



STORYTELLING

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Value of storytelling

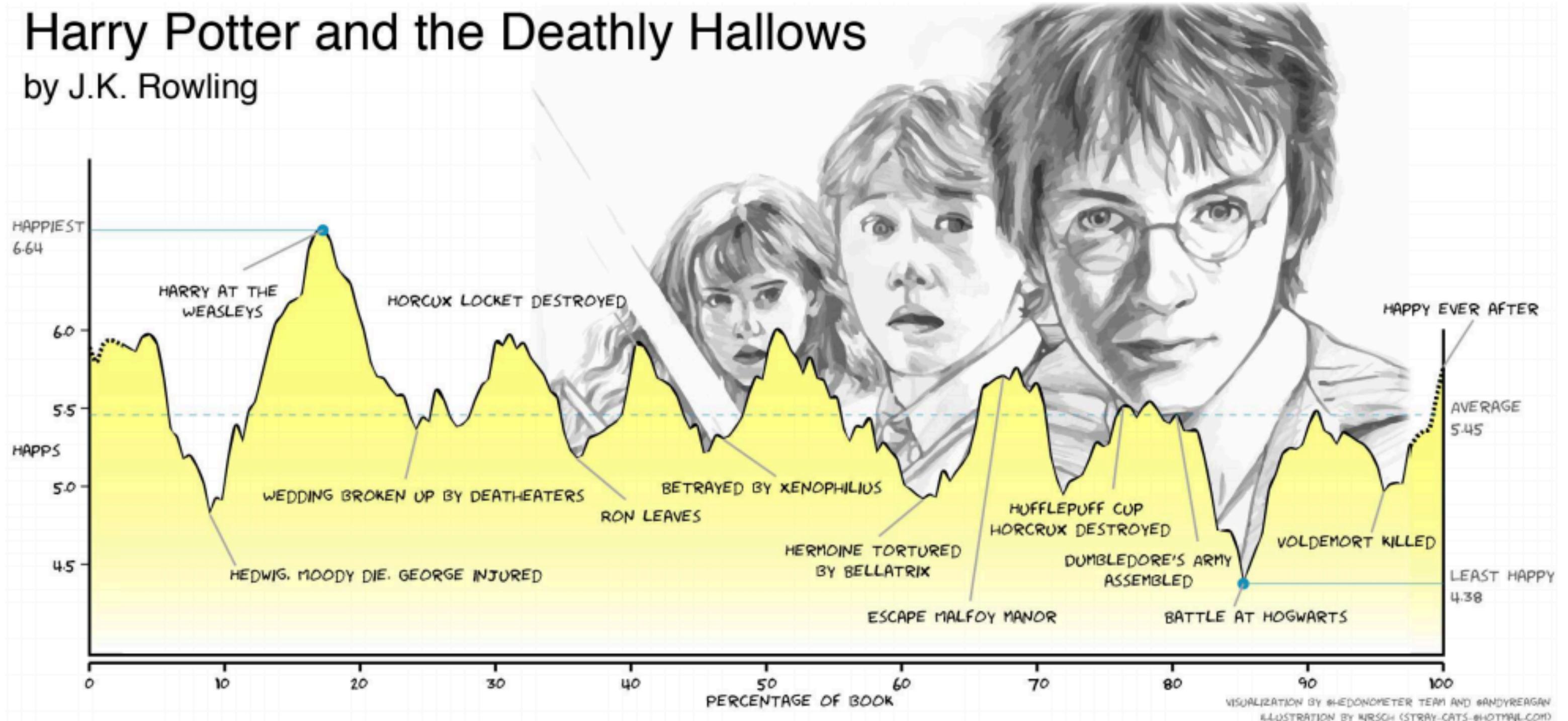
In a data viz, storytelling helps to:

- Explore
- Discover
- Develop cognition / extract value



Why stories?

- Stories are emotional
- Stories are memorable
- Stories are impactful



[Reagan et al.]

Narrative

- The art of narrating, or of telling a story
- Different narrative structures are used depending on the medium
- The most common structure in literature follow a modified version of Freytag's pyramid





Jamie Foxx on Playing Mike Tyson

Story with data?

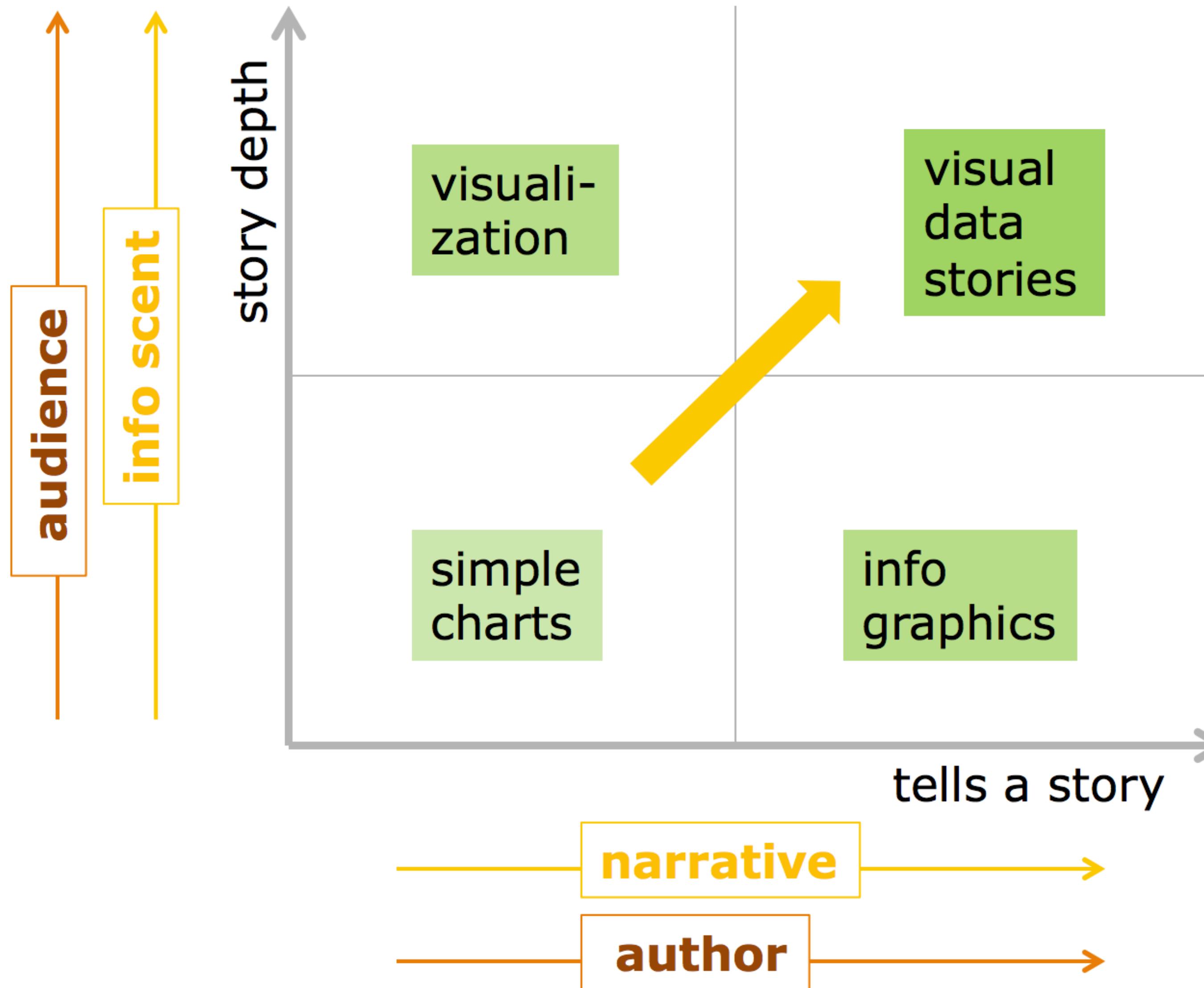
In essence, a story is built on a ordered sequence of steps

text, images, visualizations, video

Our goal is to define the different paths through the steps

not necessarily linear!

Visual data stories



[Mendiratta 2014]

Two main approaches

Journalist model

Collect information (research, interviews, photos, etc.) on the subject to assemble key facts

Link together the key facts to produce a story

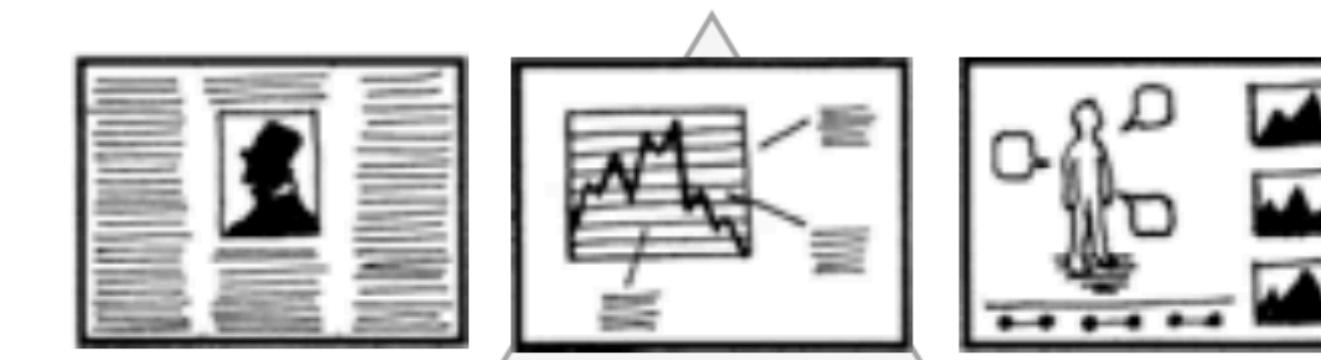
Data scientist model

Exploration and analysis via visualization

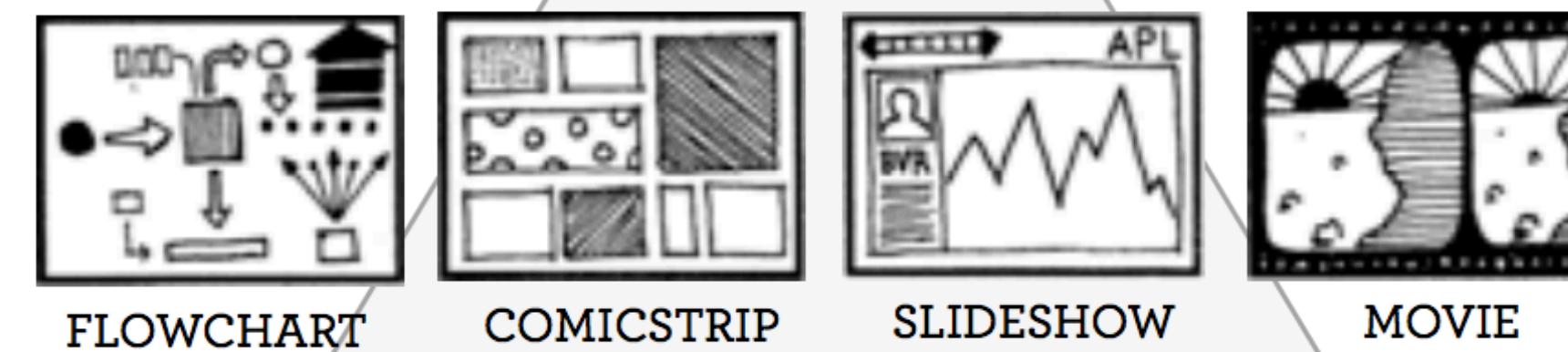
Storytelling via visualization using the results of the analysis

Narrative Visualization: Telling Stories with Data

Visual Design



MAGAZINE
STYLE ANNOTATED
CHART SCIENCE FAIR
POSTER



FLOWCHART COMICSTRIP SLIDESHOW MOVIE



Messaging

Interactivity

[Segel, Heer 2010]

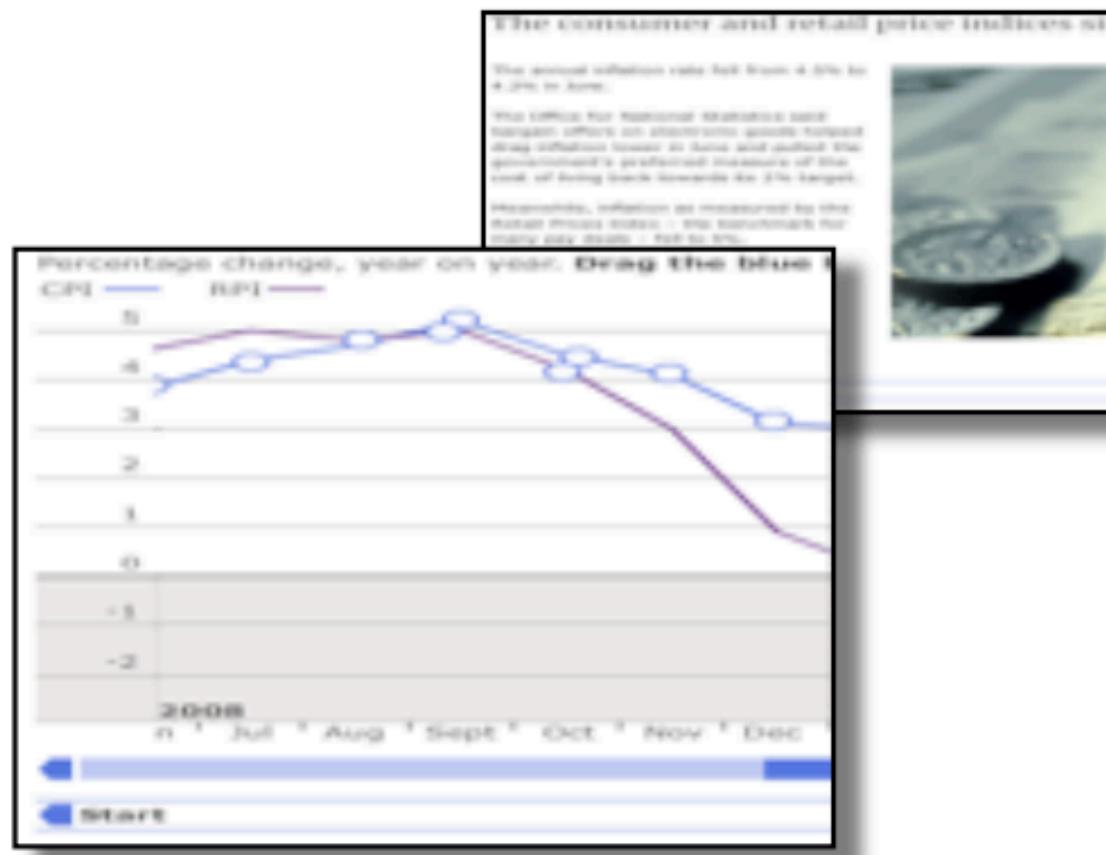
Design space

STORYTELLING
CLARITY
SPEED

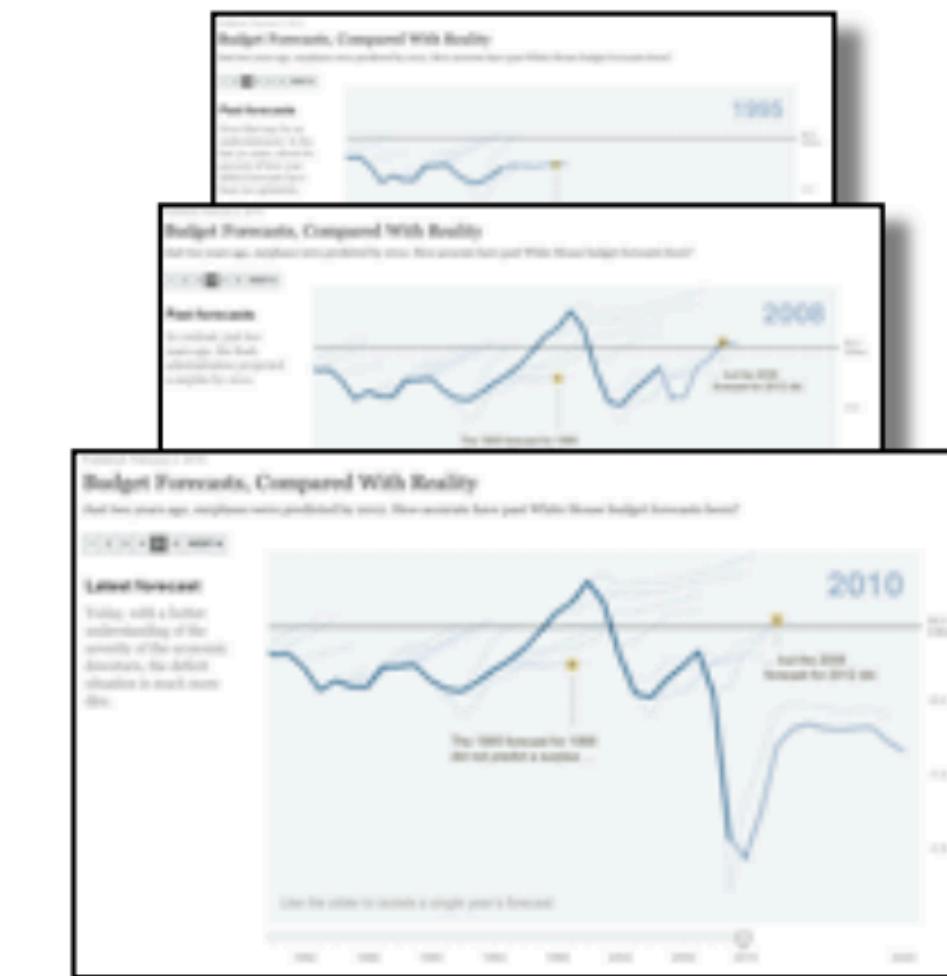
Author Driven
strong ordering
heavy messaging
limited interactivity

Reader Driven
weak ordering
light messaging
free interactivity

ASK QUESTIONS
EXPLORE
FIND



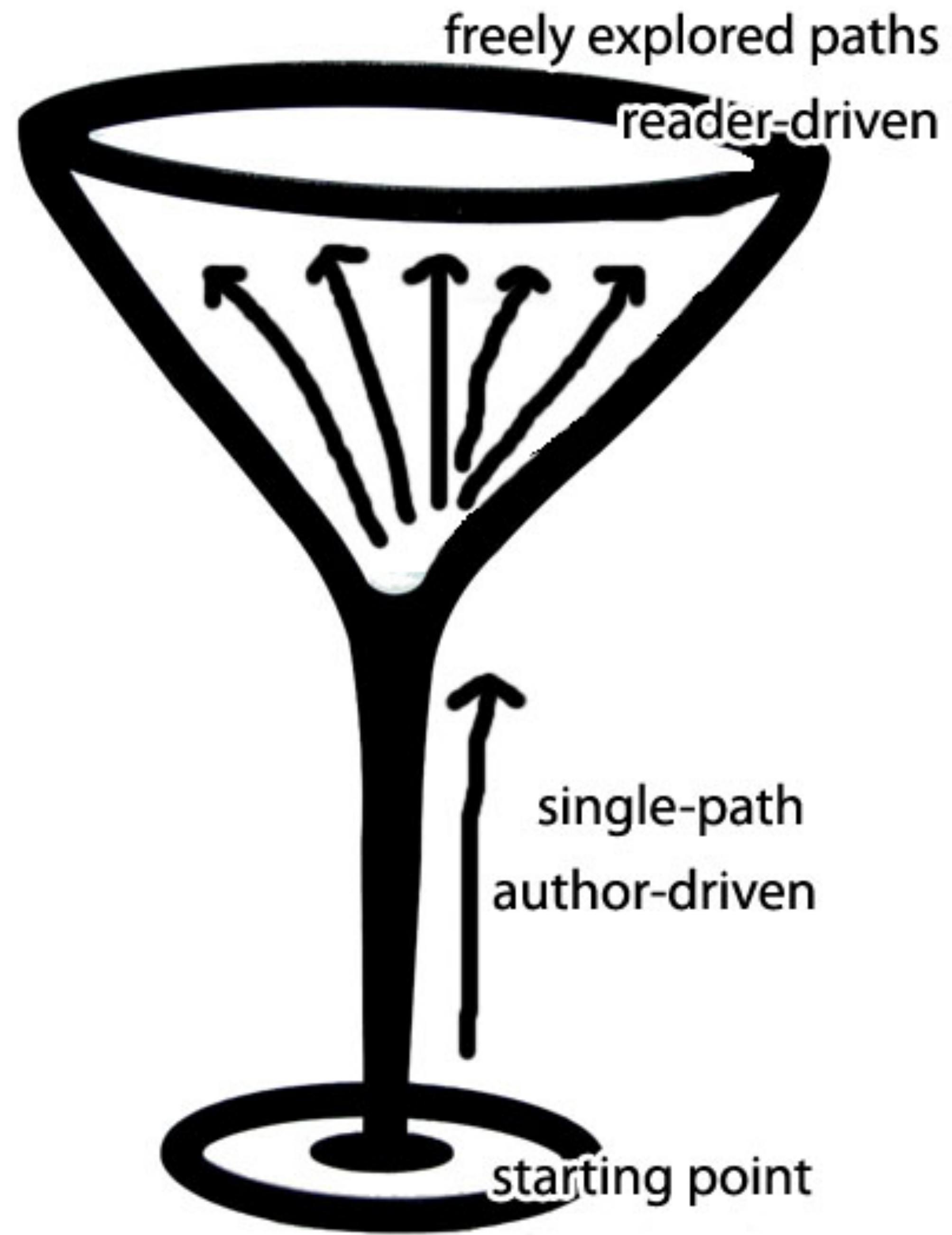
martini
glass



interactive
slideshow

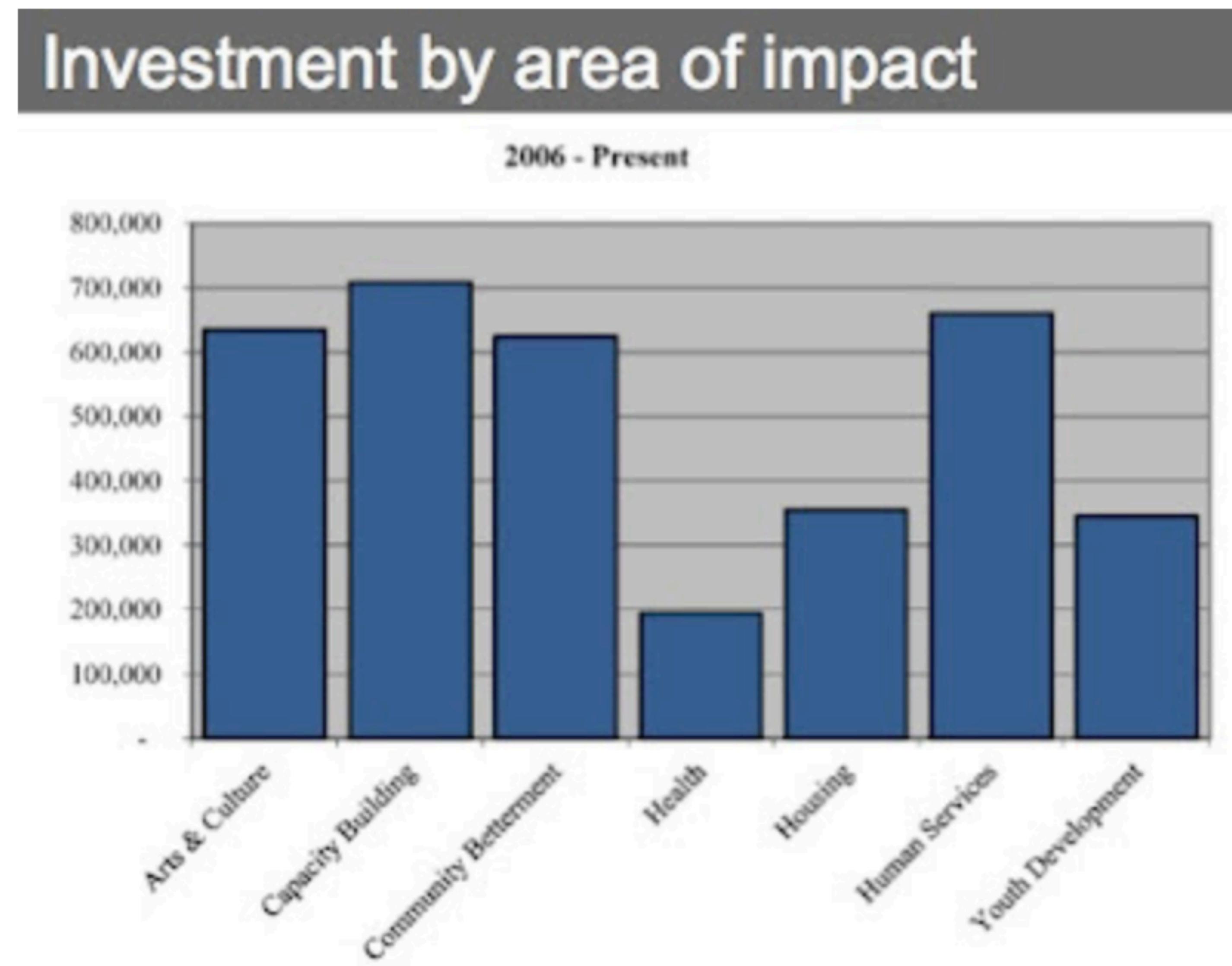


drill-down
story



Add structure!

Compare this



to this?

We invest primarily in four areas

Since we began investing in 2006, **four areas have received more than \$600K each, accounting for 75% of total grantmaking activity**

Investment by Area of Impact

2006 - Present

Dollars in '000s



Replaced the descriptive title with an active one

Added insights with text (using the preattentive attributes of bold & color to draw your attention to the important part)

Ordered the data from greatest to least

Labeled the x-axis (what was the y-axis in the original version) to make it unquestionable what you're looking at.

Eliminated unnecessary clutter

Reduced the width (or height, now that we've flipped it on its side) of the bars.

Used color strategically

A good story is structured

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.

Hank Aaron
755 home runs
23 seasons



Babe Ruth
714 home runs
22 seasons



Barry Bonds
708 home runs
20 seasons



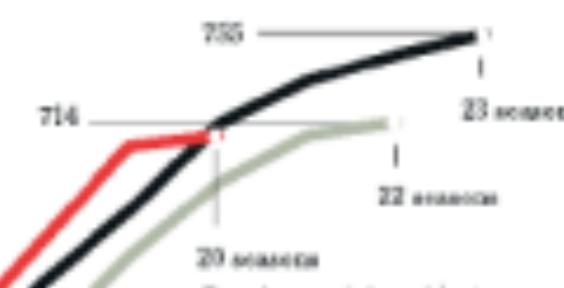
Bonds takes lead
Home runs
after 16 seasons
Bonds 587
Aaron 554
Ruth 516



14th 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.

Note: Ages as of July 1 of each season.



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 42.6 for next four seasons.

Bonds

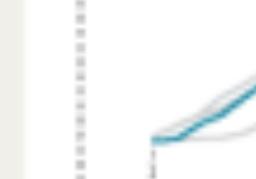
From age 35 to 39, he averaged 14 more homers a season than projected.



Others Taking Aim

Alex Rodriguez

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



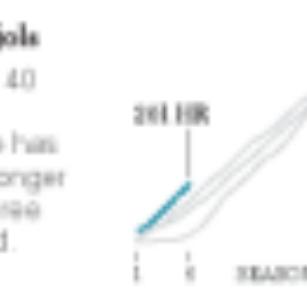
Aaron, Ruth and Bonds

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.



Albert Pujols



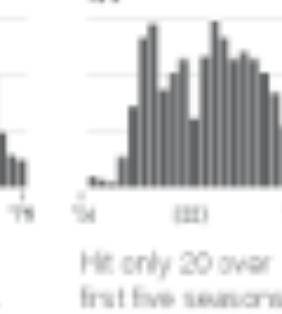
Differing Paths to the Top of the Charts

The top seven players on the career home run list, along with a look at Griffey (12th), Rodriguez (37th) and Pujols (1ed 257th).

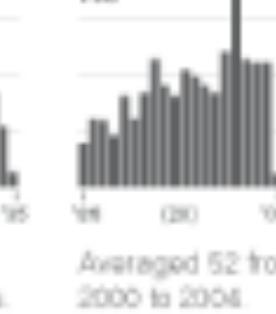
Hank Aaron



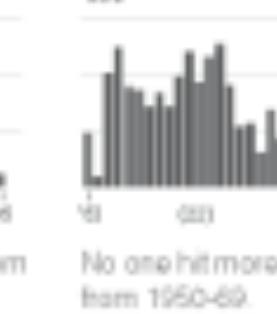
Babe Ruth



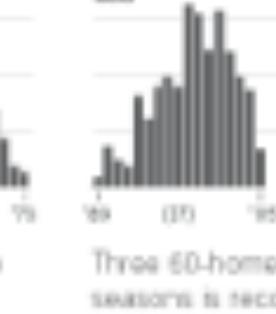
Barry Bonds



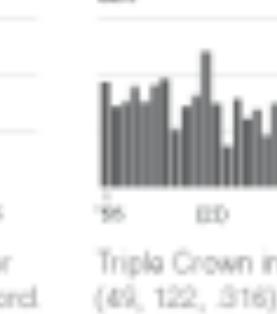
Willie Mays



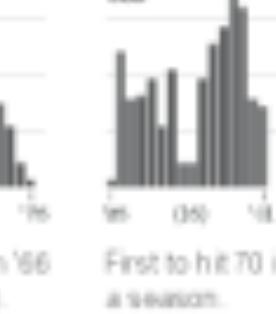
Sammy Sosa



Frank Robinson



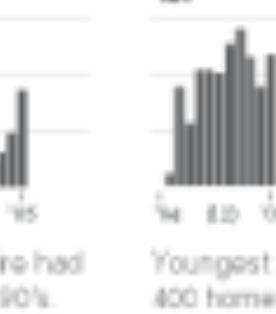
Mark McGwire



Ken Griffey Jr.

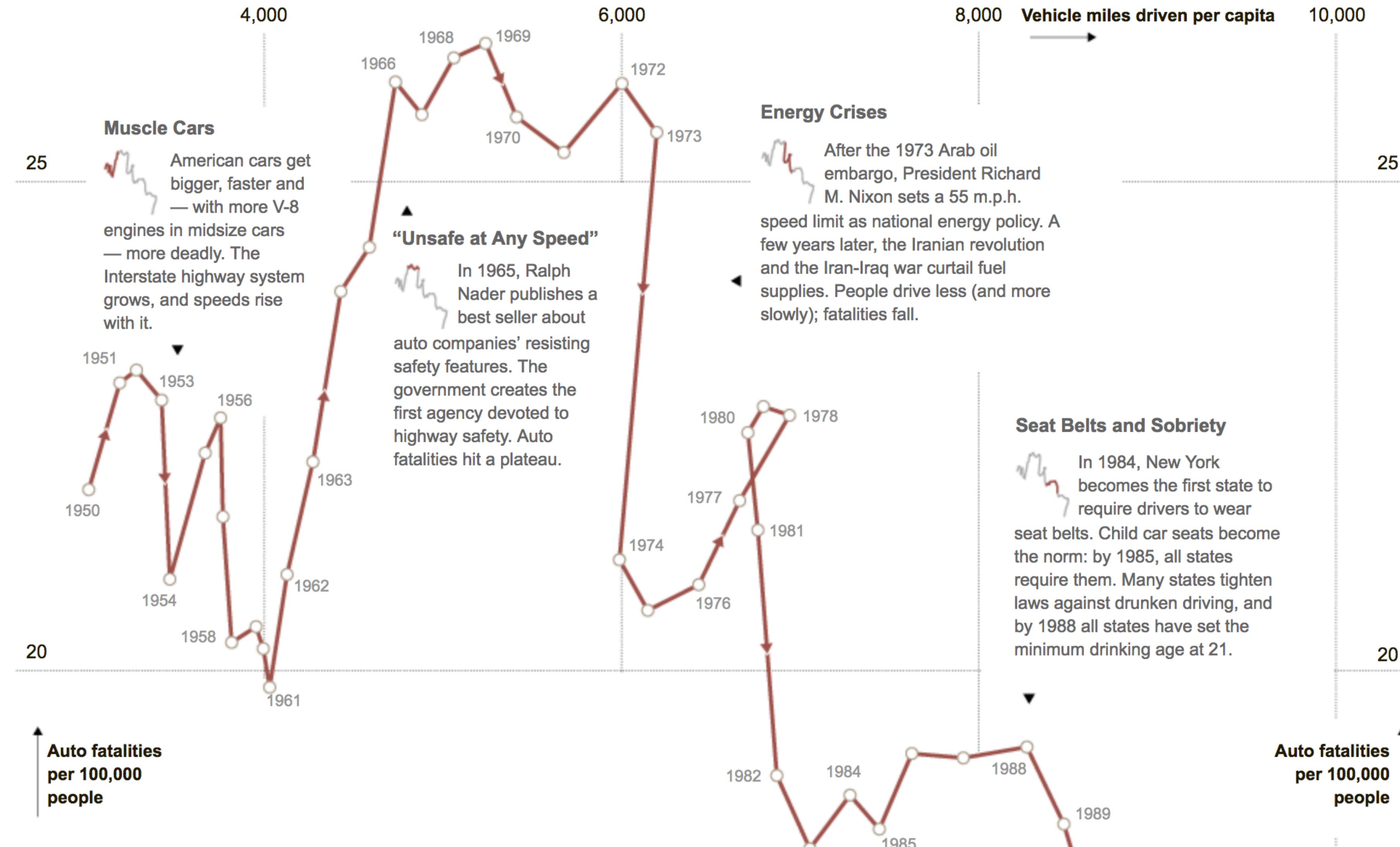


Alex Rodriguez

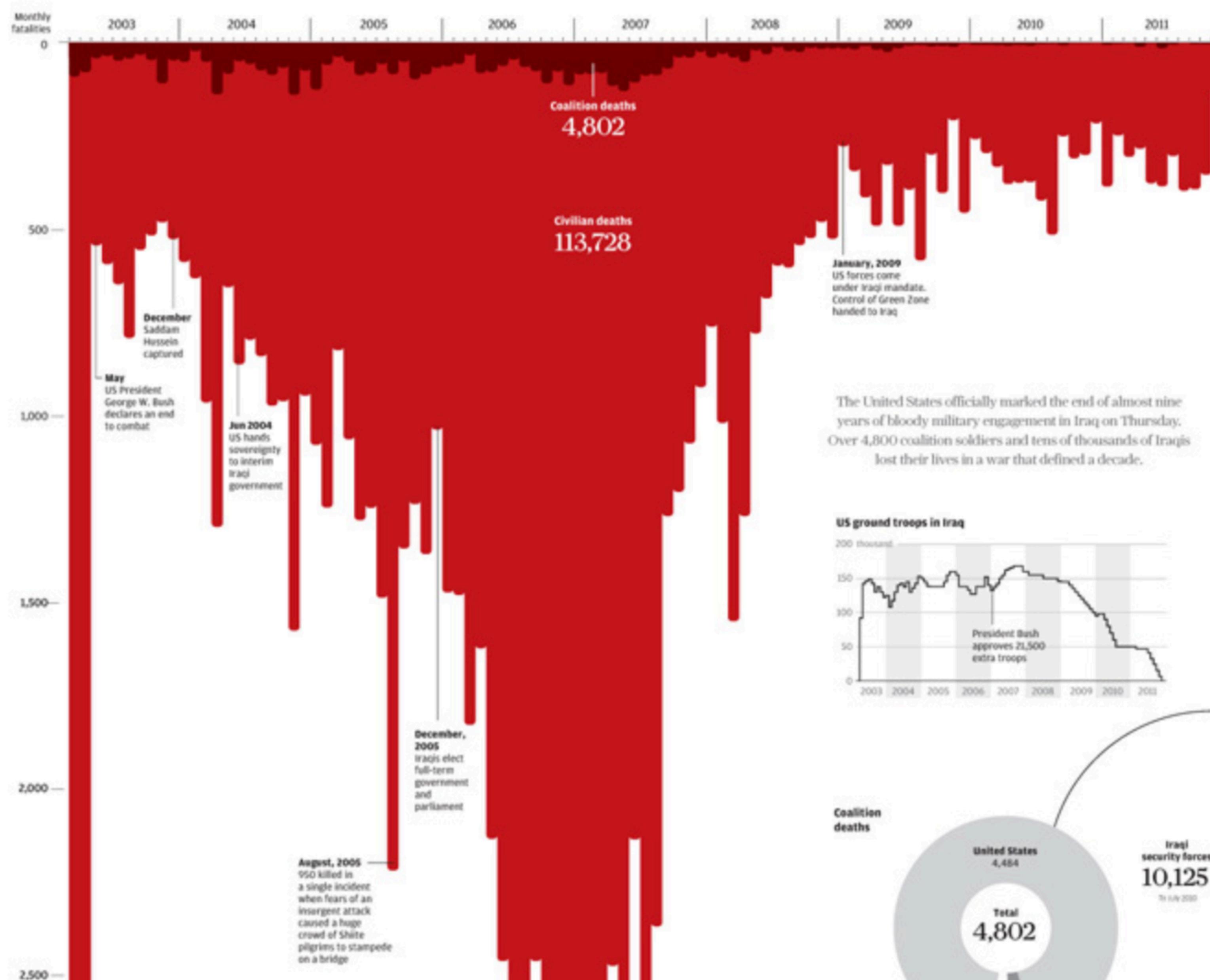


Albert Pujols

Connected scatterplot



Iraq's bloody toll

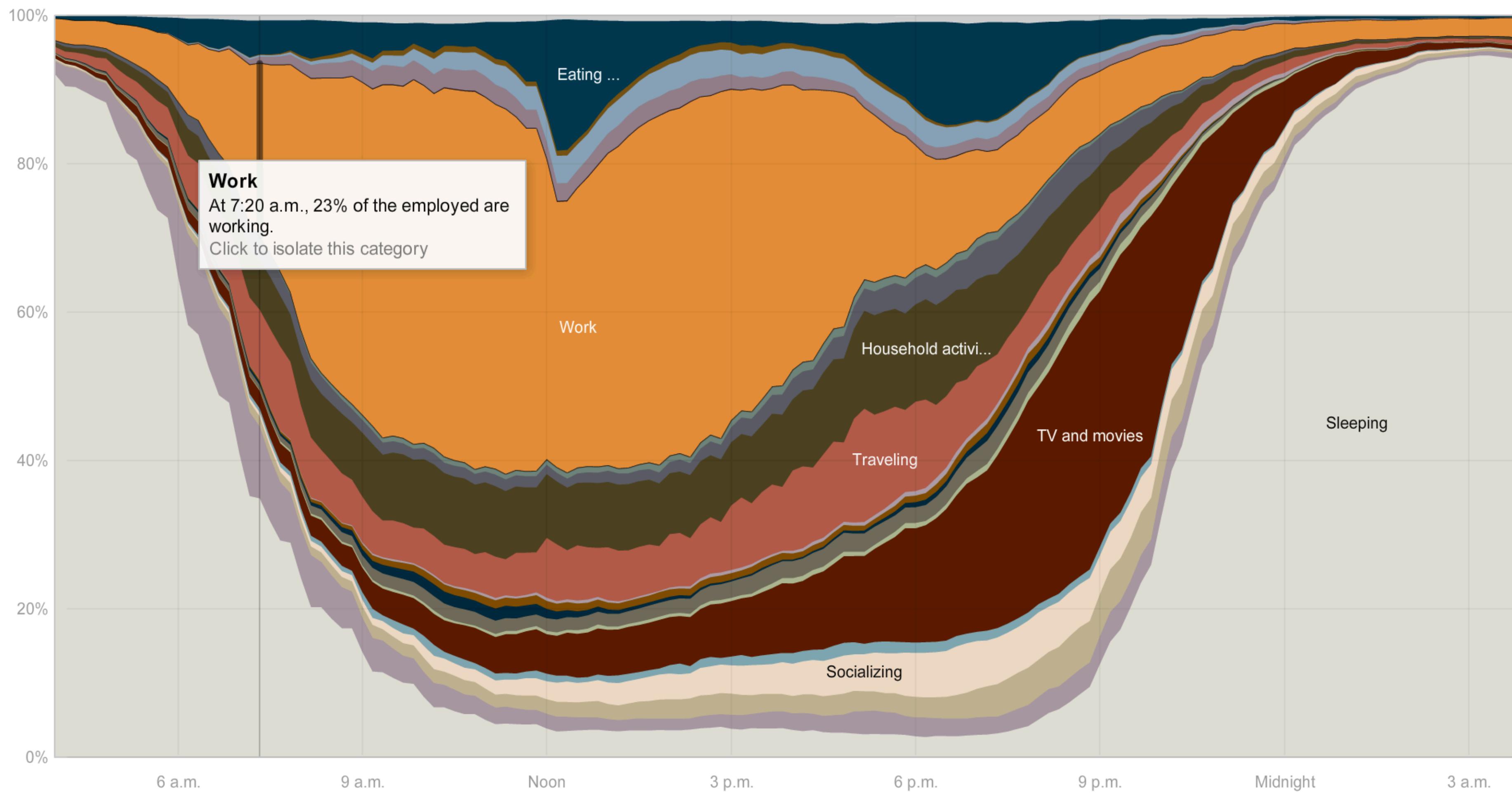


How Different Groups Spend Their Day?

The employed

At 6 a.m., about 60 percent of employed people are sleeping, compared with more than 80 percent of those who are unemployed.

Everyone	Employed	White	Age 15-24	H.S. grads	No children
Men	Unemployed	Black	Age 25-64	Bachelor's	One child
Women	Not in lab...	Hispanic	Age 65+	Advanced	Two+ children



Focus attention

Drones strikes

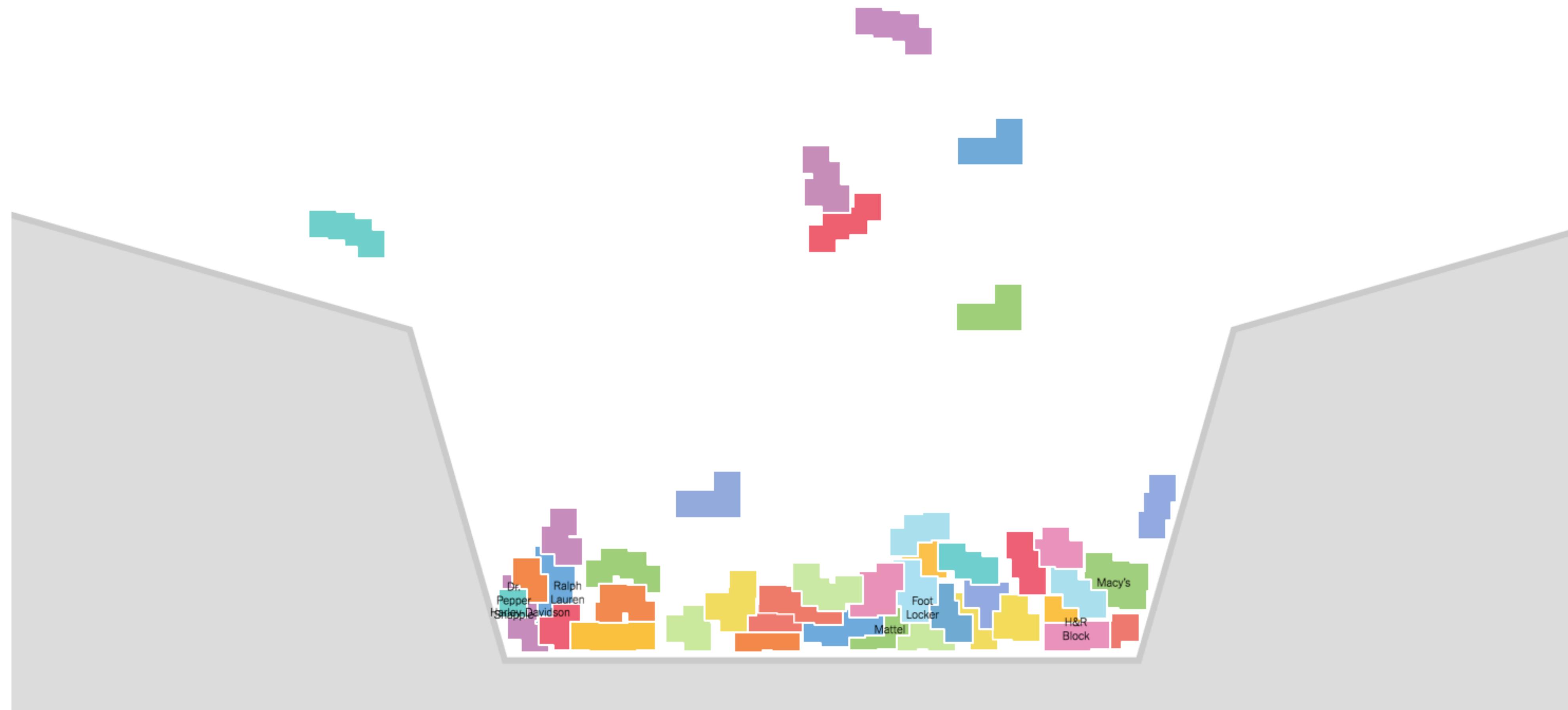




« SKIP

\$0319 Billion

Now let's add 108 of the other smallest S.&P. 500 companies.



Gapminder

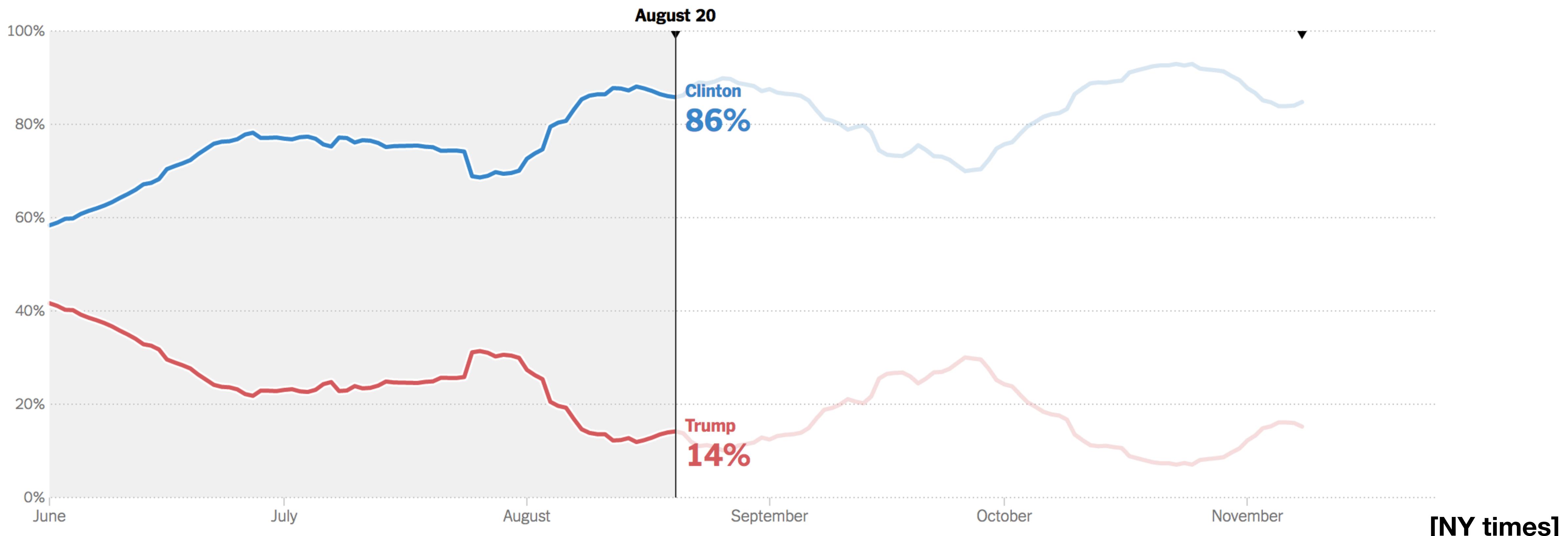


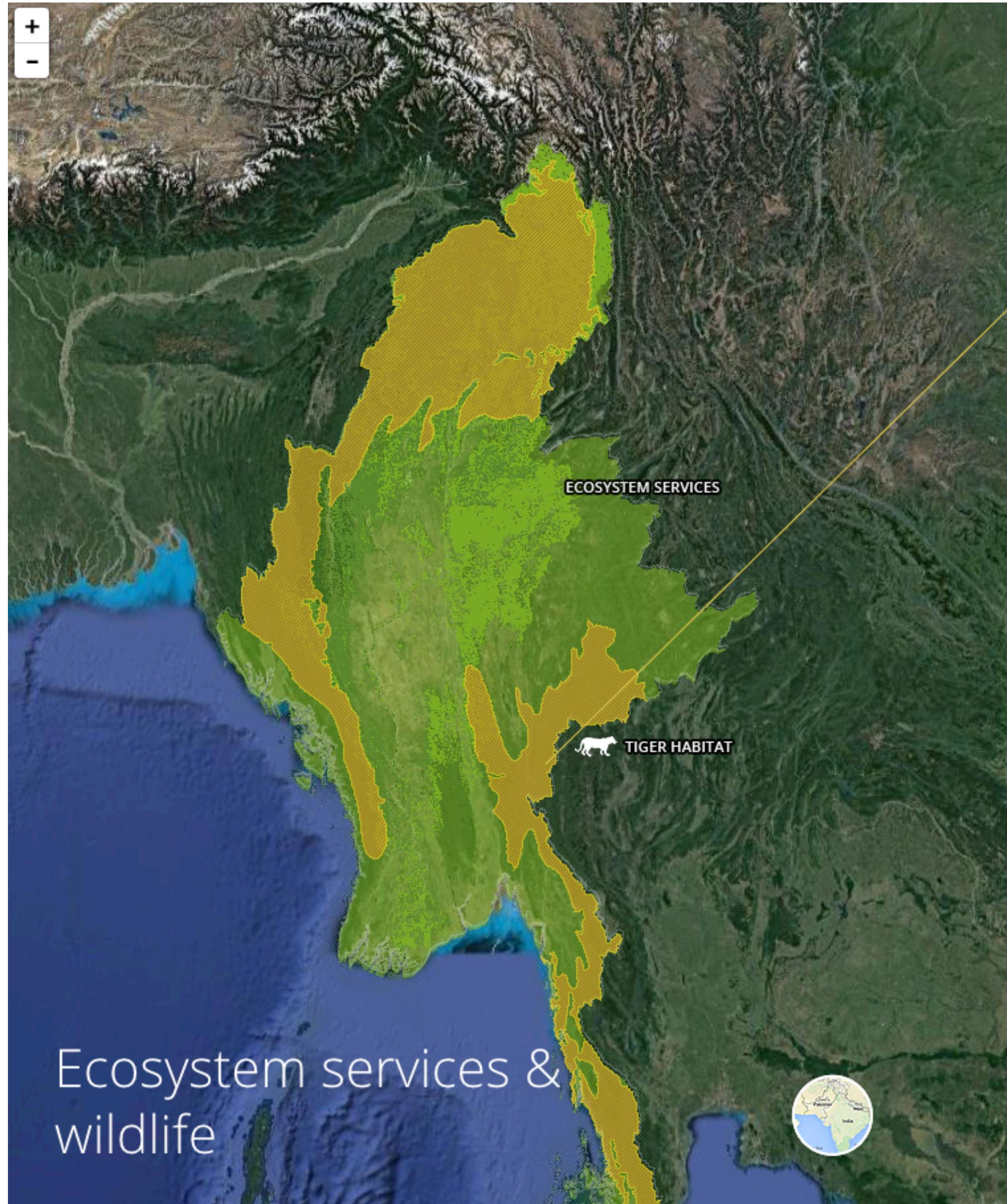
Limit interactivity

Who Will Be President?

FOR MONTHS, WE'VE BEEN UPDATING OUR ESTIMATES WITH EACH NEW POLL.

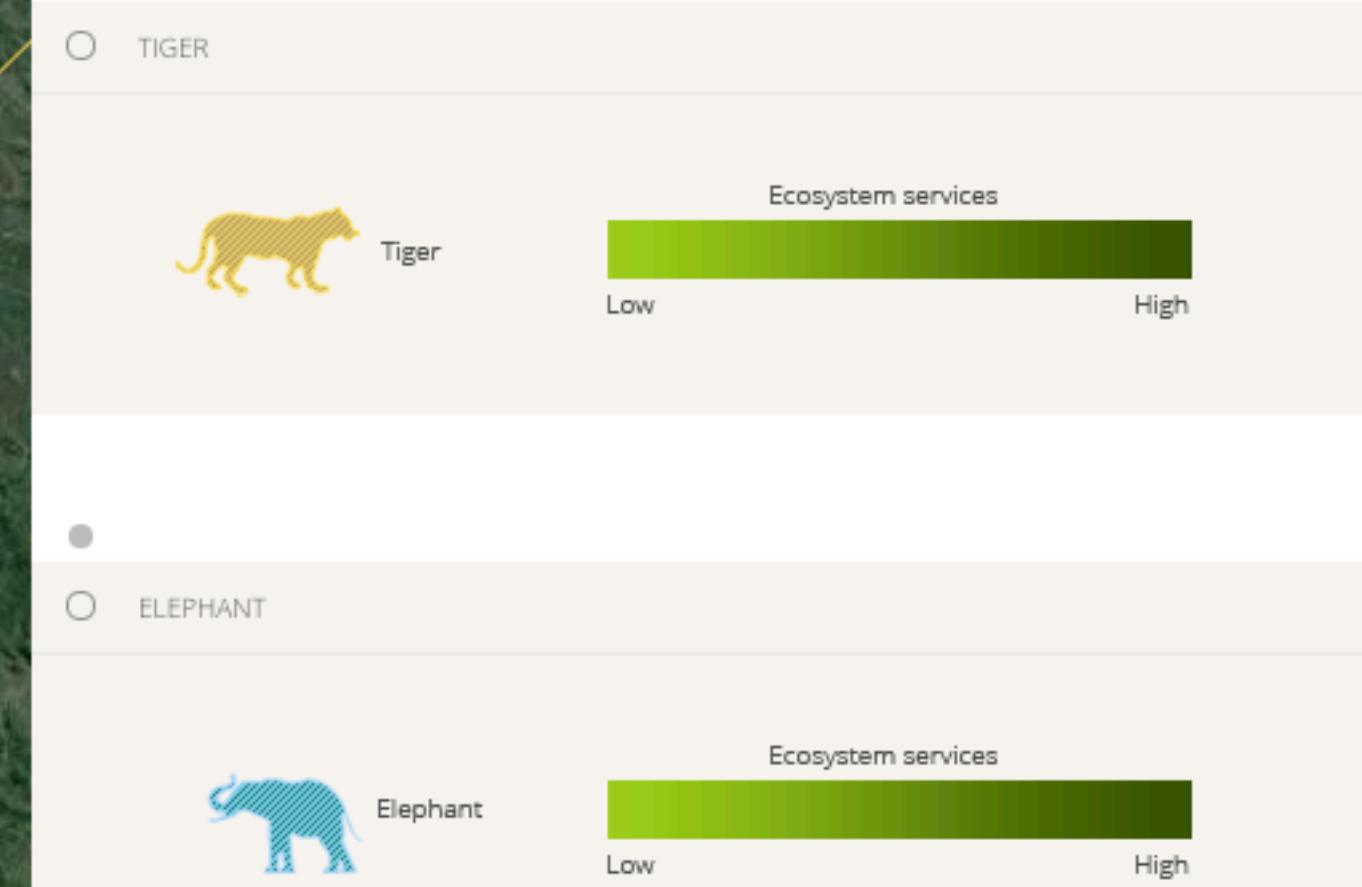
Today, it's Election Day, what we've all been waiting for, and there will be no more updates. You can chart different paths to victory below.
Here's how our estimates have changed over time:





Areas: Myanmarbiodiversity.org

Ecosystem services & wildlife



Areas that provide ecosystem services coincide with tiger and elephant habitat, especially in the **Kachin** state of northern Myanmar and the **Chin** and **Rakhine** states of western Myanmar.



Take home message: structure

Understand the audience: what are the takeaway/
outcomes, the context

Cool vs readability tradeoff

Choose the right visual idioms (as always)

Remove clutter: Gestalt principles, color theory, do's
and don'ts

Try to be linear for an improved storytelling



Take home message: messaging

Start with an interesting point

Remember that a textual description is always good for storytelling

Don't let the reader wondering, take a side, state your point

Put numbers and facts in context with careful attention to the significant digits

Label important numbers

Add TLDR;, a summary, a conclusion “so what?”



Take home message: interaction

Interactions with the viz should be obvious (going back, reset views, etc.)

Limit interactivity to key elements

Adapt to the platform: touch screen vs mouse, single-click table



Last tips

Use Google fonts for faster rendering

Viewing 846 of 846 font families

Roboto
Christian Robertson (12 styles)

All their equipment and instruments are alive.

Encode Sans Expanded
Impallari Type, Andres Torresi, Jacques Le Bailly (9 styles)

A red flair silhouetted the jagged edge of a wing.

Mukta
Ek Type (7 styles)

I watched the storm, so beautiful yet terrific.

Open Sans
Steve Matteson (10 styles)

Almost before

Lato
Łukasz Dziedzic (10 styles)

A shining

Slabo 27px
John Hudson (1 style)

It was going to be

