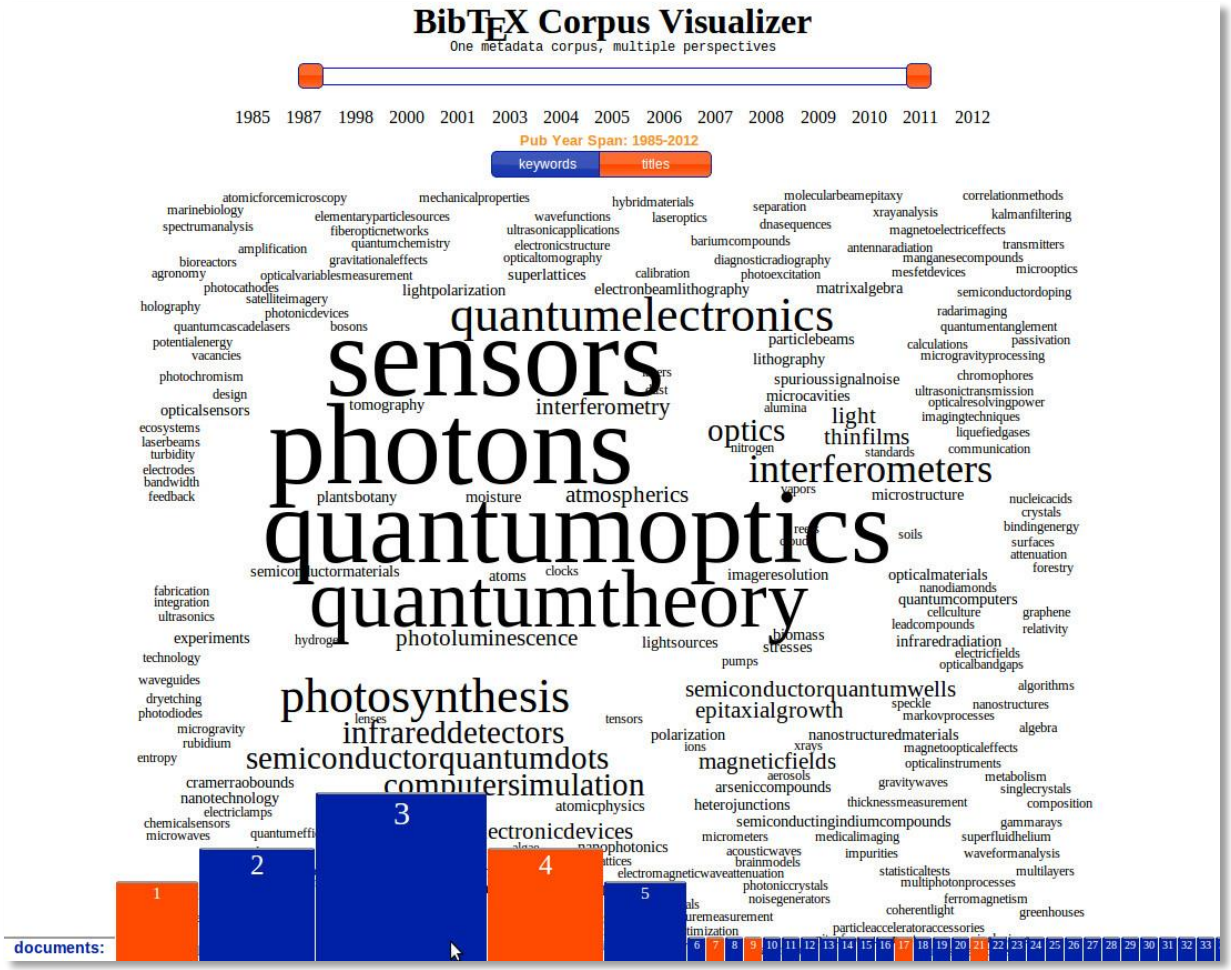




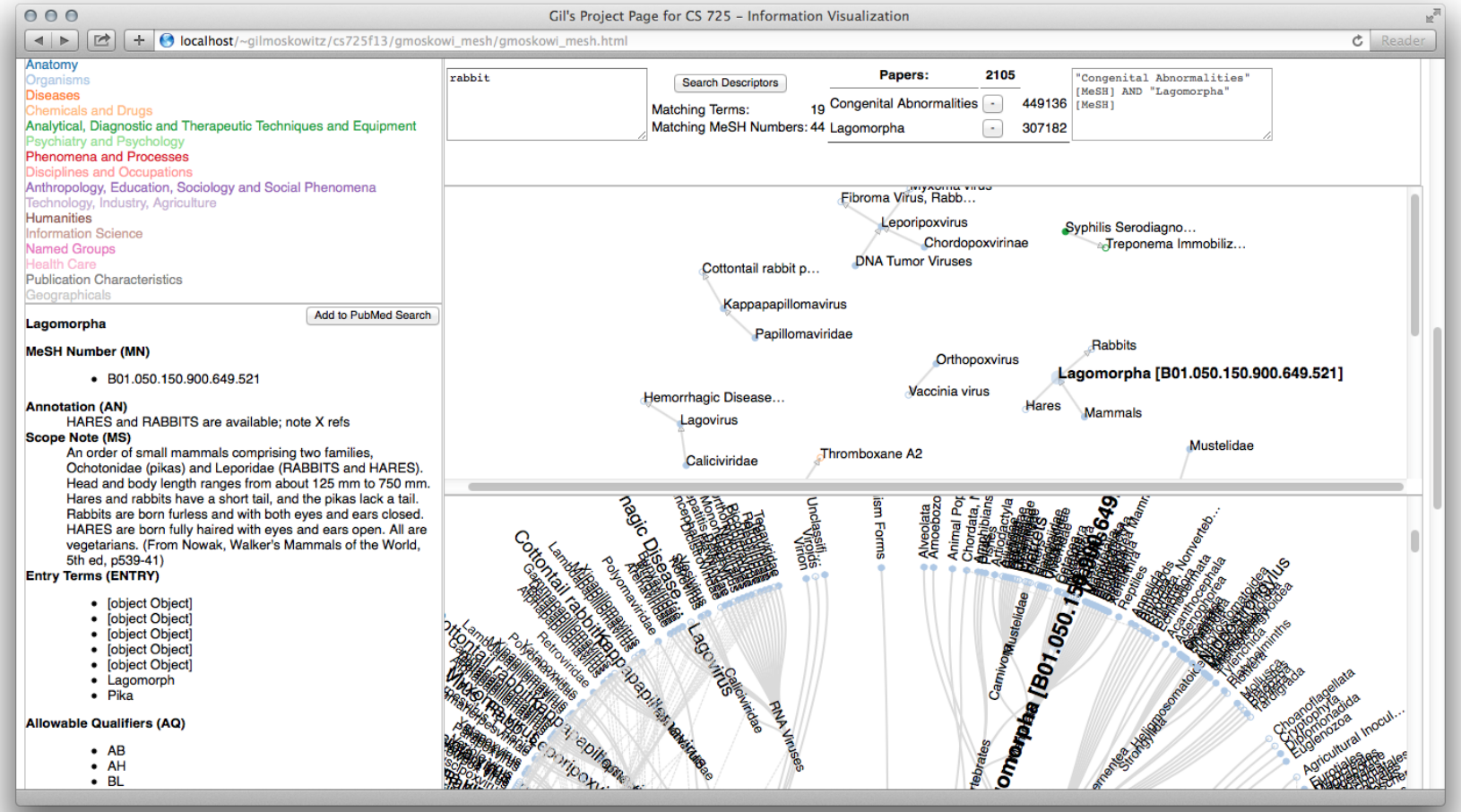
FluNet Visualization



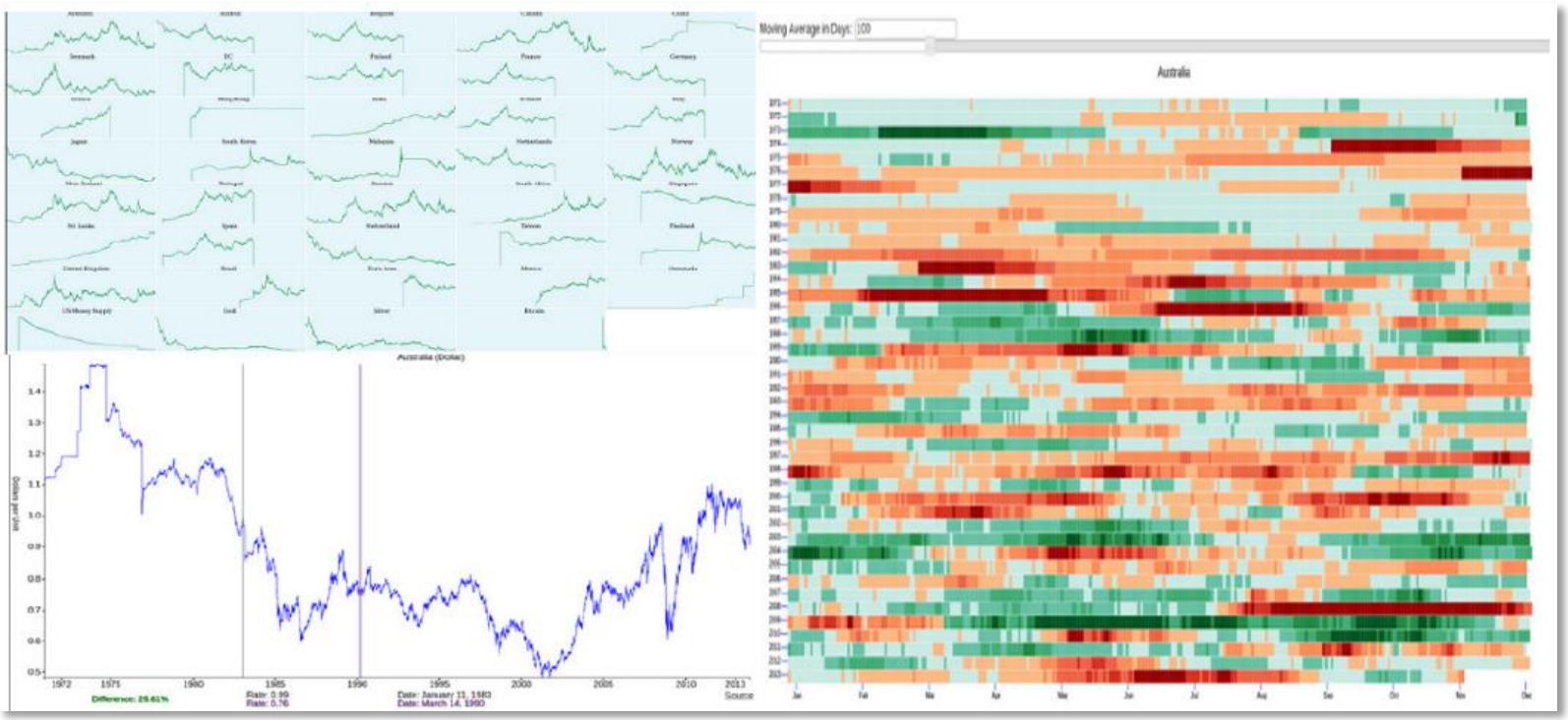
Academic Paper Browser



MeSH Viewer


Gil's Project Page for CS 725 – Information Visualization
localhost/~gilmoskowitz/cs725f13/gmoskowi_mesh/gmoskowi_mesh.html
Reader
Anatomy
Organisms
Diseases
Chemicals and Drugs
Analytical, Diagnostic and Therapeutic Techniques and Equipment
Psychiatry and Psychology
Phenomena and Processes
Disciplines and Occupations
Anthropology, Education, Sociology and Social Phenomena
Technology, Industry, Agriculture
Humanities
Information Science
Named Groups
Health Care
Publication Characteristics
Geographicals
Add to PubMed Search
Lagomorpha
MeSH Number (MN)
B01.050.150.900.649.521
Annotation (AN)
HARES and RABBITS are available; note X refs
Scope Note (MS)
An order of small mammals comprising two families, Ochotonidae (pikas) and Leporidae (RABBITS and HARES). Head and body length ranges from about 125 mm to 750 mm. Hares and rabbits have a short tail, and the pikas lack a tail. Rabbits are born furless and with both eyes and ears closed. HARES are born fully haired with eyes and ears open. All are vegetarians. (From Nowak, Walker's Mammals of the World, 5th ed, p539-41)
Entry Terms (ENTRY)
[object Object]
[object Object]
[object Object]
[object Object]
[object Object]
Lagomorph
Pika
Allowable Qualifiers (AQ)
AB
AH
BL
rabbit
Search Descriptors
Matching Terms: 19
Matching MeSH Numbers: 44
Papers: 2105
Congenital Abnormalities - 449136
Lagomorpha - 307182
"Congenital Abnormalities" [MeSH] AND "Lagomorpha" [MeSH]
Fibroma Virus, Rabb…
Leporipoxvirus
Chordopoxvirinae
DNA Tumor Viruses
Syphilis Serodiagno…
Treponema Immobiliz…
Cottontail rabbit p…
Kappapapillomavirus
Papillomaviridae
Orthopoxvirus
Vaccinia virus
Rabbits
Lagomorpha [B01.050.150.900.649.521]
Hares
Mammals
Hemorrhagic Disease…
Lagovirus
Caliciviridae
Thromboxane A2
Mustelidae

Visualizing Currency Volatility



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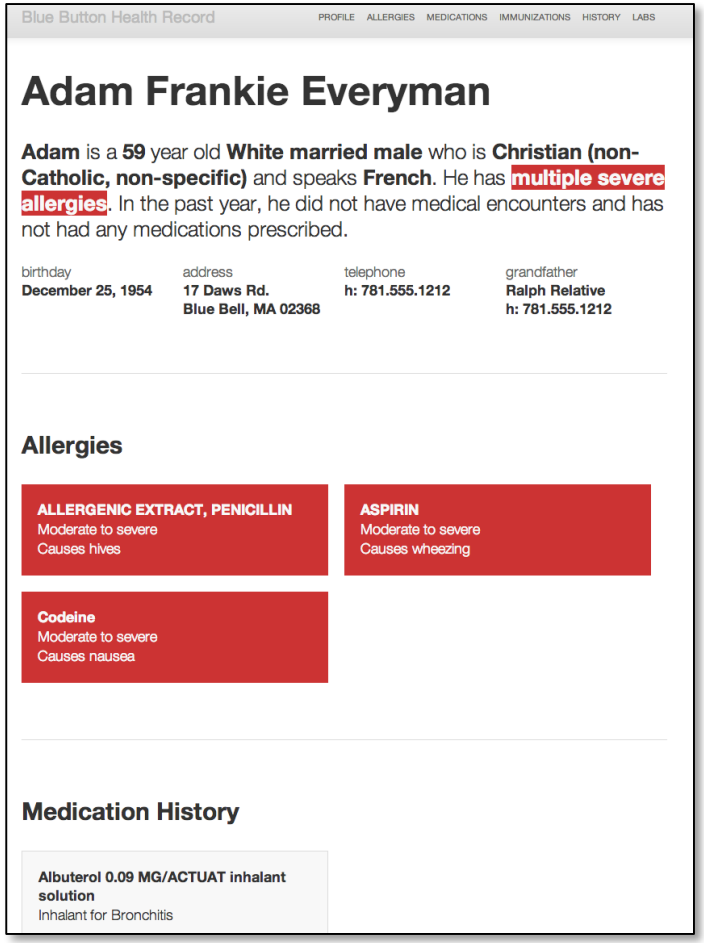
Blue Button+ Visualization

- Blue Button - allows patients to download their health data

U.S. Department of Veterans Affairs

CMS.gov
Centers for Medicare & Medicaid Services

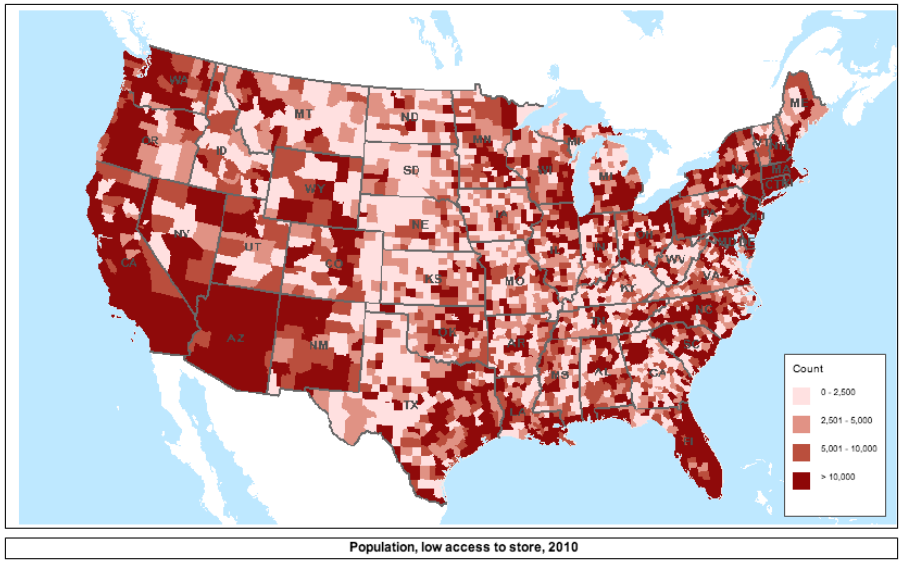
- Goals:
  - perform research into previous approaches to visualizing Blue Button data
  - begin the development of a novel visualization of Blue Button data



http://blue-button.github.io/bbClear/bluebutton.html

Visualizing Aggregate Health Data

- Aggregate health data
  - statistics for a large number of people (by country, US state, US county, etc.)
- Goal:
  - become familiar with using public datasets and web-based visualization tools

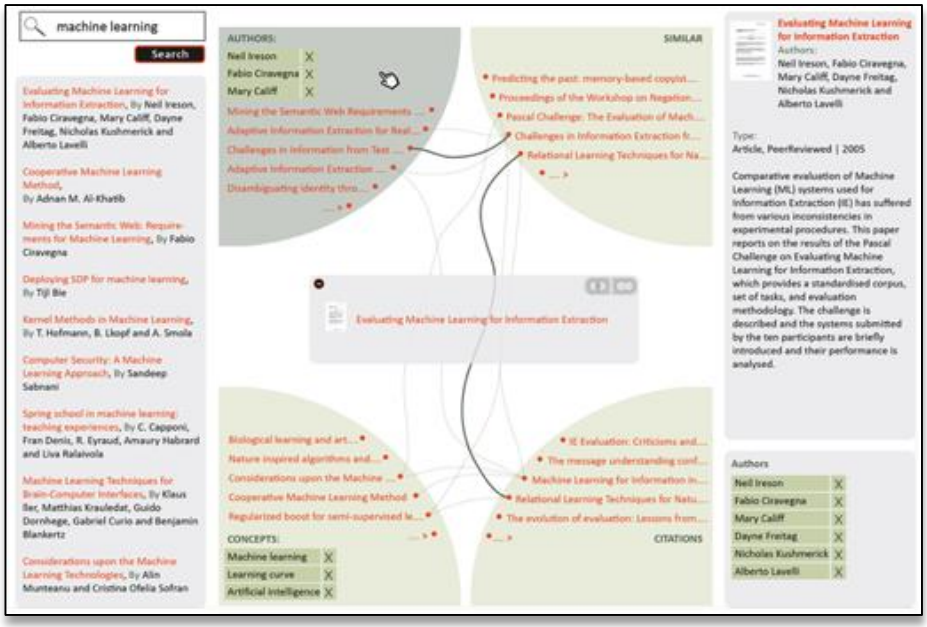


Population, low access to store, 2010

http://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas.aspx#.U6hHpY1dUhs

Exploring Large Document Collections

- CORE
  - API access to a large number of Open Access academic publication repositories
- Goals:
  - investigate the use of the CORE API
  - begin the implementation of tools that could be used in exploring large document collections



http://www.dlib.org/dlib/july12/herrmannova/07herrmannova.html

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