

Communication Sketching

Minimal information to connect
with viewer schema

Straight Lines

keep the wrist stiff

draw from the shoulder

draw through

let the dot be your guide

draw away from the body

rotate the paper

Arcs

leverage your on the physiology

.... keep wrist stiff...

rotate at the elbow

kinetic memory

try contour lines

Circles

draw guide lines

ghost passes over the sheet

...keep your wrist stiff...

closing your eyes helps, maybe

Ellipses

plot major and minor axis
...ghost passes over the sheet...
draw from the shoulder

Patterns

use all the patterns

use dots to maintain distance

keep the wrist stiff

draw from the shoulder

Graphic Layouts

Use symbolic shapes to layout
graphics

Design & Data

01010100	01101000
01101001	01101110
01101011	00100000
01100100	01101001
01100110	01100110
01100101	01110010
01100101	01101110
01110100	00101110

Data does not equal information

Data has to have a structure that is meaningful to inform it's audience

Category

Time

Location

Alphabet

Continuum

Information Anxiety by Richard Saul Wurman

THE GRAPHIC CONTINUUM

The Graphic Continuum shows several ways that data can be illustrated individually or combined to show relationships. Use of various shapes, chart types, and colors can help identify patterns, tell stories, and reveal relationships between different sets and types of data. Bar charts, or histograms, for example, can illustrate a distribution of data over time, but they also can show categorical or geographic differences. Scatterplots can illustrate data from a single instance or for a period, but they also can be used to identify a distribution around a mean.

This set of charts does not constitute an exhaustive list, nor do the connections represent every possible pathway for linking data and ideas. Instead, the Graphic Continuum identifies some presentation methods, and it illustrates some of the connections that can bind different representations together. The six groups do not define all possibilities. Many other useful, overlapping data types and visualization techniques are possible.

This chart can guide graphic choices, but your imagination can lead the way to other effective ways to present data.

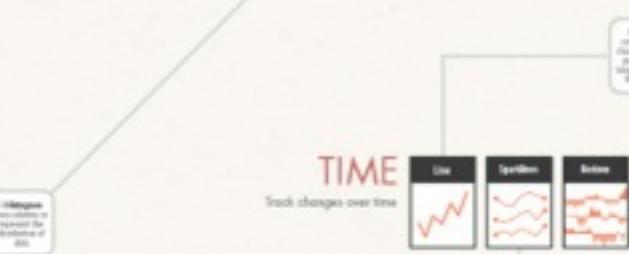
COMPARING CATEGORIES

Compare values across categories.



DISTRIBUTION

Optical representations of the distribution of data



TIME

Track changes over time



GEOSPATIAL

Relate data to its geography



PART-TO-WHOLE

Visualizations that relate the part of a variable to its total



RELATIONSHIP

Illustrates correlations or relationships between variables



© Jonathon Schwabish & Severino Ribecca

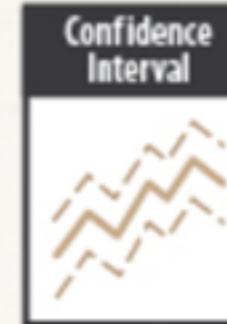
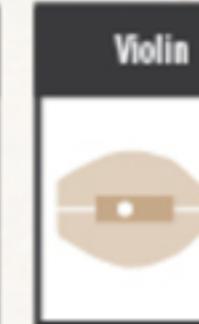
www.jonathonschwabish.com

http://www.coolinfographics.com/display>ShowImage?imageUrl=/storage/post-images/The-Graphic-Continuum-POSTER.jpg?SQUARESPACE_CACHEVERSION=1412357494790

Job Schwabish and Severino Ribecca. Available as a printed poster for \$25 on Mimeo.

DISTRIBUTION

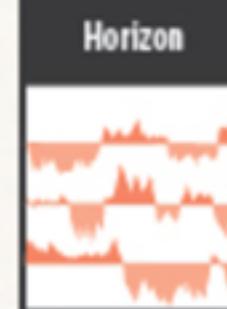
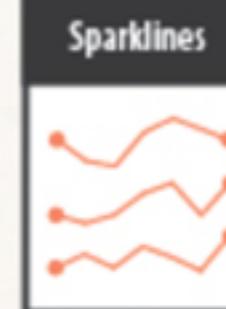
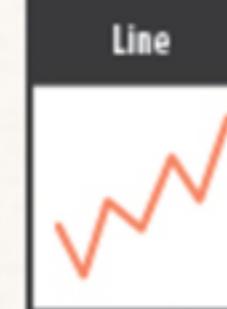
Graphical representations of the distribution of data



A Fan Chart combines a line chart for observed past data with ranges for possible future values

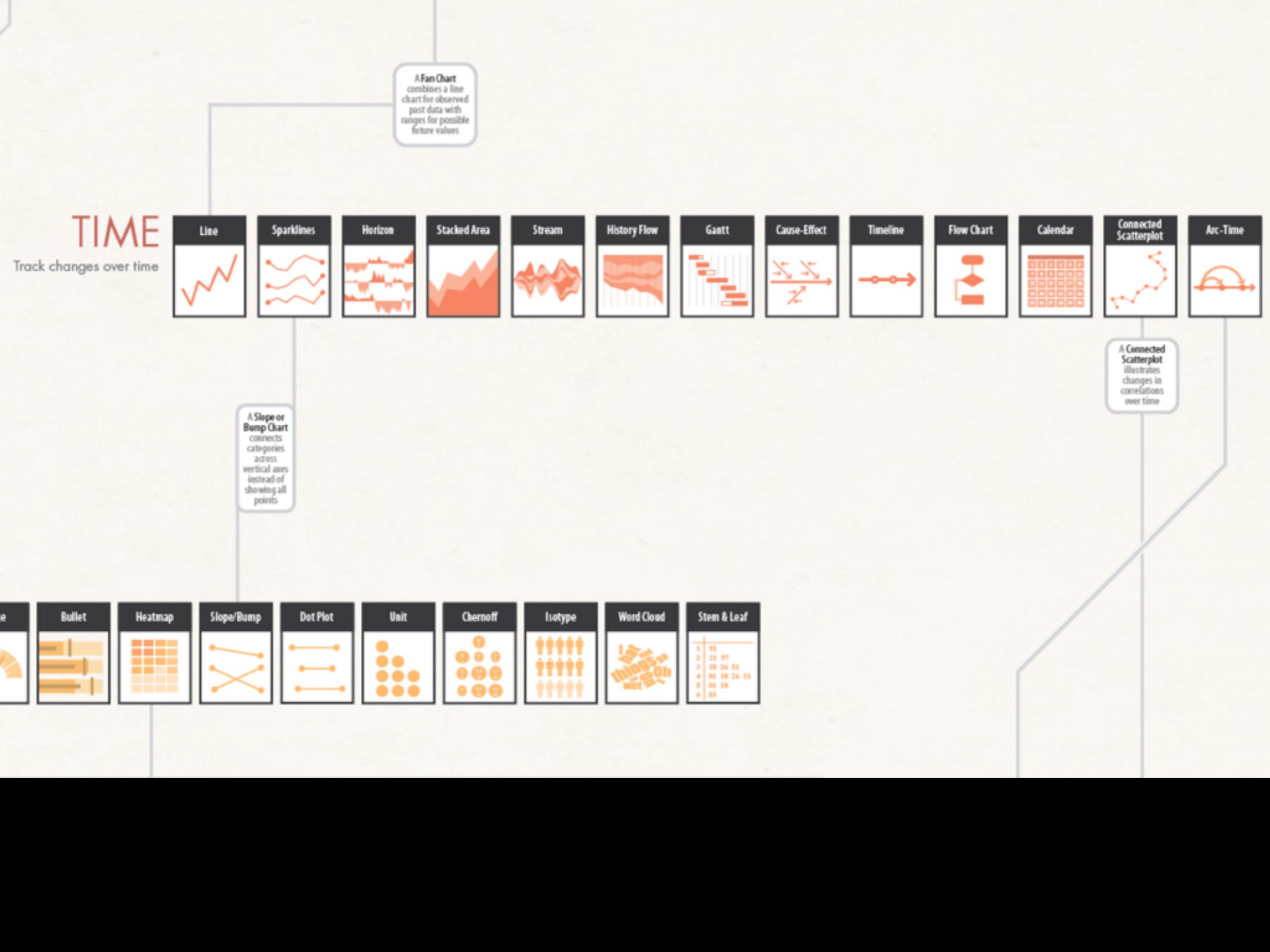
TIME

Track changes over time



A Histogram uses columns to represent the distribution of data

A Slope or Bump Chart connects categories across vertical axes instead of showing all points



COMPARING CATEGORIES

Compare values across categories



A Slope or Bump Chart connects categories across vertical axes instead of showing all points



GEOSPATIAL

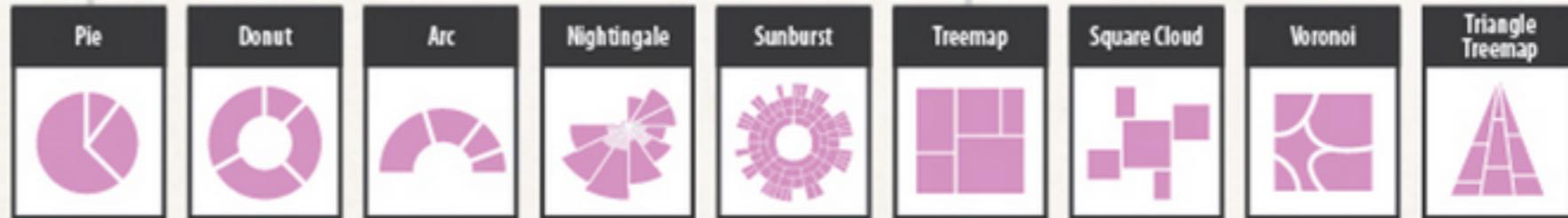
Relate data to its geography



A Map with
Columns encodes
data within a
geographic frame
of reference

PART-TO-WHOLE

Visualizations that relate the part of a variable to its total

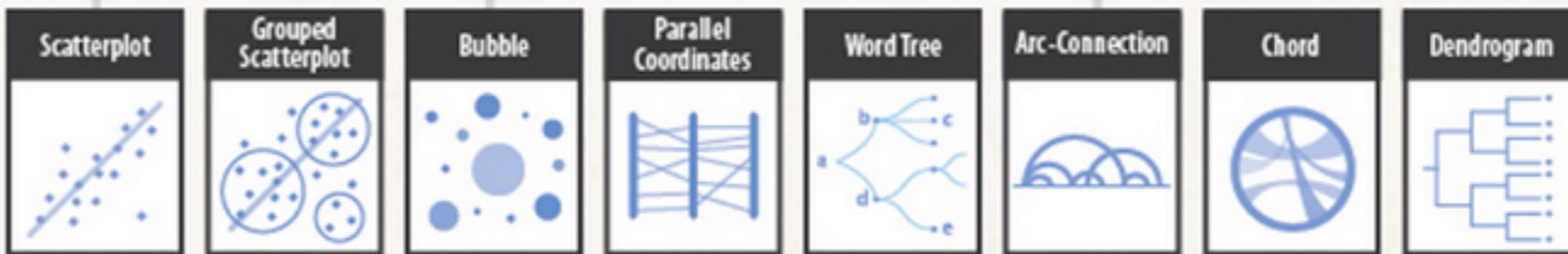


Full Image

A Pie Chart shows part-to-whole relationships; placing Pie Charts on a map illustrates a geographic component

RELATIONSHIP

Illustrates correlations or relationships between variables



© Jonathan Schwabish & Severino Ribecca

@jschwabish @SR_Visual_Info

Ease of Use

TUNING IN: Communications technologies historically have had broad appeal for consumers

IF YOU LOOK AT the history of technology, said high-tech guru George Forrester Colony in 1995, "there is a threshold where one day, you had to have a fax machine. Remember that day? It was 1981 or something. You had to have a fax machine on that day. The day before, you didn't need it."

The Electric Age

"And there came a day, I think it was last year, when you had to have an e-mail address," he continued. "It's possible that in the home, there will come a day when you will need [two-way] video, because there are enough people out there you want to talk to who also have video and it's cheap enough."

Families would gather around the radio nightly to listen. In 1924, people were tuning in to political conventions, which spurred sales of radio sets. In 1925,

Chicago station WGN broadcast from the famous Scopes "monkey" trial.

The growing popularity of radio is easy to see in the chart below. Notice the disparity in the percentage of homes with radios compared to those with telephones in the 1930s. By the end of 1939, nearly 80% of homes had radios while only about 36% had telephones.

This trend continued with the advent of television. A little more than 10 years after it began to be mass-produced, TV surpassed the telephone in U.S. household penetration. By the end of 1957, 80% of homes had television sets compared to about 70% with telephones. Radios could be found in 96% of homes.

In the early 1950s, color television added another dimension to America's newfound obsession. Cable-television systems had already begun in 1948 and home-use video recorders were introduced in 1965, although they didn't reach significant levels of household penetration until 1979. Within 19 years, however, 91% of U.S. homes had VCRs.

times faster in performing calculations than older electromechanical machines. By the 1950s, other inventions such as the silicon transistor, silicon chip and integrated circuit made computers smaller, yet more powerful. These devices also made computers more affordable and desirable to businesses.

The Electronic Age

In the 1940s, an equally important wave of new technology was emerging: the computer.

One significant invention was the Electronic Numerical Integrator and Computer (Eniac) in 1946. Eniac ran a thousand

In the 1960s, other products such as the Apple Macintosh, CD-ROM, the laptop computer and Windows software helped to revolutionize the industry, making computers easier to operate and more convenient for personal use.

By 1998, about 43% of U.S. homes had computers — and access to the Internet suddenly seemed to be the thing everybody had to have. Household penetration of the Internet stood at 24%, well below the level many people believe it eventually will reach.

Other hot products in 1998 were the pager, with penetration of 31%, up from 1% in 1993, and the cellular phone, which rose to 49% from 1% in 1987.

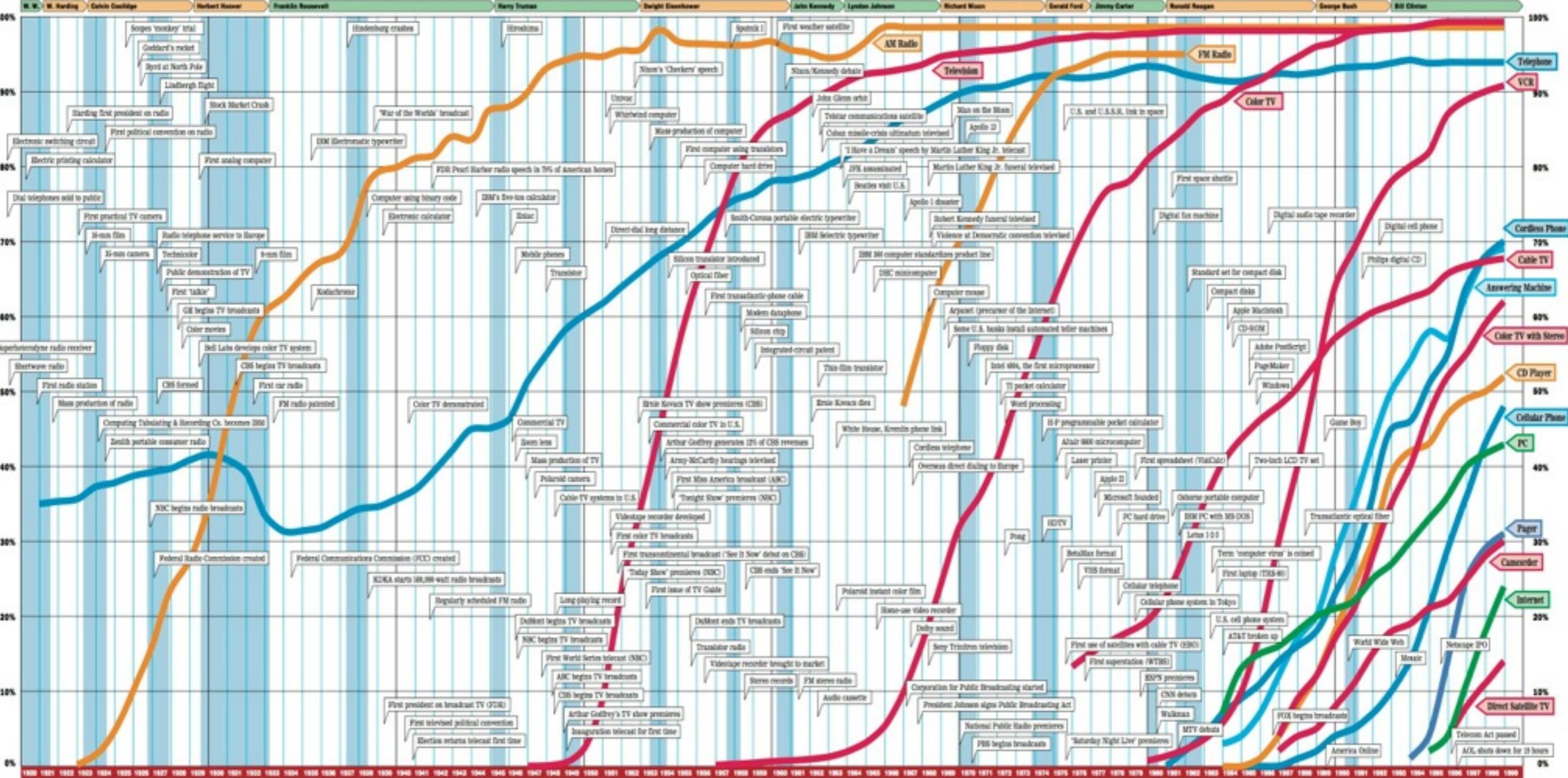
How to Read this Chart

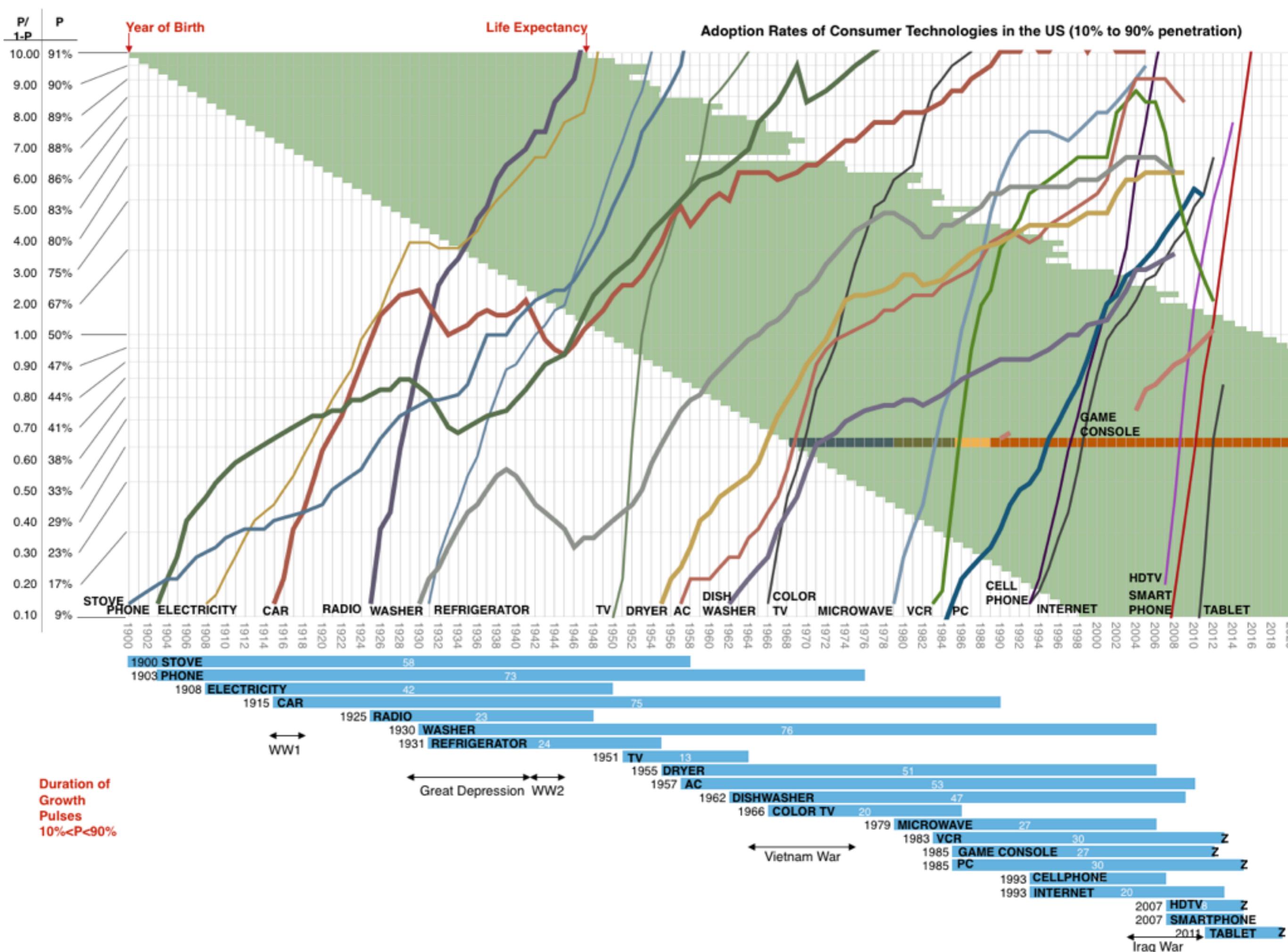
This chart shows the percentage of household penetration for consumer-electronics products in the U.S. from 1920 to 1998.

The colored lines represent the major product types. The red lines relate to television; the gold lines, radio; the blue lines, telephone; and the green lines, computers. Some lines aren't complete because the data for these products aren't available for early years of use.

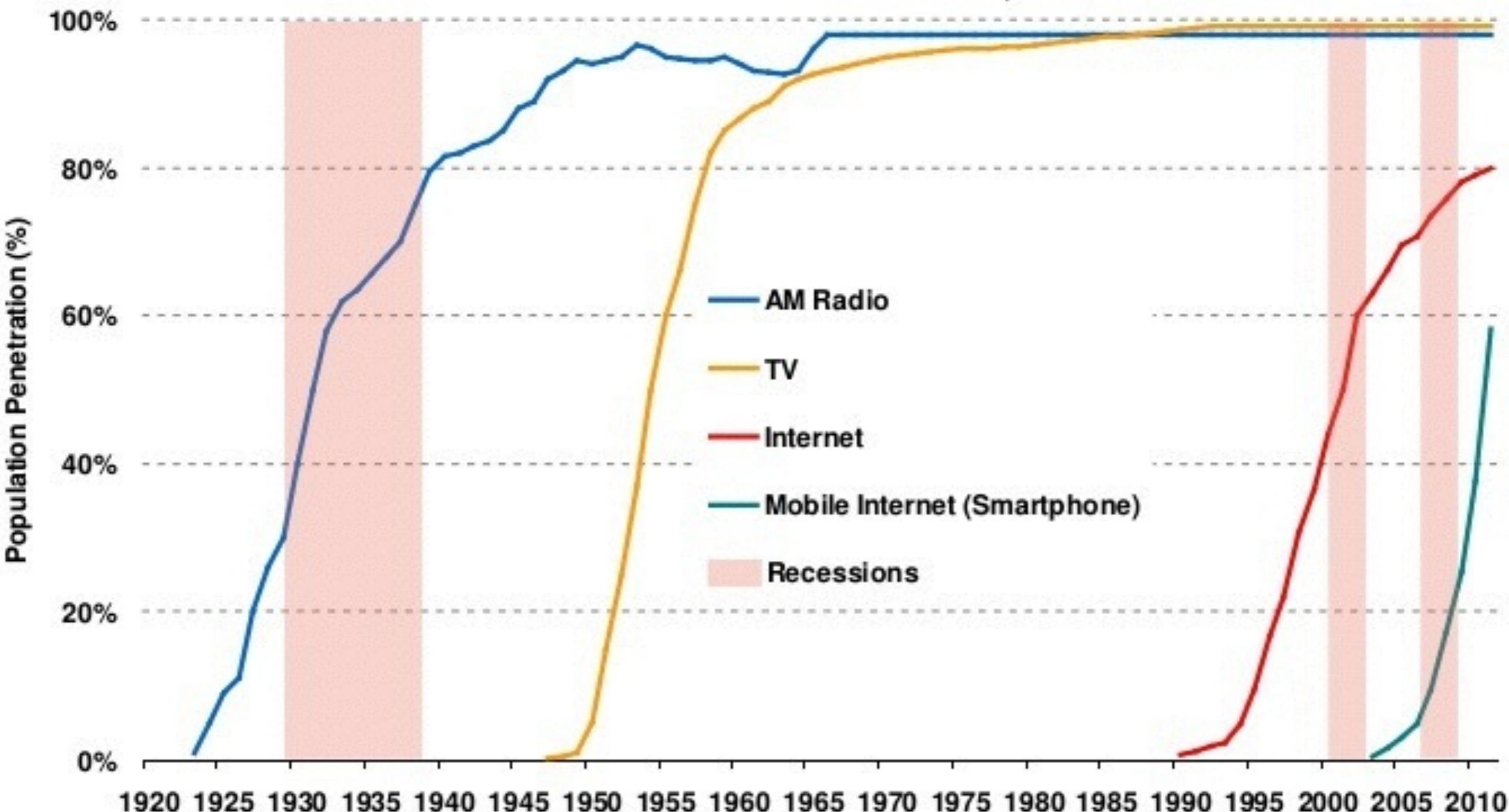
The light-blue vertical areas represent specific consumer-electronics products and services, and show their relationship to historical events.

This chart allows you to compare the popularity of these products over time. Notice the number of products introduced since the mid-1980s.





Technology Adoption (Measured by Population Penetration) in USA Radio vs. TV vs. Internet vs. Mobile Internet, 1920 – 2011E



Source: Radio penetration data per Broadcasting & Cable Yearbook 1996, Internet penetration data per World Bank / ITU, Mobile Internet (smartphone) data per Morgan Stanley Research; 3G data per Informa.

The internet's undersea world

The vast majority of the world's communications are not carried by satellites but an altogether older technology: cables under the earth's oceans. As a ship accidentally wipes out Asia's net access, this map shows how we rely on collections of wires of less than 10cm diameter to link us all together.

Fibre-optic submarine cable systems

In-service

Planned

Damaged

Each cable contains up to 12 pairs of optical fibers, each under contract for a minimum year until 2007.



Internet users affected by the Alexandria accident

The main countries affected in Wednesday's event

60m

India

12m

Pakistan

6m

Egypt

4.7m

Saudi Arabia

1.7m

UAE

0.8m

Kuwait

0.3m

Qatar

0.2m

Bahrain

Capacity in terabytes a second

Total capacity
7.1 tbps

Purchased capacity
5.7 tbps

Unused capacity
2.1 tbps

What makes up "used capacity"?

27% Private networks, owned by companies

72% Internet

1% Telecoms

The longest submarine cables

Submarine cable operators light (burn off) capacity on their systems to sell bandwidth to other carriers. Carriers buy extra capacity, mainly to hold in reserve. On the trans-Atlantic route 80% of the bandwidth is purchased, but only 25% is used

Seabulk-3 39,000 km

Southere Cross 30,500 km

Giga-05 20,476 km

FLAG Europe Asia 25,000 km

South America-3 25,000 km

The world's cables in bandwidth

The first intercontinental telephony submarine cable system, TAT-1, connected North America to Europe in 1958 and had an initial capacity of 640,000 bytes per second. Since then, total trans-Atlantic cable capacity has soared to over 2 trillion bps

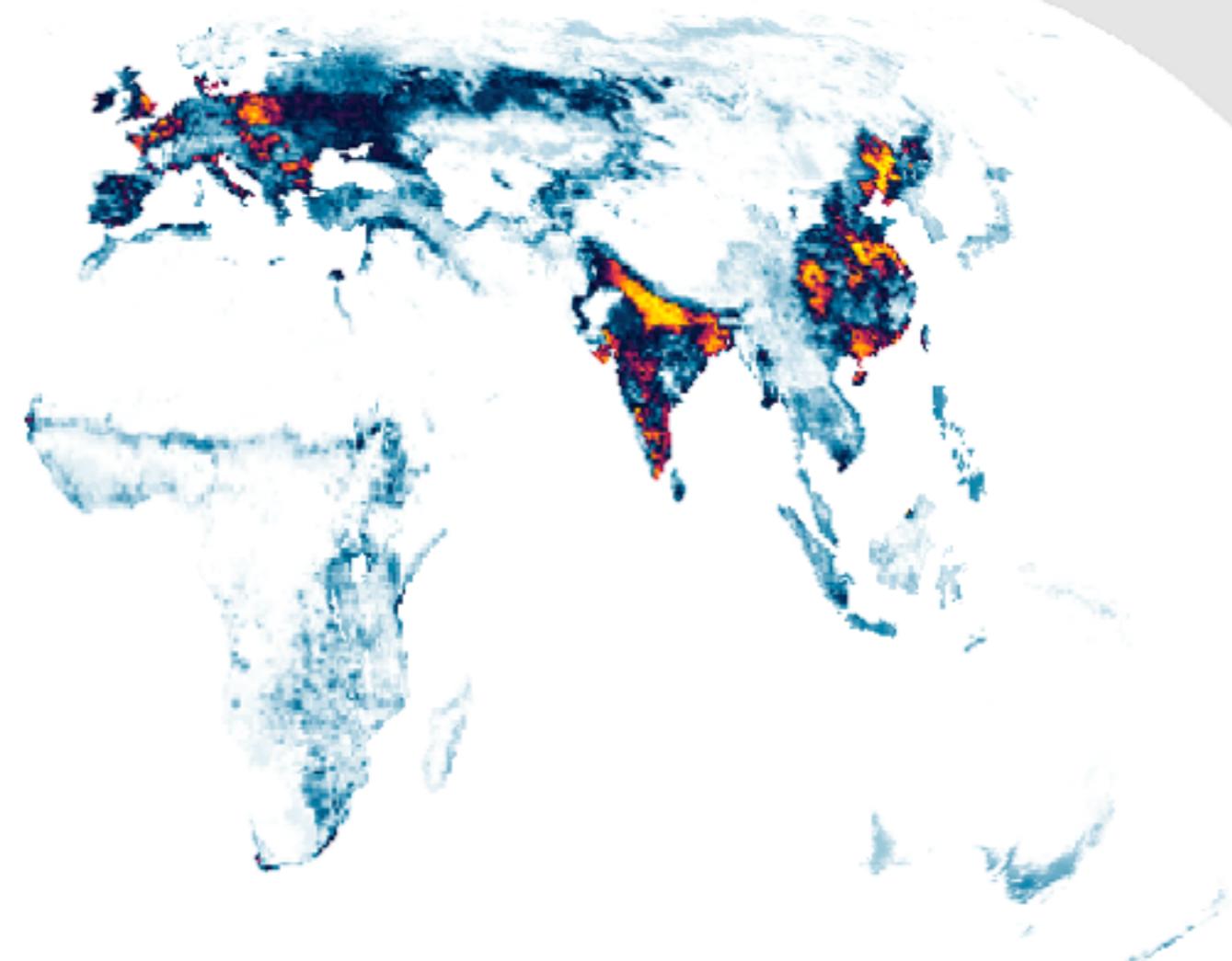
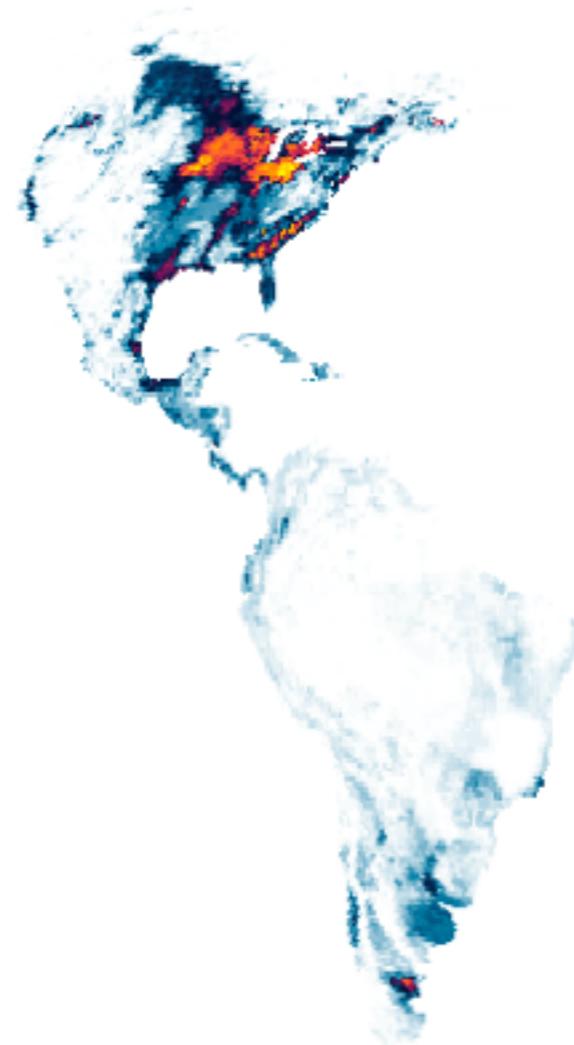


1700

1800

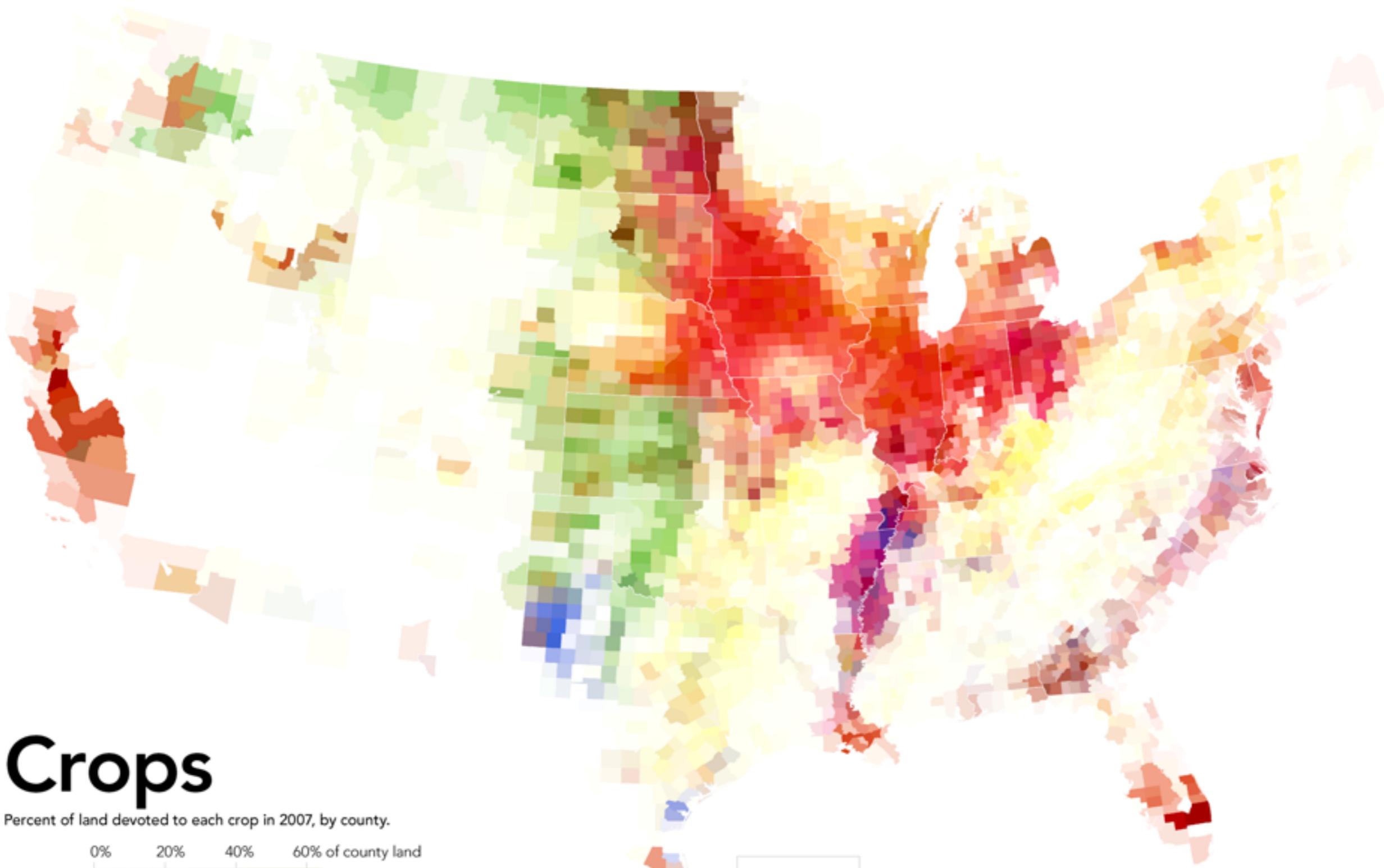
1900

2000



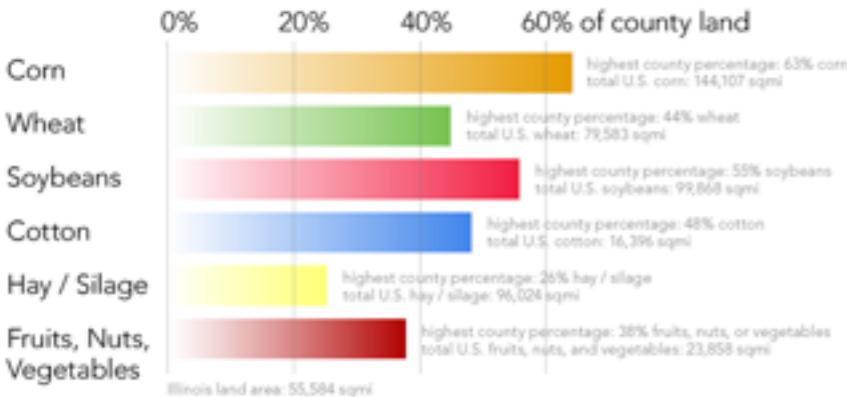
percent of land used for growing crops





Crops

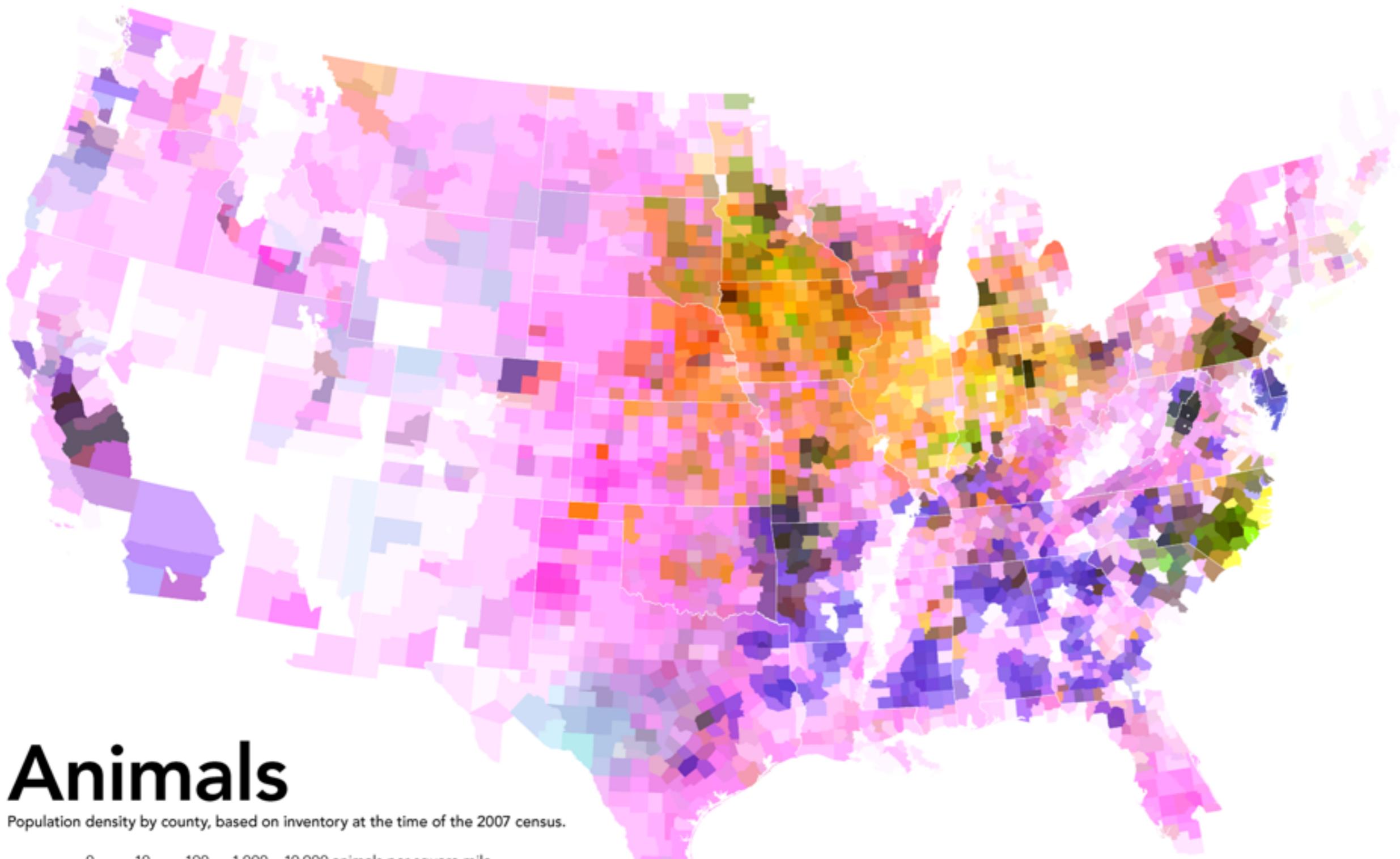
Percent of land devoted to each crop in 2007, by county.



All maps shown at the same scale using equal-area projections. Data from the 2007 U.S. Census of Agriculture. Map by Bill Rankin, 2009.

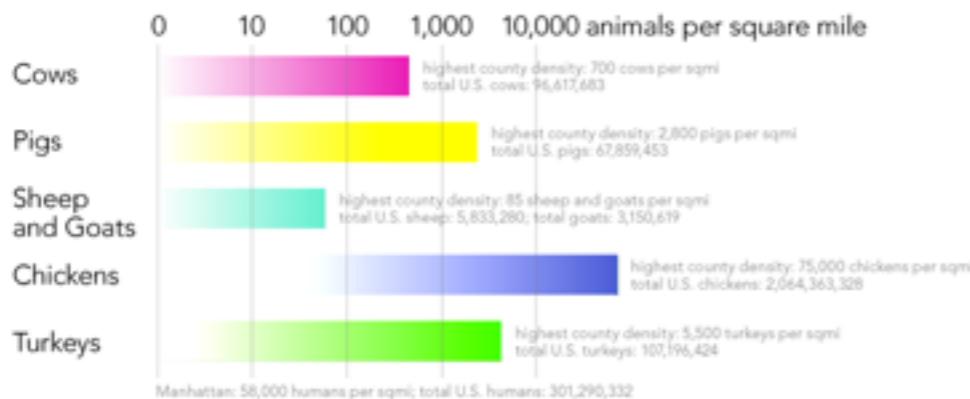
No cartographically meaningful agriculture in Alaska. Only inhabited islands shown.





Animals

Population density by county, based on inventory at the time of the 2007 census.



All maps shown at the same scale using equal-area projections. Data from the 2007 U.S. Census of Agriculture. Map by Bill Rankin, 2009.

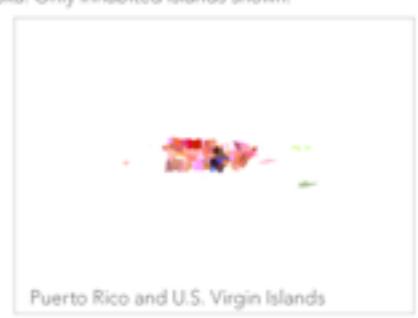


Guam and
Northern Mariana

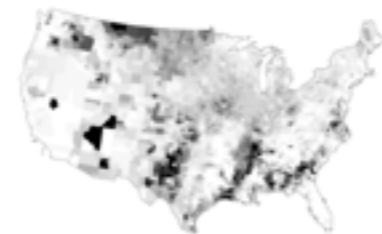
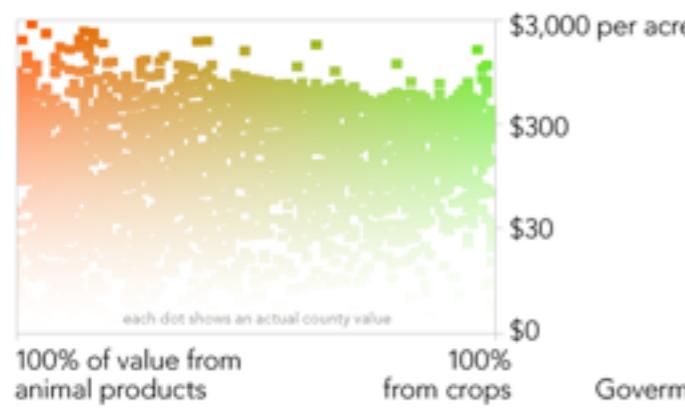
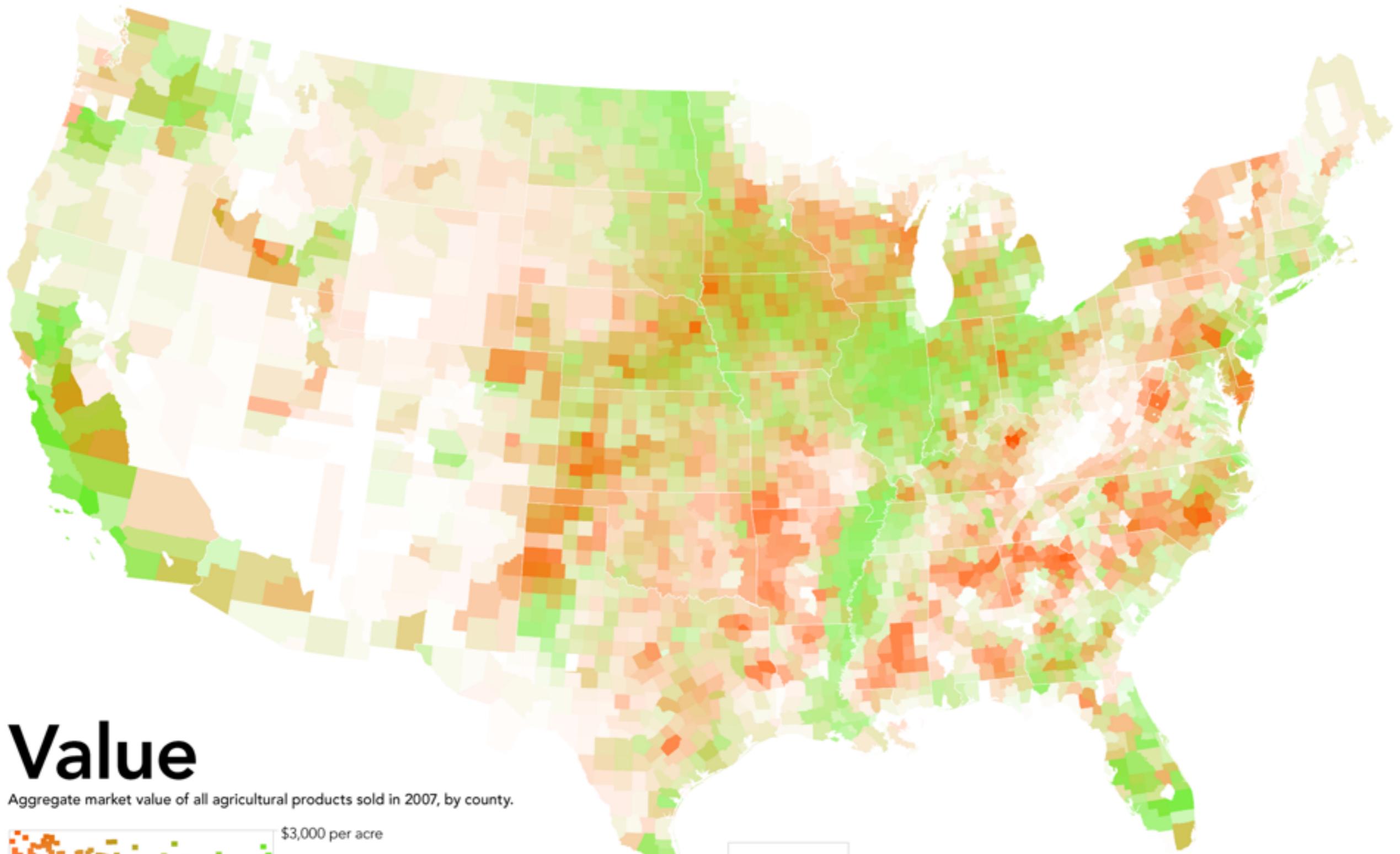


American Samoa 90

Hann



Puerto Rico and U.S. Virgin Islands



Guam and
Northern Marianas



American Samoa (2008)



No cartographically meaningful agriculture in Alaska. Only inhabited islands shown.



Hawaii

Puerto Rico and U.S. Virgin Islands

Hierarchy Through Scale & Transparency

STATES VISITED



AIRMILES TRAVELED

30,724

TRAVEL

AIRPORTS VISITED

8

NUMBER OF FLIGHTS

11

AVERAGE FLIGHT DISTANCE IN MILES

2793

LOCATION BY DAY



DAYS EXCLUSIVELY IN MANHATTAN

304

MOST CONSECUTIVE DAYS IN MANHATTAN

40

* GREATER NEW YORK STATE ** QUEENS

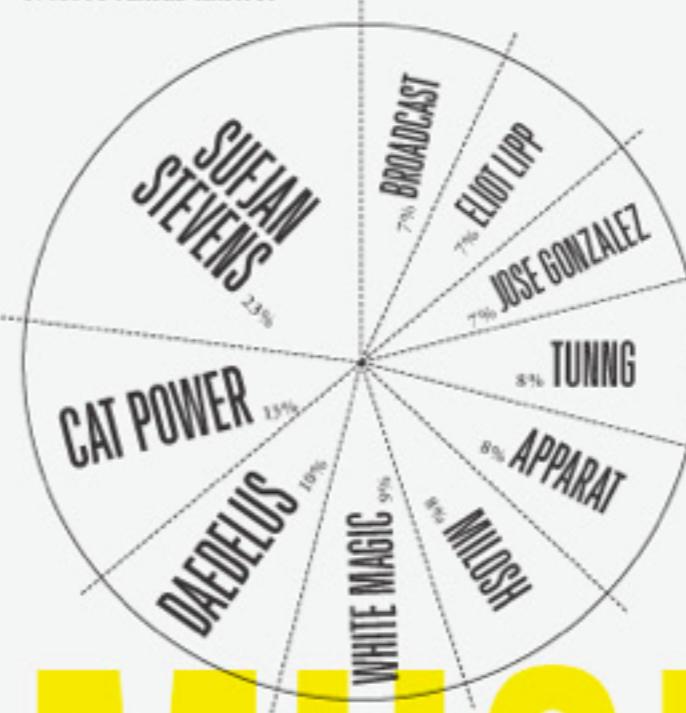
COUNTRIES VISITED



GERMAN AIRPORT EXPLORED

FRANKFURT

10 MOST PLAYED ARTISTS



iTUNES TRACKS PLAYED

26,059

WWW.LAST.FM/USER/FELTRON

BEST ALBUMS

WHITE MAGIC DAT ROSA MEL APIBUS

FLYING LOTUS 1983

THOM YORKE THE ERASER

BEST NEW ARTIST

BATTLES



DJ SETS PLAYED

49

MOST DJ-ED TRACK

52x

JAY-Z:
"DIRT OFF YOUR SHOULDER"
(ACAPELLA)

CONCERTS ATTENDED

4

ELIOT LIPP AT APT
STEINSKI AT CAPONE'S
THE BOOKS AT NORTH 6TH
DAEDELUS AT APT

BEST LIVE PERFORMANCE

DAEDELUS

5 MOST PLAYED MIXES

COSMO BAKER: LEMON-RED FEB 06 WWW.LEMON-RED.ORG 19 PLAYS

THE TAPE: MIXTAPE PART 2 WWW.THETAPE.DE 16 PLAYS

DJ RAEQ: APRIL 2006 WWW.RAEQ.NET 15 PLAYS

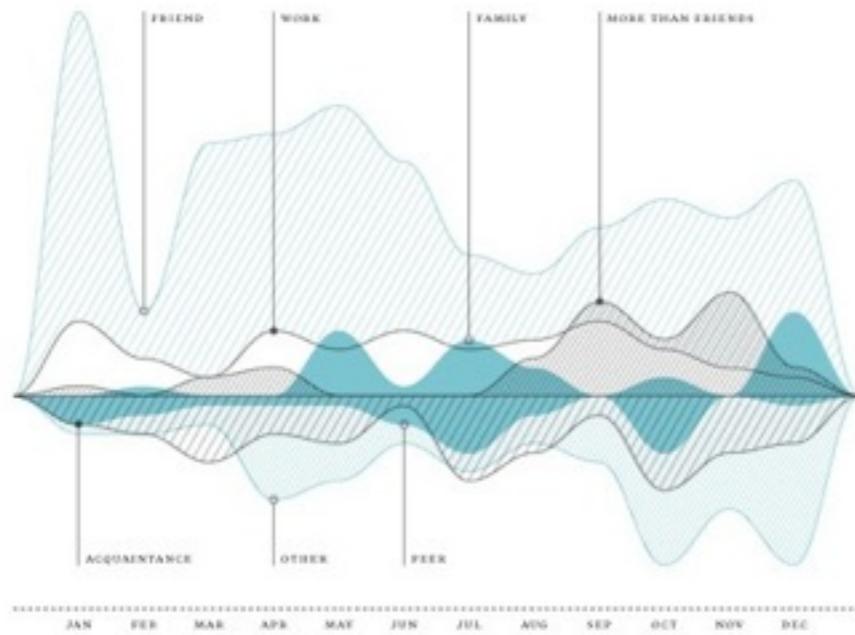
ELIOT LIPP'S ELECTRONIC BEATS PODCAST WWW.HEFTY.COM 8 PLAYS

TAKE: PRESS ENTER WWW.INNERNCURRENT.COM 7 PLAYS

Relationships

Reporting on the reporters.

FIGURE 3. RELATIONSHIPS REPORTED



SHORTEST RELATIONSHIP

5 Mins
ERIC, MAY 15

LONGEST RELATIONSHIP

Forever
ELIE, JAN 7

AVERAGE RELATIONSHIP DURATION

About 3 Years
3 YEARS, 3 MONTHS AND 22 DAYS

MOST COMMON RELATIONSHIP

Friend
234 REPORTS

STUDENT TO TEACHER RATIO

3:1
6 STUDENTS, 1 TEACHER AND
1 DANCING INSTRUCTOR

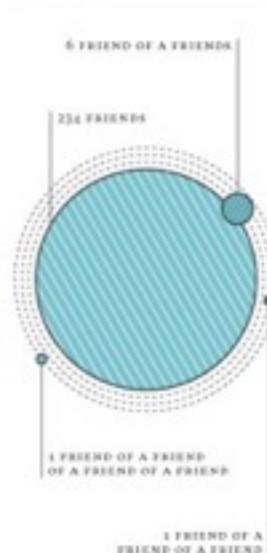
DISTINCT RELATIONSHIPS

179

NO RELATIONSHIP REPORTED

Eight

FIGURE 4. DEGREES OF FRIENDSHIP



QUESTION 1. WHAT IS YOUR
RELATIONSHIP TO NICOLAS?

Friend / esteemed colleague.
RYAN C., JANUARY 32

Internet buddy.
NOAH, FEBRUARY 18

Golf master.
WARREN, MAY 10

Drinking buddy.
HANK, JUNE 12

Double-digit sociability.
OGGA, SEPTEMBER 17

Ex-wife.
NICK R., OCTOBER 21

Statistic.
KEVIN L., DECEMBER 21

Dentist.
JOHN B., DECEMBER 23

QUESTION 2. HOW LONG
HAVE YOU KNOWN NICOLAS?

A year, come February 22.
ELISE, JANUARY 26

Since Summer 2004.
MARGARET, FEBRUARY 9

*17 days at the time
of recording.*
IAN A., MARCH 14

About three hours
AGE JULY 170, APRIL 2

5 years, my whole life.
JULIAN, APRIL 12

Sixty-four days.
JESSICA B., APRIL 19

Since birth.
CAROL, MAY 15

*Since I was a teenager?
Could that be?*
MARINA, SEPTEMBER 1

Years... I'm bad with time.
MELISSA, NOVEMBER 20

Activities

The length and habits of an encounter.

FIGURE 5. AVERAGE LENGTH OF AN ENCOUNTER

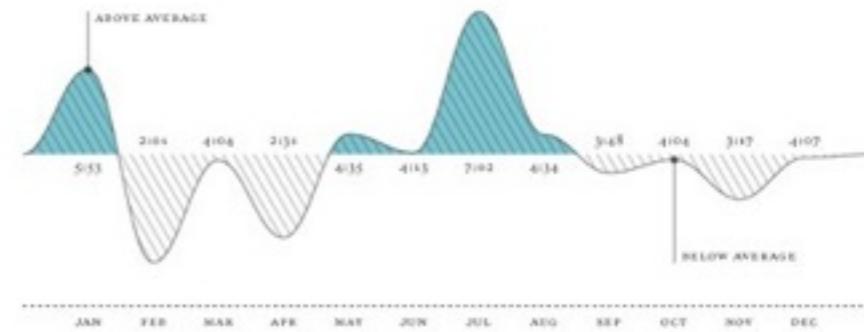
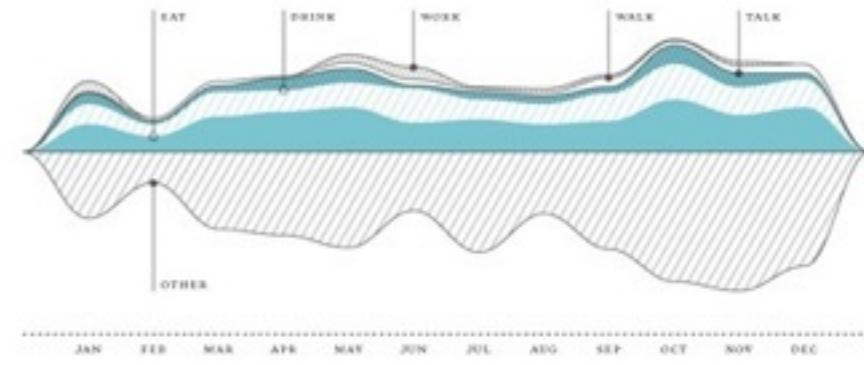


FIGURE 6. FREQUENTLY REPORTED ACTIVITIES



QUESTION 3.
APPROXIMATELY HOW LONG
WAS YOUR ENCOUNTER?

A total of about 60 minutes.
LOKI, JANUARY 3

10:00-11:00pm on 03/26/09.
RUKI, MARCH 26

900 seconds.
CHRISTOPHER F., APRIL 2

*3 hours (they always seem
to be 3 hours!).*
BONNIE, JUNE 19

*Personal - 7 mins;
Impersonal - 35 mins.*
ANDREW K., AUGUST 19

7 hours 30 minutes.
MARINA F., DECEMBER 24

QUESTION 4.
WHAT ACTIVITIES DID YOU AND
NICOLAS PARTICIPATE IN?

Drinking, in a social sense.
KEE, JANUARY 7

*A walk to the peak, riding
roller coasters at Ocean
Park, browsing for books.*
DANIELLE, JANUARY 18

*Conversation,
light computer use.*
NICK S., MARCH 31

Chomp chomp chomp,
GORDON, MAY 18

*Ate crab, drank, watched
fireworks, got ice cream.*
AARON L., JULY 10

Reviewing work.
MIKE A., AUGUST 12

Waiting for a plane.
GIDEON, OCTOBER 25

*Studio tour/
business meeting.*
WILLY, NOVEMBER 23

Three Months

99 DAYS, 6 HOURS AND 17 MINUTES

AVERAGE ENCOUNTER LENGTH

Four Hours

4 HOURS, 15 MINUTES AND 13 SECONDS

USING TO DANCING RATIO

5:4

AVERAGE ACTIVITIES PER ENCOUNTER

2.3

Dinner

105 REPORTS

MOST ACTIVITIES IN A MONTH

157

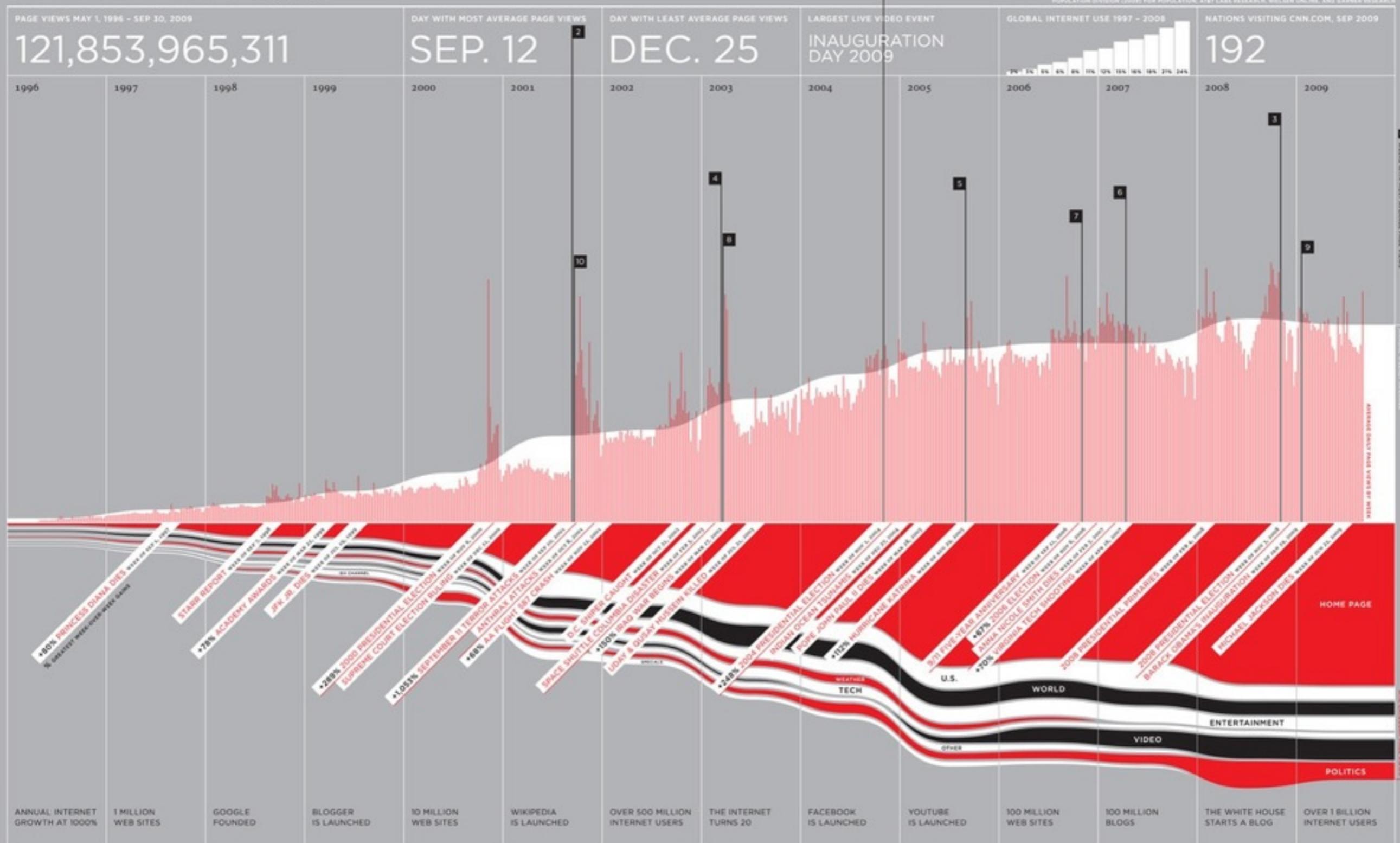
OCTOBER

INSTANCES OF LAUGHTER

14

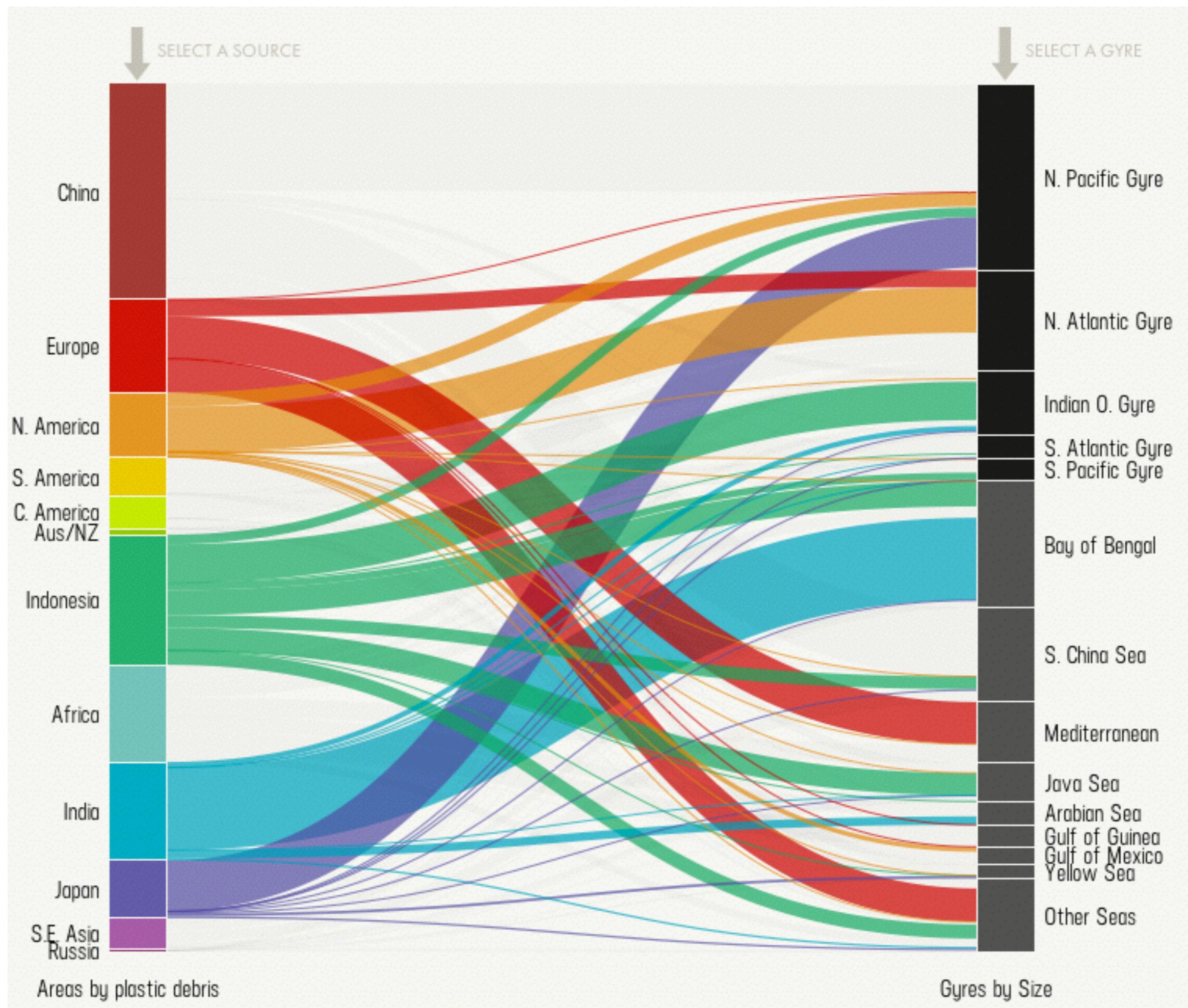
CNN.COM

LAUNCHED AUGUST 30, 1995



Strive for truth not beauty



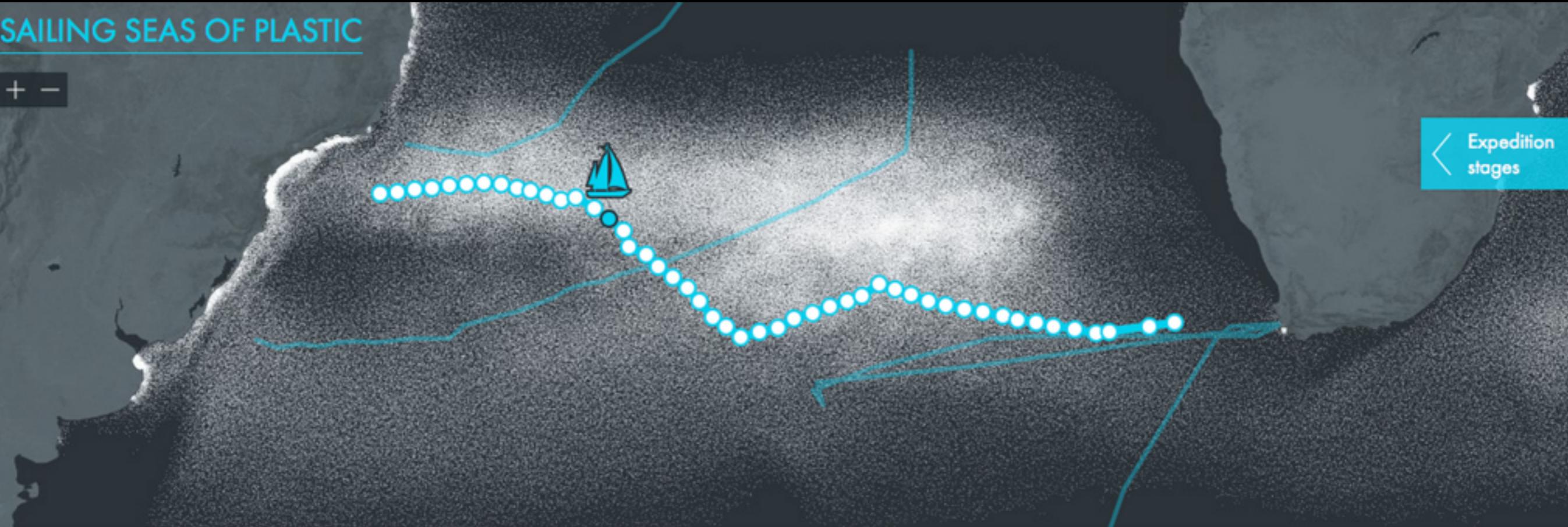


SAILING SEAS OF PLASTIC

+

-

Expedition stages



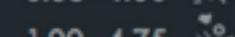
EXPEDITION

5 Gyres - Eriksen M. | 2010(b)

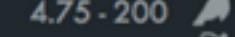
48 Locations



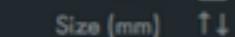
0.33 - 1.00



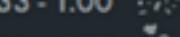
1.00 - 4.75



4.75 - 200



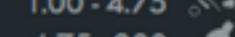
> 200



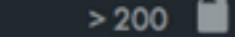
Size (mm)

↑↓

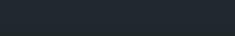
0.33 - 1.00



1.00 - 4.75



4.75 - 200



> 200



19/11/2010 | 27.88° S, 25.90° W

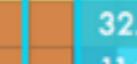


0.22

32.01

11.03

no data

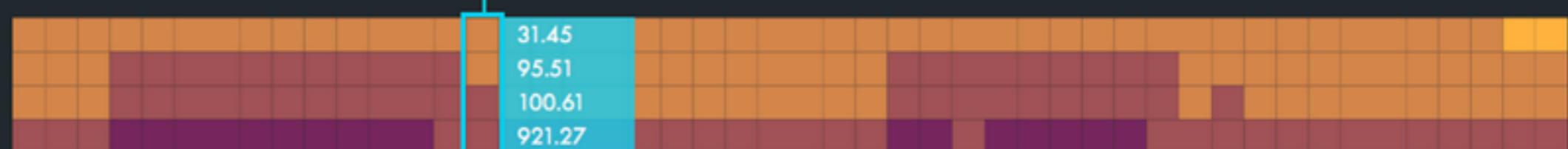


31.45

95.51

100.61

921.27



x Hide Model Estimates

Weight Density (g/km²) 0 | 0.22 | 32.01 | 11.03 | 31.45 | 95.51 | 100.61 | 921.27 | > 1,000 | No data

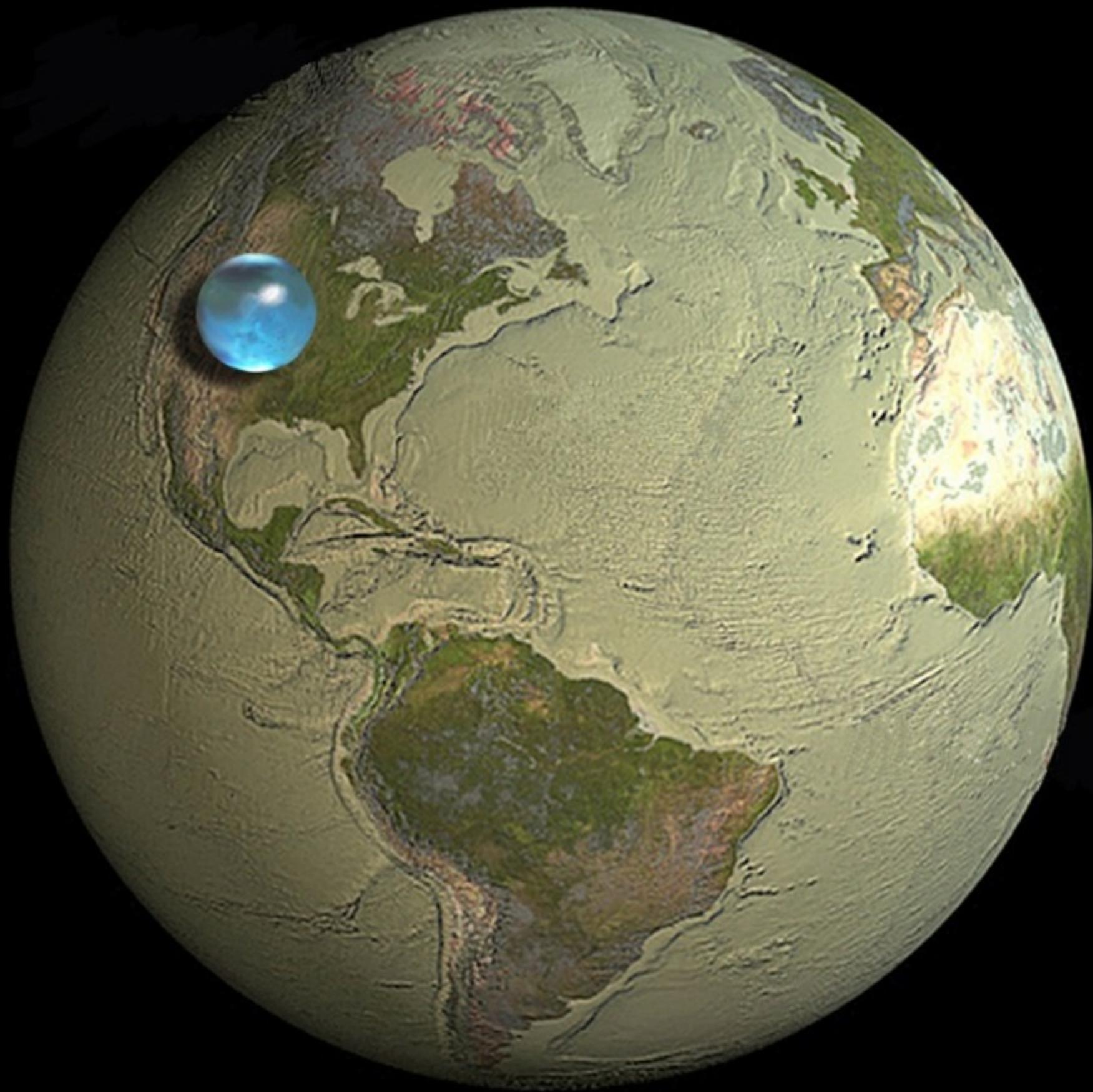
[LEARN MORE](#)

Credits

a data visualisation by dumpark



<http://app.dumpark.com/seas-of-plastic-2/>



Vantage Point

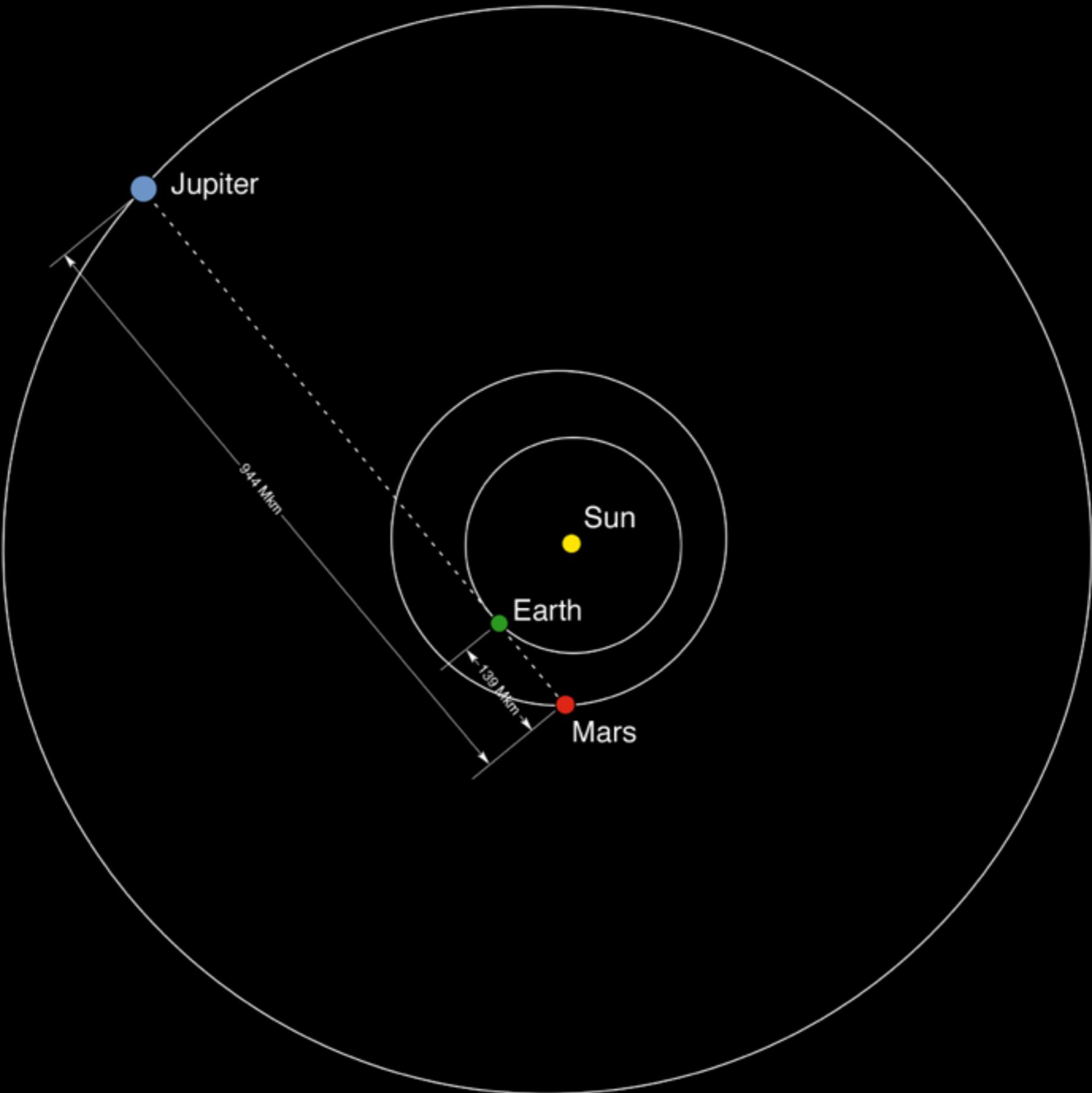




Image Courtesy of NASA



Earth

moon



Earth & Moon

Every human that has ever lived is *here*

you are here



<http://www.distancetomars.com/>

Point of View

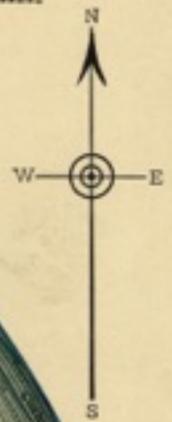
Map showing the
GREAT COAL FIELDS, NATURAL GAS FIELDS,
STEAM AND ELECTRIC RAILROADS
and all important
CITIES, TOWNS, VILLAGES AND STREAMS

Territory to
COLUMBUS

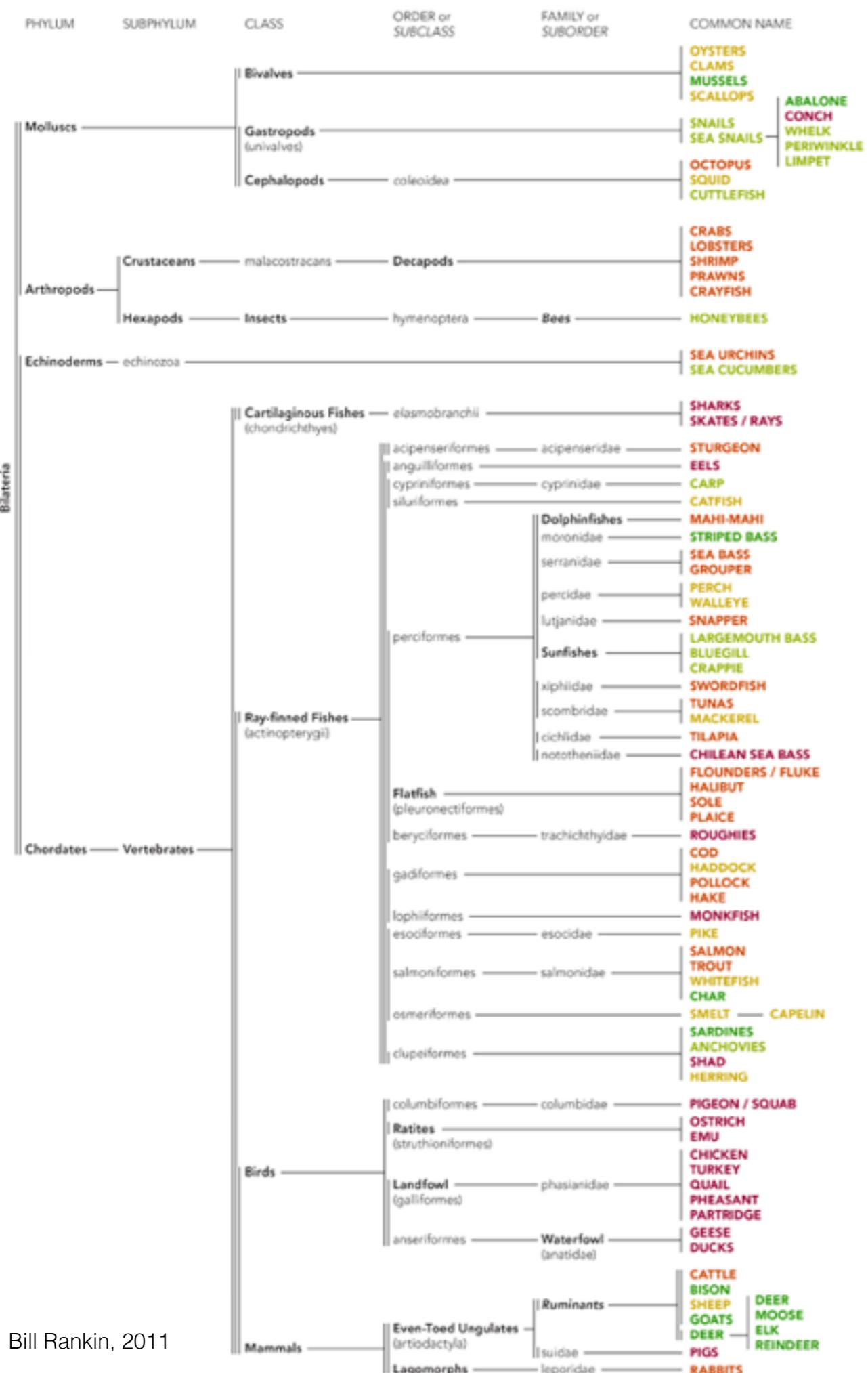
within a radius of 70 Miles.

This Area includes a
Population of 1,300,000.

Steam Railroads are indicated thus: —
Electric Railroads = - - - -



G
4081
C6H9
1902
M3



Ethically Eating Animals?

sustainable seafood ratings
from Monterey Bay Aquarium:
(not all rated fish included here)

ALWAYS OK
NEVER BAD
SOMETIMES BAD
ALWAYS BAD

other recommendations:
GENERALLY OK

poultry and livestock welfare:
NO CAGE FARMS
FEW CAGE FARMS
MANY CAGE FARMS
MOSTLY CAGE FARMS

(reptile and other exotic meat is
rarely farmed sustainably)

Area or circle proportional.
Scale .5339 to the square inch.

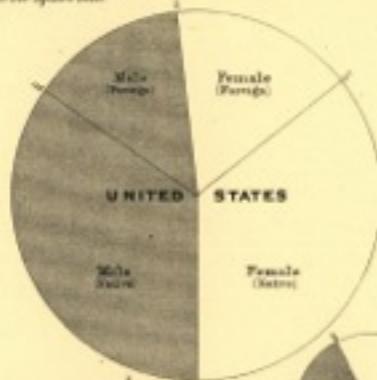
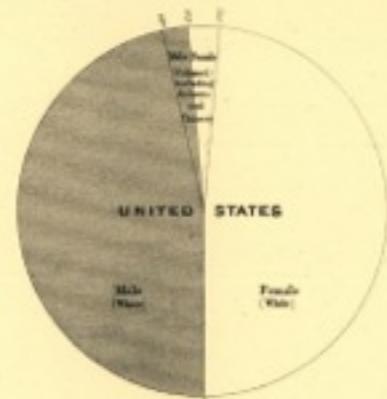
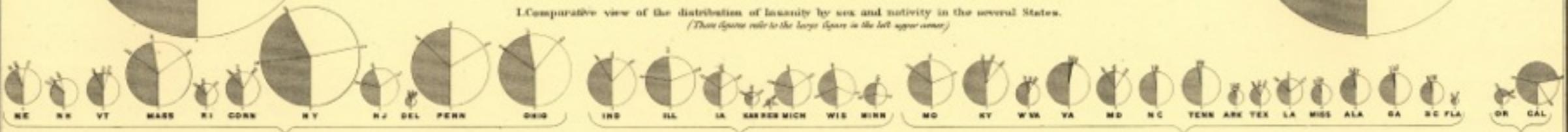


CHART
SHOWING THE AGGREGATE NUMBER OF THE
INSANE
AND THE PROPORTION OF MALES AND FEMALES,
WHITE OR COLORED, NATIVE OR FOREIGN,
AT THE SIXTH CENSUS 1870,
also the increase since 1860.
PREPARED FOR THE STATISTICAL ATLAS OF THE UNITED STATES
by FRED H. WINES Secy Illinois State Board of Charities.

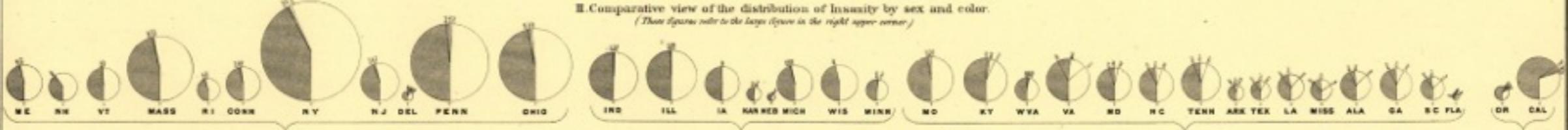


I. Comparative view of the distribution of Insanity by sex and nativity in the several States.
(These figures refer to the large figure in the left upper corner.)



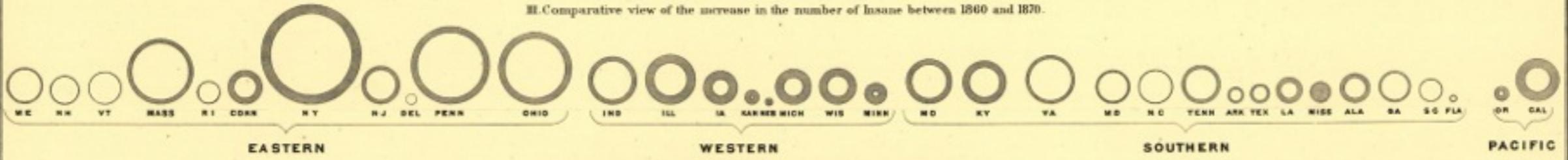
J. Opposite first radius from left to left diameter degrees in sector for Native Males; that opposite second radius to left, the sum of the degrees in the two sectors for Males, Native and Foreign, that opposite first radius to right, degrees in sector for Native Females.

II. Comparative view of the distribution of Insanity by sex and color.
(These figures refer to the large figure in the right upper corner.)



K. Opposite first radius from 2nd to left diameter degrees in sector for White Males; that opposite second radius to left, the sum of the degrees in the two sectors for Males, White and Colored, that opposite first radius to right, degrees in sector for White Females.

III. Comparative view of the increase in the number of Insane between 1860 and 1870.



L. Inner circle represents numbers reported at 1860, outer circle, numbers at 1870, the shaded ring, the increase in the interval. In Mississippi the number reported at 1860 exceeds the number at 1870, in this case the inner circle represents 1860, and is shaded, the outer circle represents 1870, and the ring is left unshaded.

Make it Human

