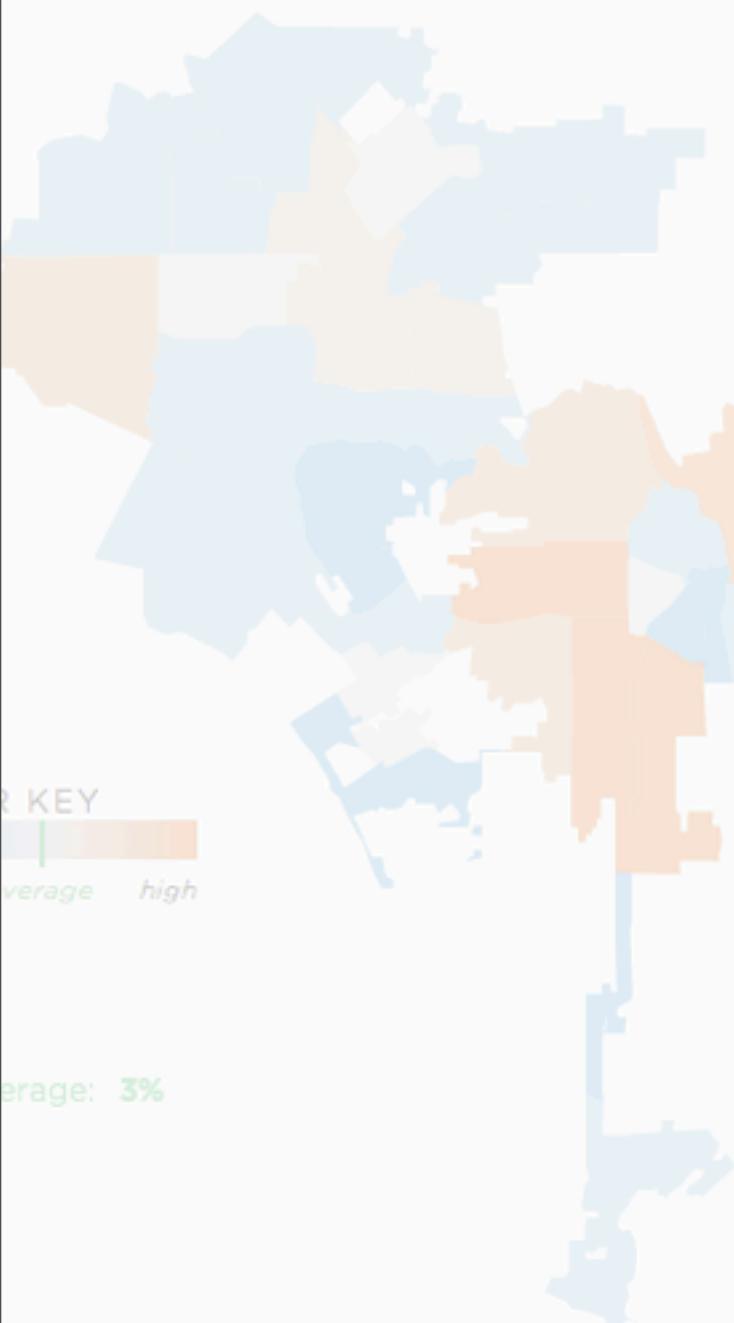


# UI Design Principles

# 2 seconds

**to instruct or not to instruct**

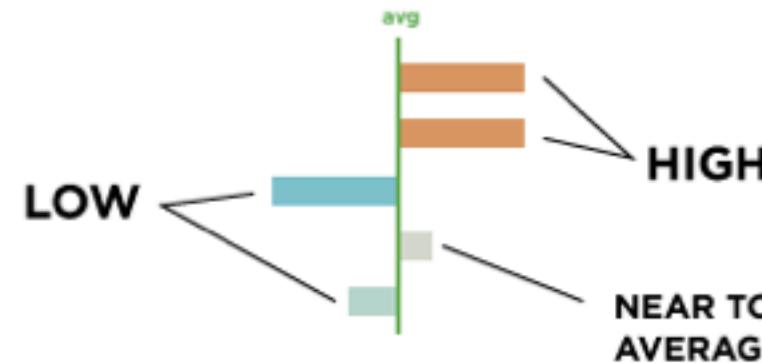
percentage of Total Population



## Hints for exploration!

This graphic is meant to be explored. Almost every part of the maps and charts can be clicked on for more information.

- Things that are **RED** indicate values that are high, relative to the average.
- Things that are **BLUE** indicate values that are low, relative to the average.
- Things that are **GRAY** are close to the average.
- The **average value** is often indicated with a green line.



- Clicking on the map will lock the geography, allowing you to compare one area of the City to others.
- Click on Neighborhood to view the interactive neighborhood profiles



HEALTH PROFILES  
City Neighborhoods

click anywhere to get started!



twitter  
tracker

powered by  
stamen



REPLAY



BUZZ • PAPARAZZI

tweet #MTVEMA

OVERALL

RECENT

- 1 BIG BANG
- 2 LADY GAGA
- 3 SELENA GOMEZ
- 4 BRUNO MARS
- 5 JUSTIN BIEBER
- 6 ADELE
- 7 KATY PERRY
- 8 EMINEM
- 9 DAVID GUETTA
- 10 BRITNEY SPEARS
- 11 COLDPLAY
- 12 RIHANNA
- 13 BEYONCE
- 14 KANYE WEST
- 15 30 SECONDS TO MARS
- 16 PARAMORE
- 17 LINKIN PARK
- 18 SNOOKI



2,366,991  
TWEETS SINCE 10:50AM

11AM

12PM

1PM

2PM

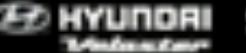


twitter  
tracker

powered by  
stamen



REPLAY

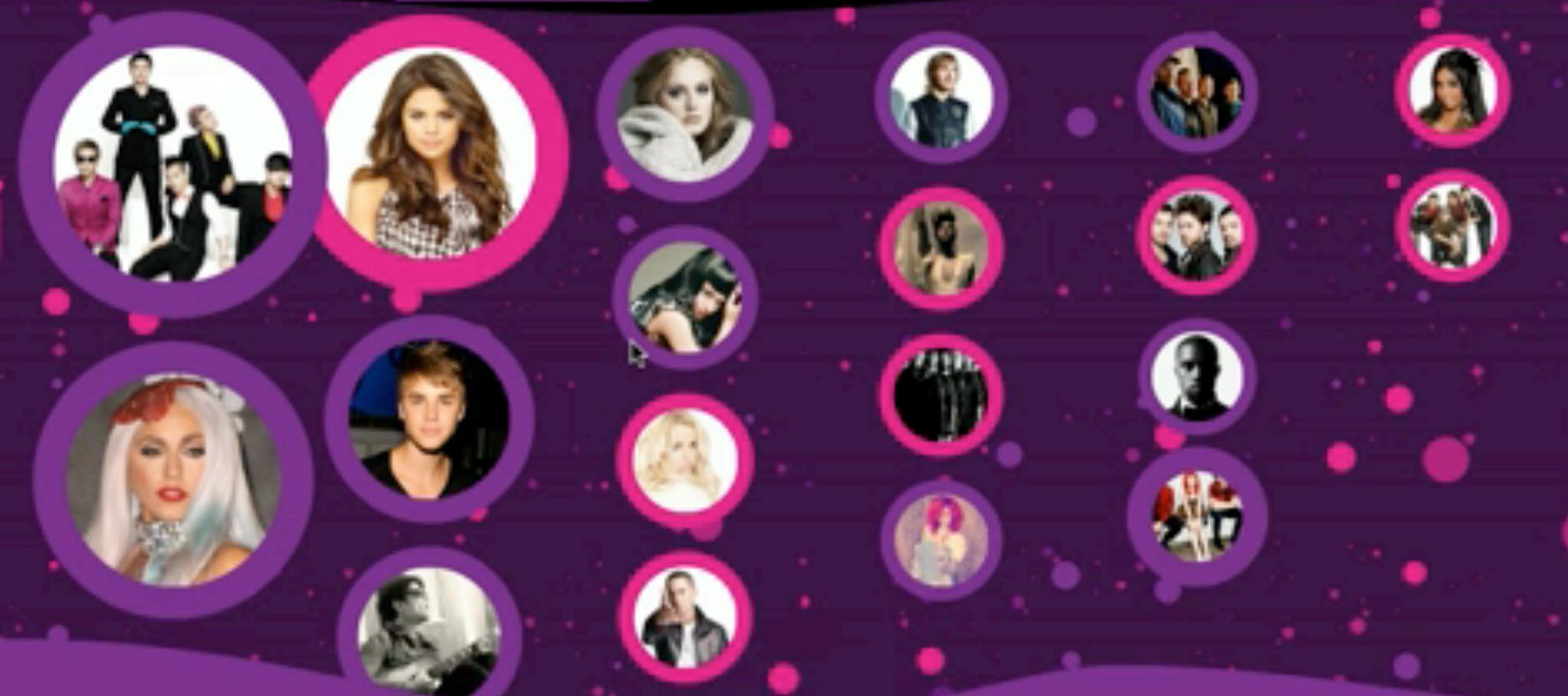


BUZZ • PAPARAZZI

tweet #MTVEMA

OVERALL RECENT

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- 11 BEYONCE
- 12 LINKIN PARK
- 13 RIHANNA
- 14 COLDPLAY



2,369,343  
TWEETS SINCE 10:50AM



**audience  
familiarity of format  
precision of information  
discoverability**

snapshot

U.S. GUN DEATHS IN

2013 2010

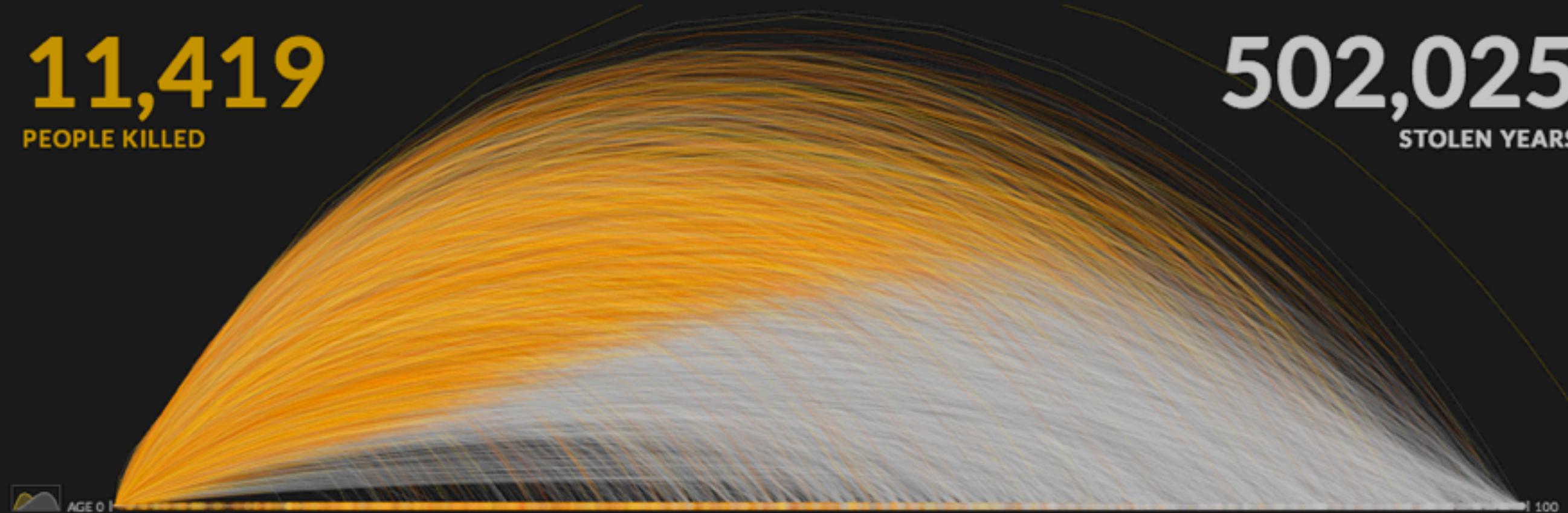
**11,419**

PEOPLE KILLED

DECEMBER

**502,025**

STOLEN YEARS ?



**explanation as  
instruction vs. animation**

the things you should  
customize, and the things  
you should not

# design patterns

# Split button dropdowns

Similarly, create split button dropdowns with the same markup changes, only with a separate button.

## EXAMPLE



```
<!-- Split button -->
<div class="btn-group">
  <button type="button" class="btn btn-danger">Action</button>
  <button type="button" class="btn btn-danger dropdown-toggle" data-toggle="dropdown">
    <span class="caret"></span>
    <span class="sr-only">Toggle Dropdown</span>
  </button>
  <ul class="dropdown-menu" role="menu">
    <li><a href="#">Action</a></li>
    <li><a href="#">Another action</a></li>
    <li><a href="#">Something else here</a></li>
    <li class="divider"></li>
    <li><a href="#">Separated link</a></li>
  </ul>
</div>
```

## Sizing

Button dropdowns work with buttons of all sizes.

## EXAMPLE

Large button ▾

Small button ▾

Extra small button ▾

Glyphicons

Dropdowns

Button groups

Button dropdowns

Single button dropdowns

Split button dropdowns

Sizing

Dropup variation

Input groups

Navs

Navbar

Breadcrumbs

Pagination

Labels

Badges

Jumbotron

Page header

Thumbnails

Alerts

Progress bars

Media object

List group

Panels

Wells

Back to top

# common pitfalls

# ambiguous buttons



twitter  
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stamen



REPLAY



BUZZ • PAPARAZZI

tweet #MTVEMA

OVERALL

RECENT

- 1 BIG BANG
- 2 LADY GAGA
- 3 SELENA GOMEZ
- 4 BRUNO MARS
- 5 JUSTIN BIEBER
- 6 ADELE
- 7 KATY PERRY
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- 14 KANYE WEST
- 15 30 SECONDS TO MARS
- 16 PARAMORE
- 17 LINKIN PARK
- 18 SNOOKI



2,366,991  
TWEETS SINCE 10:50AM

11AM

12PM

1PM

2PM

entering and exiting a  
selected state



2	BEYONCE	2,035
3	THE THRONE	967
4	TYLER, THE CREATOR	819
5	LADY GAGA	807
6	CHRIS BROWN	377
7	ADELE	365
8	KREAYSHAWN	318
9	LIL WAYNE	268
10	KATY PERRY	236
11	NICKI MINAJ	234
12	BIG SEAN	151
13	BRITNEY SPEARS	122
14	SELENA GOMEZ	94
	JUSTIN BIEBER	93
	BRUNO MARS	

**clickable elements that  
don't inform the user**



*Use of the word:*

## Electricity



### GE

Global  
International  
Economy  
Digital  
Innovation  
Growth

### MOVING

Aviation  
Aircraft  
Transportation  
Rail

### POWERING

Energy  
**Electricity**  
Oil  
Solar  
Wind  
Renewable

### CURING

Health  
Diagnostic  
Imaging  
Cancer  
Patient

### BUILDING

Manufacturing  
Technology  
Lighting  
Appliances  
GE Capital

main area is not interactive

# Innovation Barometer 2013

[About](#) | [Instructions](#)



## Topics

### Model

- Approach
- Policy
- People
- How We Compare

## Region

### World

- Developed
- Emerging
- BRIC
- MIST
- Western Europe
- Middle East

## Country

### ALL

- Australia
- Brazil
- Canada
- China
- Germany
- India
- Ireland
- Israel

### Japan

- Malaysia
- Mexico

- Netherlands

- Nigeria

- Poland

- Russia

- Saudi Arabia

- Singapore

- South Africa

- South Korea

- Sweden

- Turkey

- UAE

- UK

- United States

- Vietnam

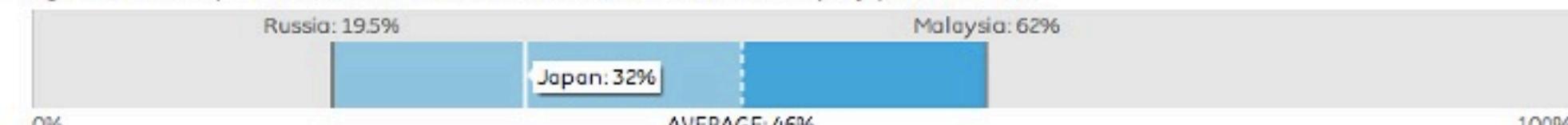
## Model: Moving beyond product innovation

Within the context of today's low-growth, Resource-constrained world, business model innovation is gaining momentum. Customer needs and market insights are rapidly shifting. As innovators adapt to this new reality, traditional business models are being disrupted in order to unlock new growth opportunities.

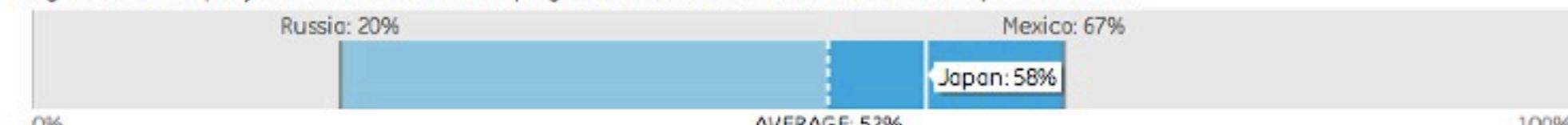


Replay

Agree the development of new business models contribute most to company performance.



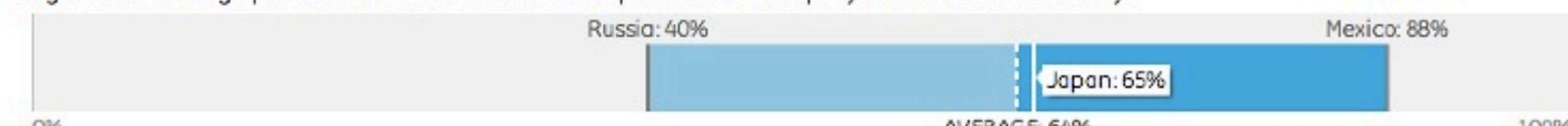
Agree their company should focus on developing new business models to boost future performance.



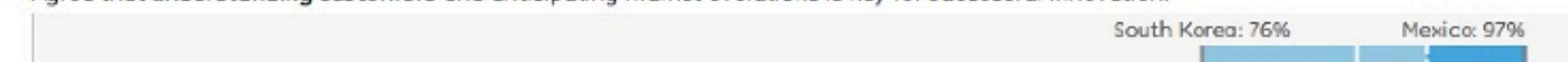
Agree their company should improve existing products or services to boost future performance.



Agree that coming up with new business models is important for a company to innovate successfully.



Agree that understanding customers and anticipating market evolutions is key for successful innovation.



## Rankings

ON

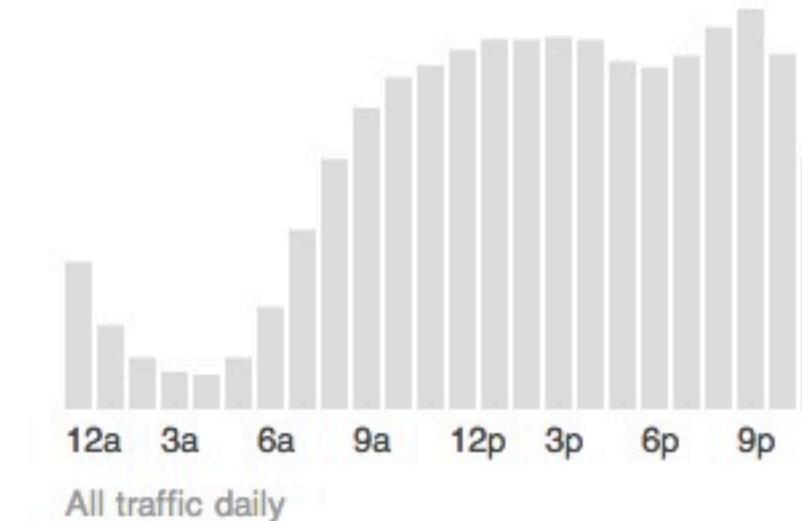
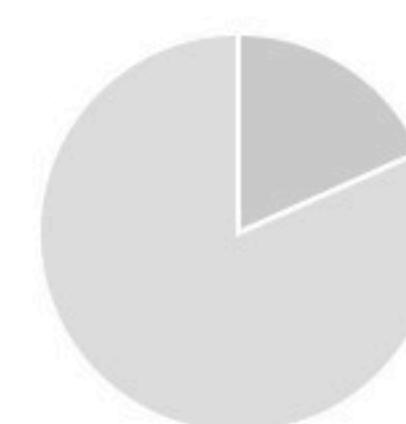
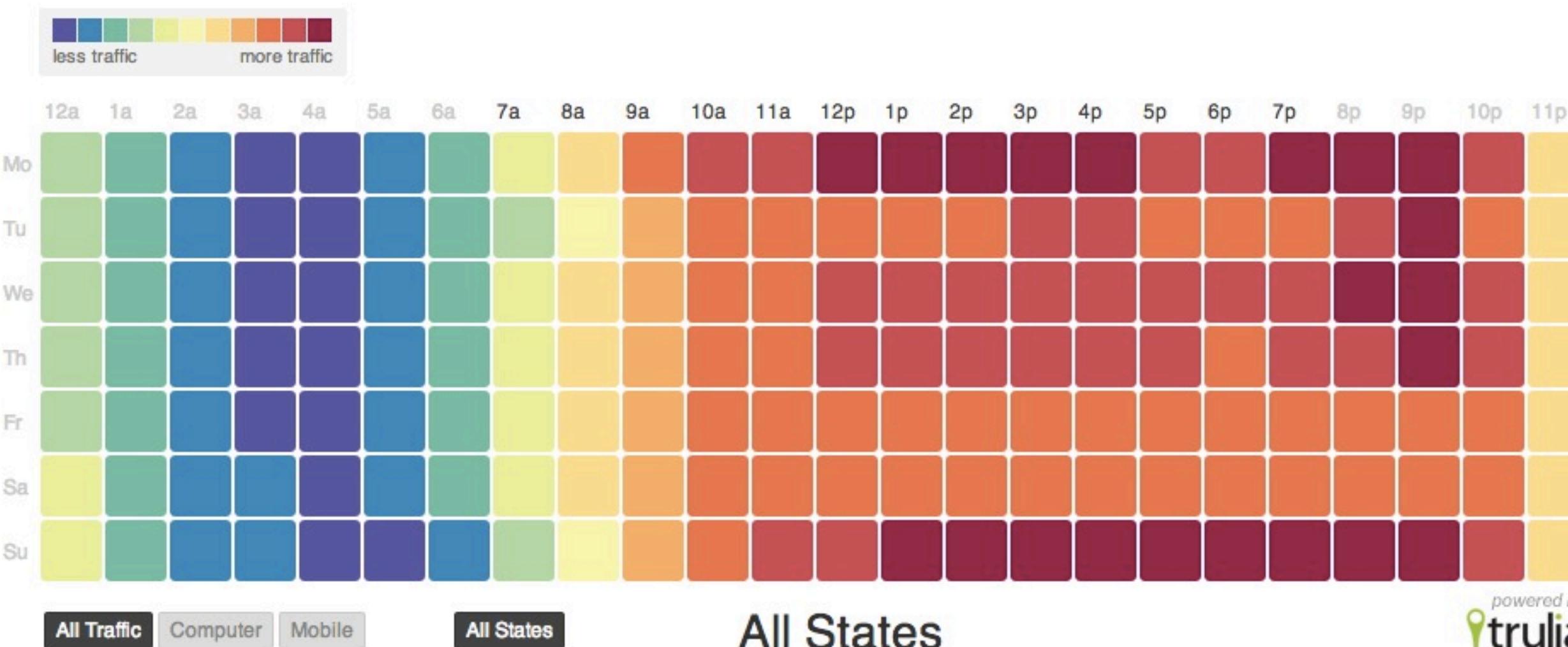
**exercise:**  
**Analyzing the UI of**  
**Visualizations**

- 1) What sort of UI elements are present?**
- 2) Is there a key?**
- 3) How does the visualization instruct the viewer to use it?**
- 4) How could it be improved?**

# House Hunting All Day, Every Day



Most people search for homes on Mondays at 9:00 PM. When are you window shopping?



# Four Ways to Slice Obama's 2013 Budget Proposal

Explore every nook and cranny of President Obama's federal budget proposal.

[All Spending](#)[Types of Spending](#)[Changes](#)[Department Totals](#)

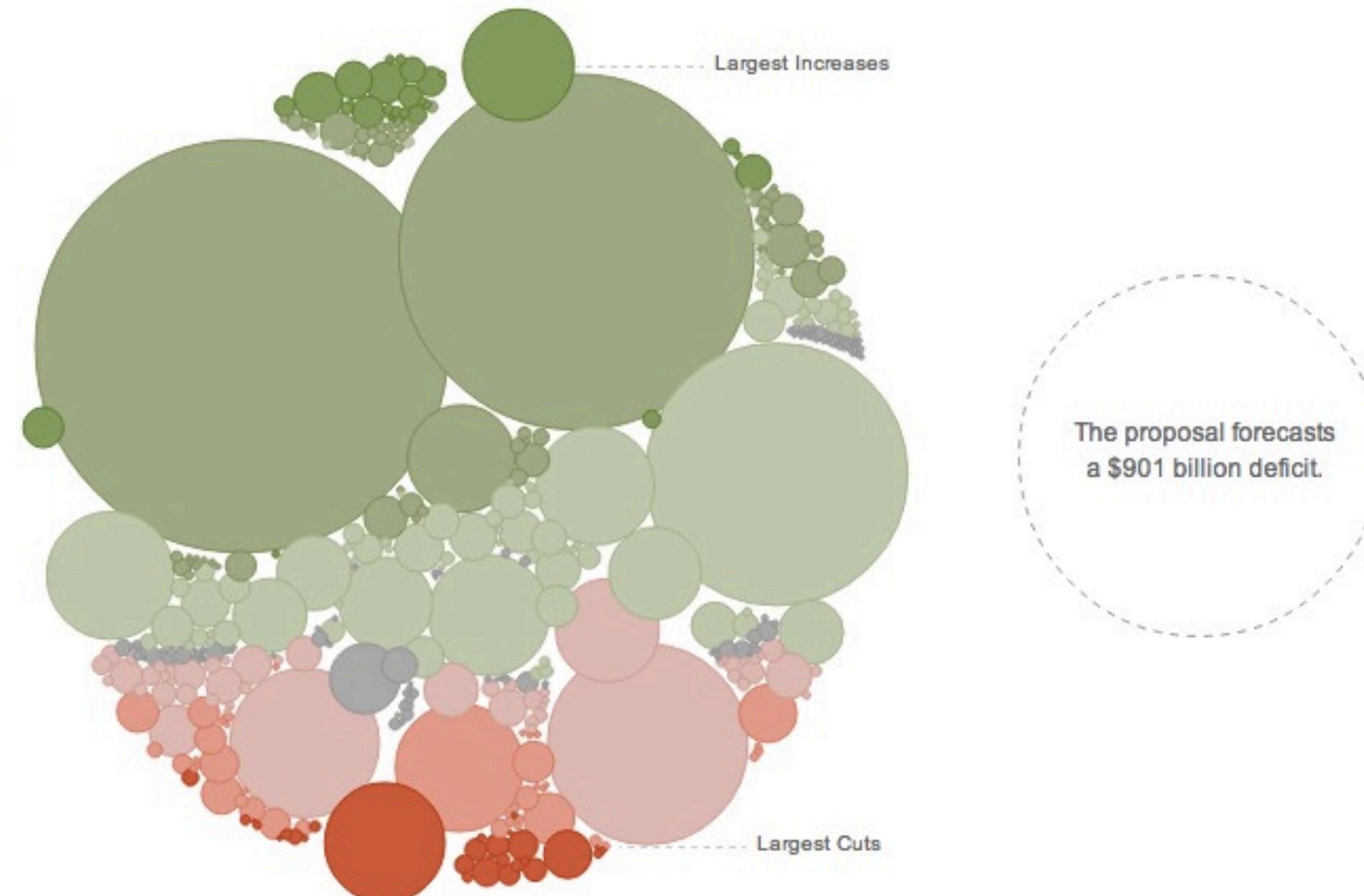
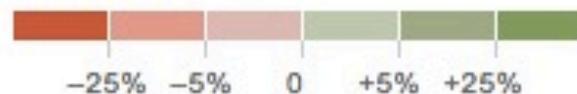
## How \$3.7 Trillion Is Spent

Mr. Obama's budget proposal includes \$3.7 trillion in spending in 2013, and forecasts a \$901 billion deficit.

Circles are sized according to the proposed spending.



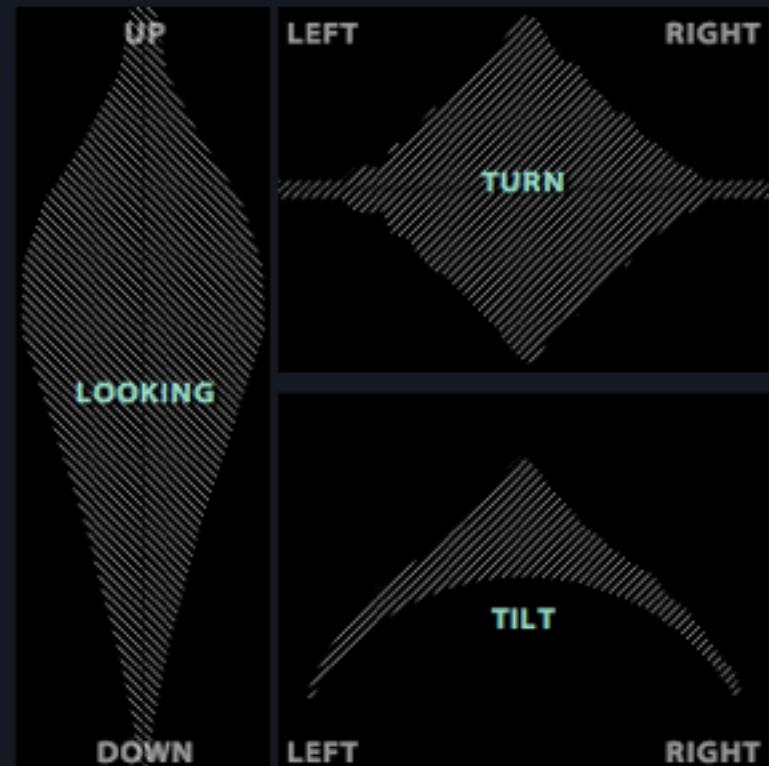
Color shows amount of cut or increase from 2012.



## DEMOGRAPHICS



## POSE



## FEATURES



## MOOD



3200 of 3200 selfies.

Normal

Crop

Crop &amp; rotate

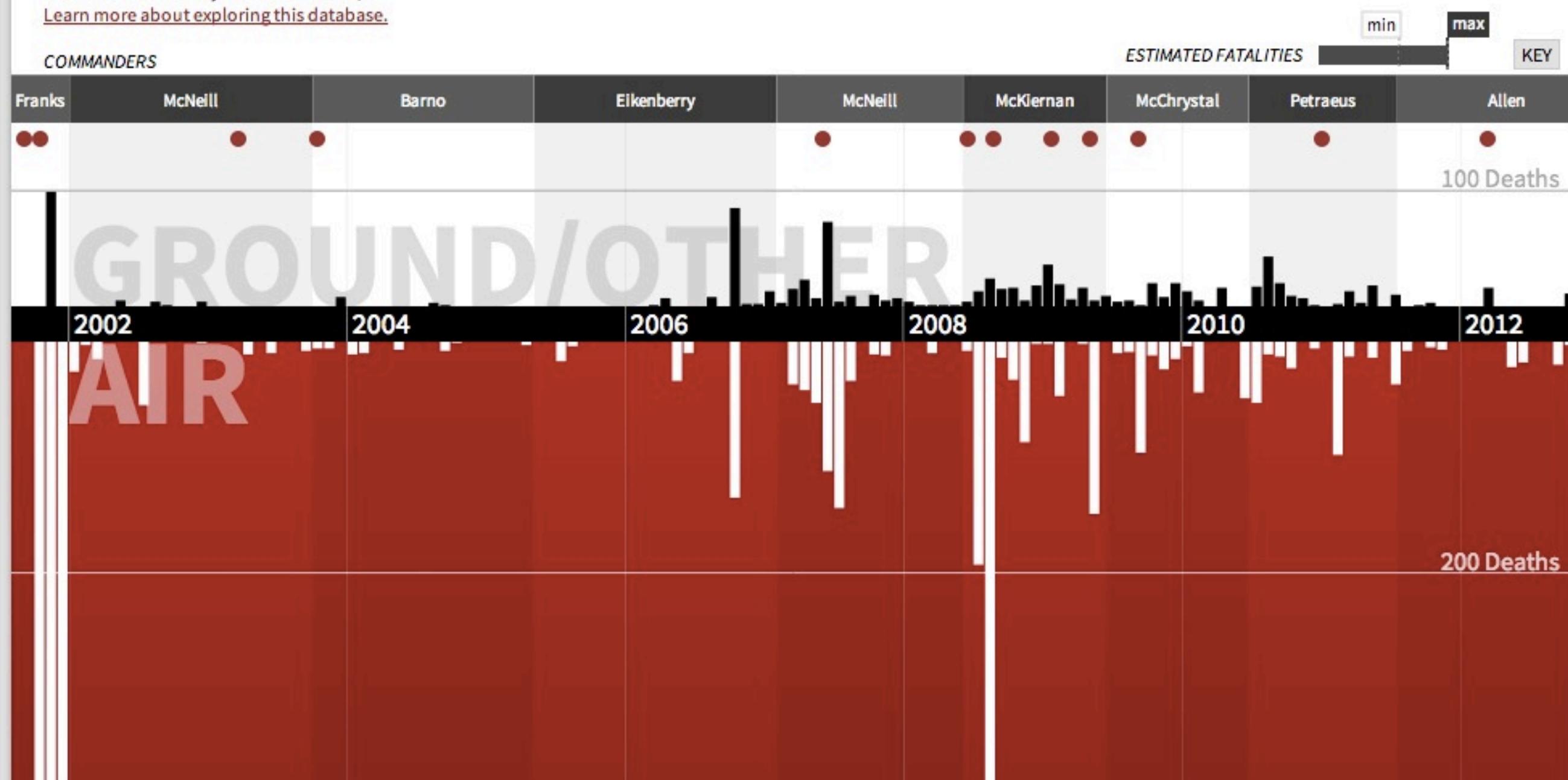
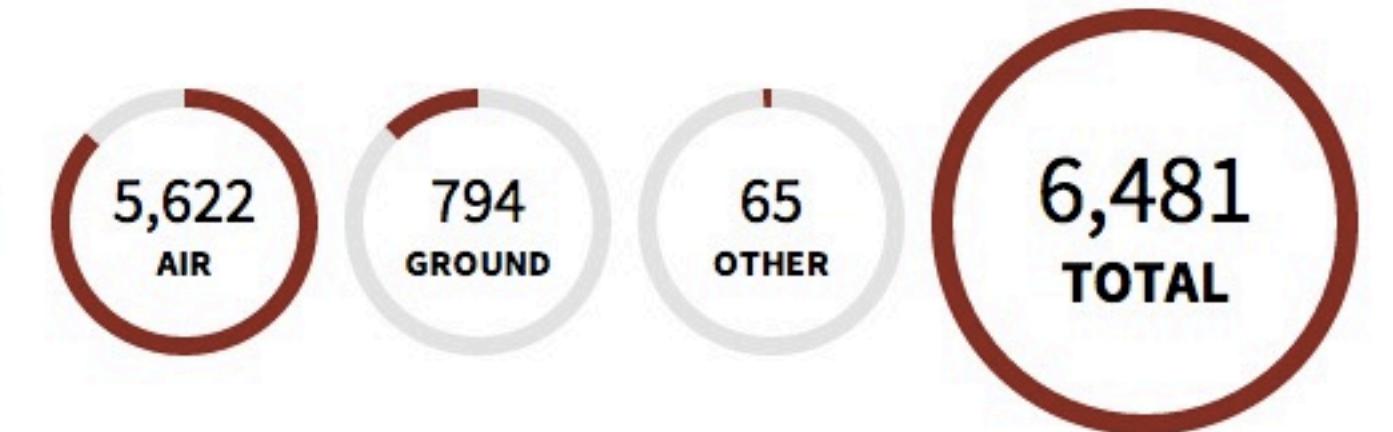


# The Deaths of Afghans

## Civilian Fatalities in Afghanistan, 2001–2012

When an Afghan civilian dies in war, the world rarely notices: the Afghan government, hospitals and morgues in the country, even the US-led international military force that has been a presence there since late 2001, all fail to keep comprehensive lists of civilian fatalities. This interactive database is an attempt to compile as complete a list as possible of civilian deaths that have occurred in Afghanistan as a result of war-related actions by the United States, its allies and Afghan government forces, from the invasion in October of 2001 through the end of 2012. It relies on an extensive survey of reliable media accounts for its raw data, and when no media account is available, on the casualty reports of NGOs, human rights organizations and ISAF (the International Security Assistance Force).

[Learn more about exploring this database.](#)



# How the Recession Reshaped the Economy, in 255 Charts

By JEREMY ASHKENAS and ALICIA PARLAPIANO JUNE 5, 2014

Five years since the end of the Great Recession, the private sector has finally regained the nine million jobs it lost. But not all industries recovered equally. Each line  below shows how the number of jobs has changed for a particular industry over the past 10 years. Scroll down to see how the recession reshaped the nation's job market, industry by industry.



SCROLL



# **Elements & Interactions:**

## **HTML vs. SVG**

## **CSS vs. d3**

# **drawing shapes**

- browser performance
- compatibility

# styling shapes

- performance
- centralized styling

# layout

- floats vs. precise positions
- margin, padding

# formatting text

- line wraps, indentation
- centering

# user interaction

- hover styles
- boundary detection

.on()  
mouseover, mousemove,  
mouseenter,mouseleave,  
click, dblclick, etc etc etc

	default		text		e-resize
	help		vertical-text		ne-resize
	pointer		all-scroll		nw-resize
	move		no-drop		n-resize
	crosshair		not-allowed		se-resize
	wait		col-resize		sw-resize
	progress		row-resize		s-resize
					w-resize

	default		text		e-resize
	help		vertical-text		ne-resize
	pointer		all-scroll		nw-resize
	move		no-drop		n-resize
	crosshair		not-allowed		se-resize
	wait		col-resize		sw-resize
	progress		row-resize		s-resize
					w-resize

**hover state vs.  
selection state**

# exercise: Hover and Click Behaviors in CSS

# animatable

One property, two values, endless possibilities

Animate on hover

Animate all

1

background-color

2

background-position

3

background-position

4

background-size

5

border-radius

6

border-radius

7

border-width

8

border-width

9

border-width

10

box-shadow

11

box-shadow

12

box-shadow

13

color

14

font-size

15

height

16

letter-spacing

17

line-height

18

opacity

19

outline-width

20

outline-offset

21

outline-color

# project time!

# Animation in Visualization

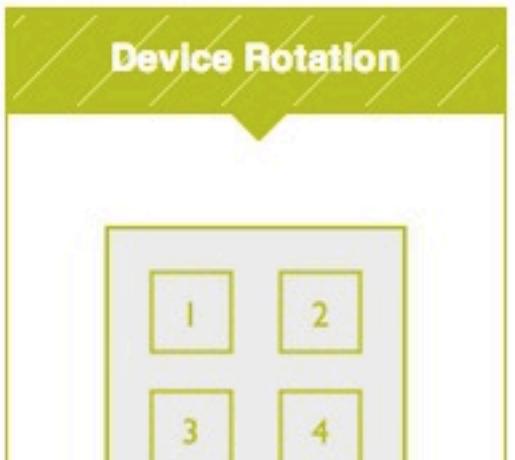
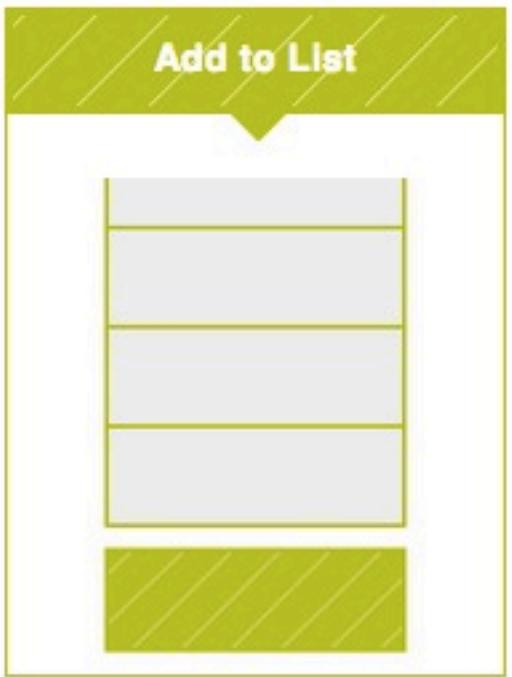
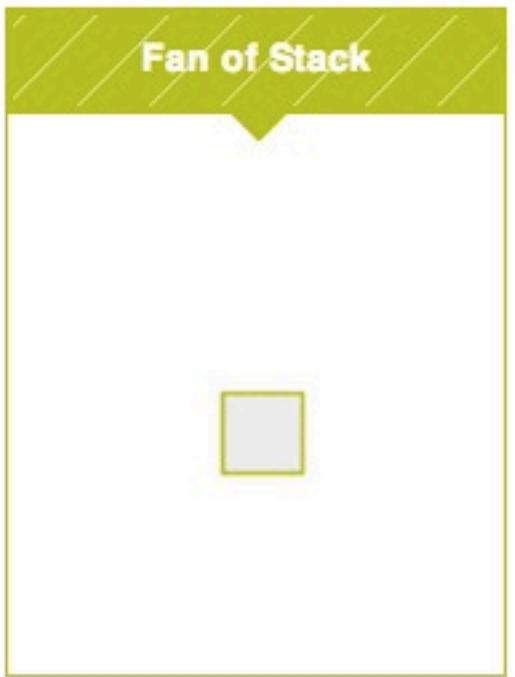
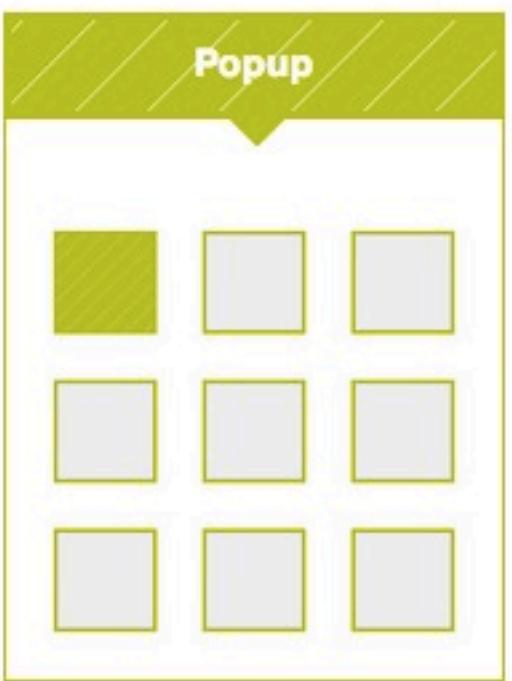
the ways we respond  
to animation

# **fast vs. slow**

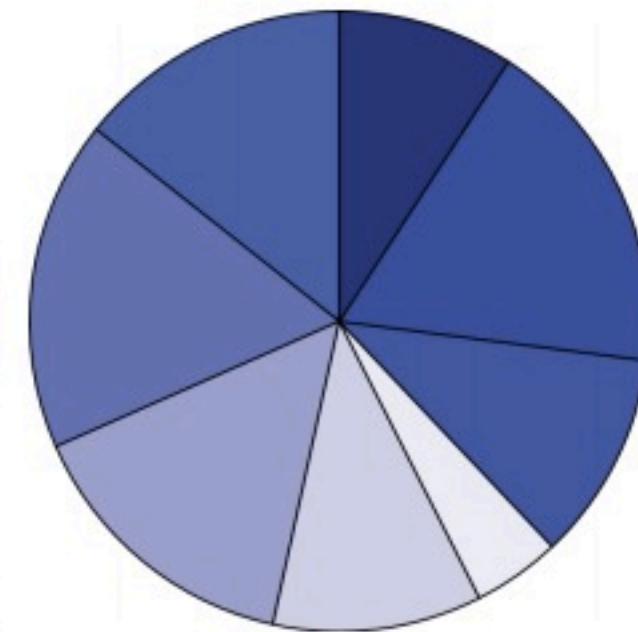
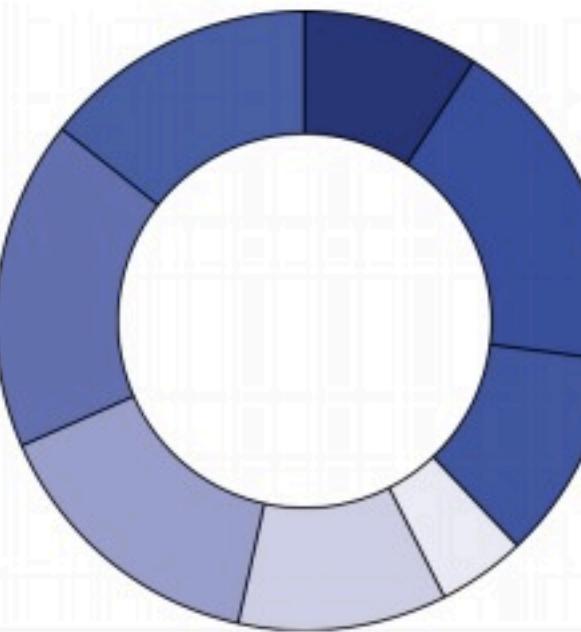
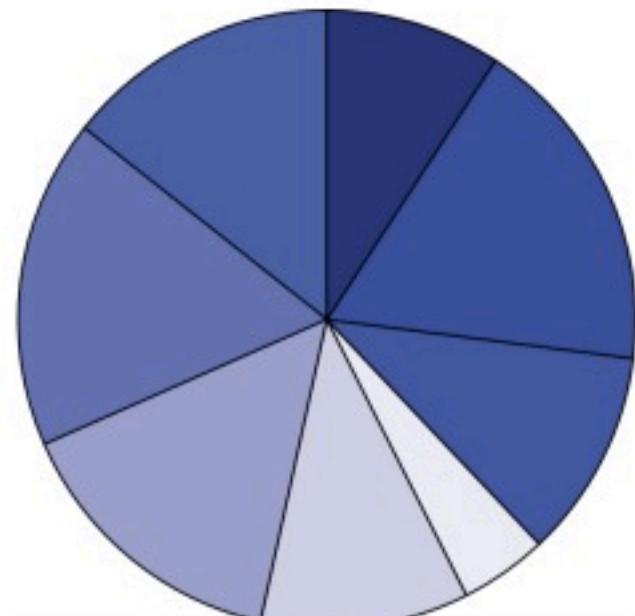
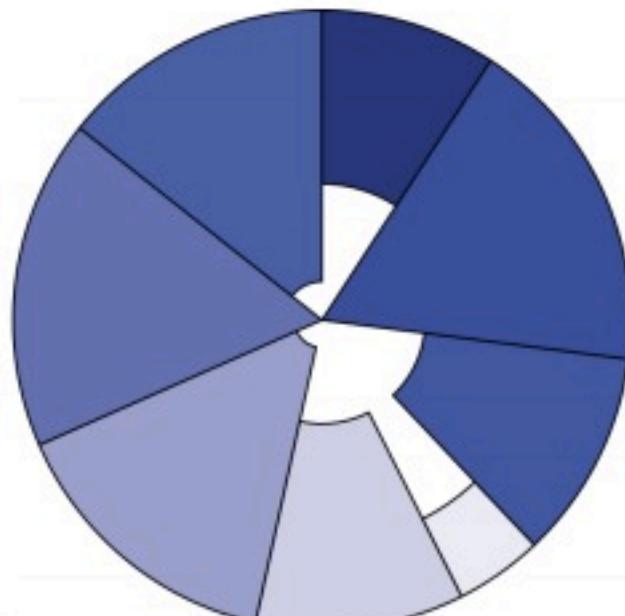
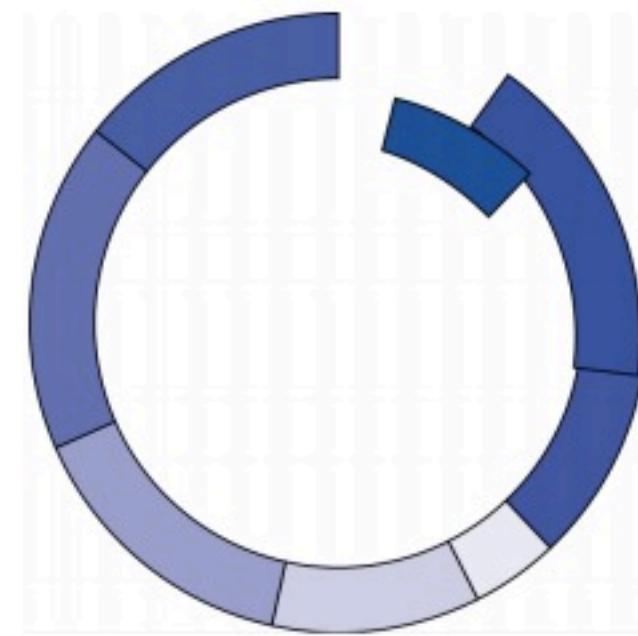
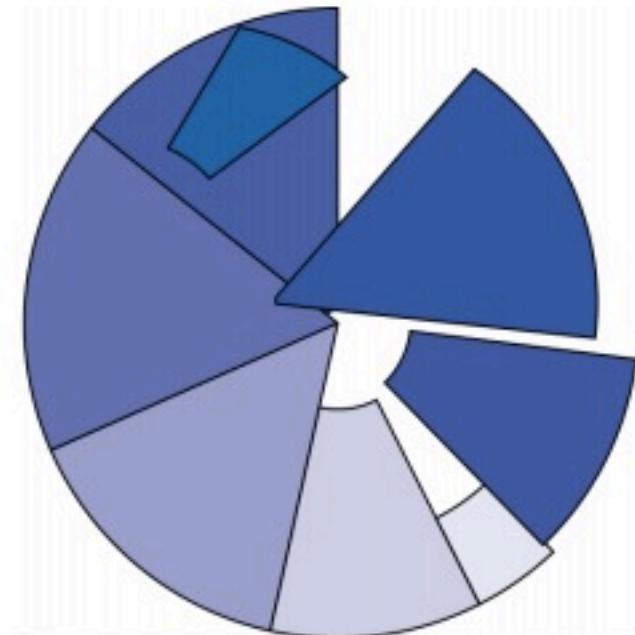
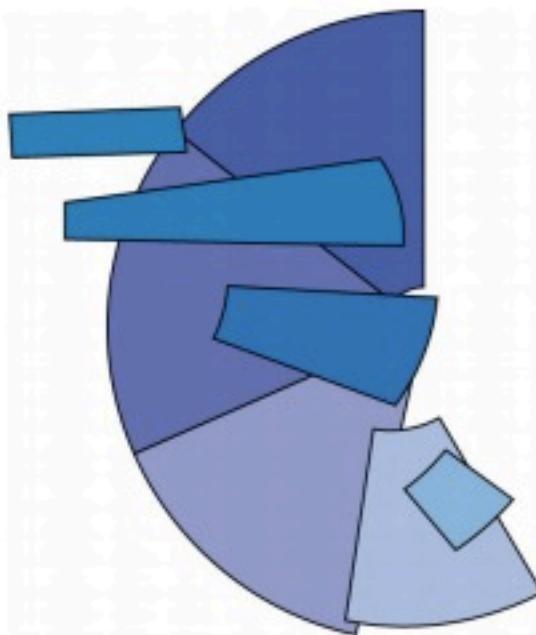
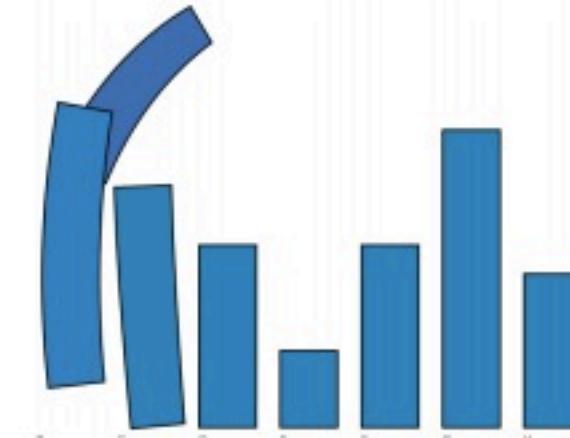
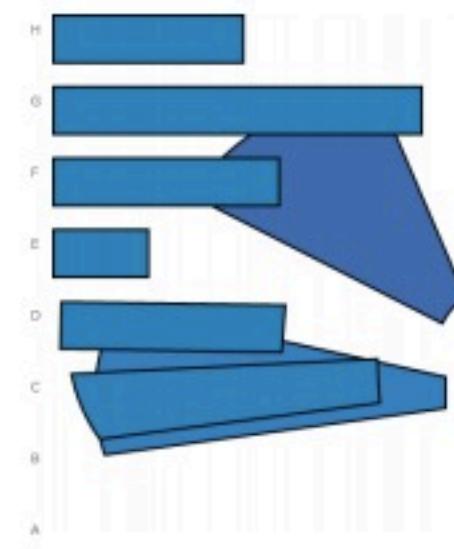
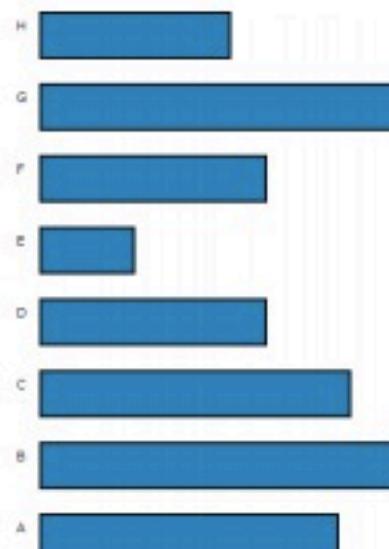
# growing vs. shrinking

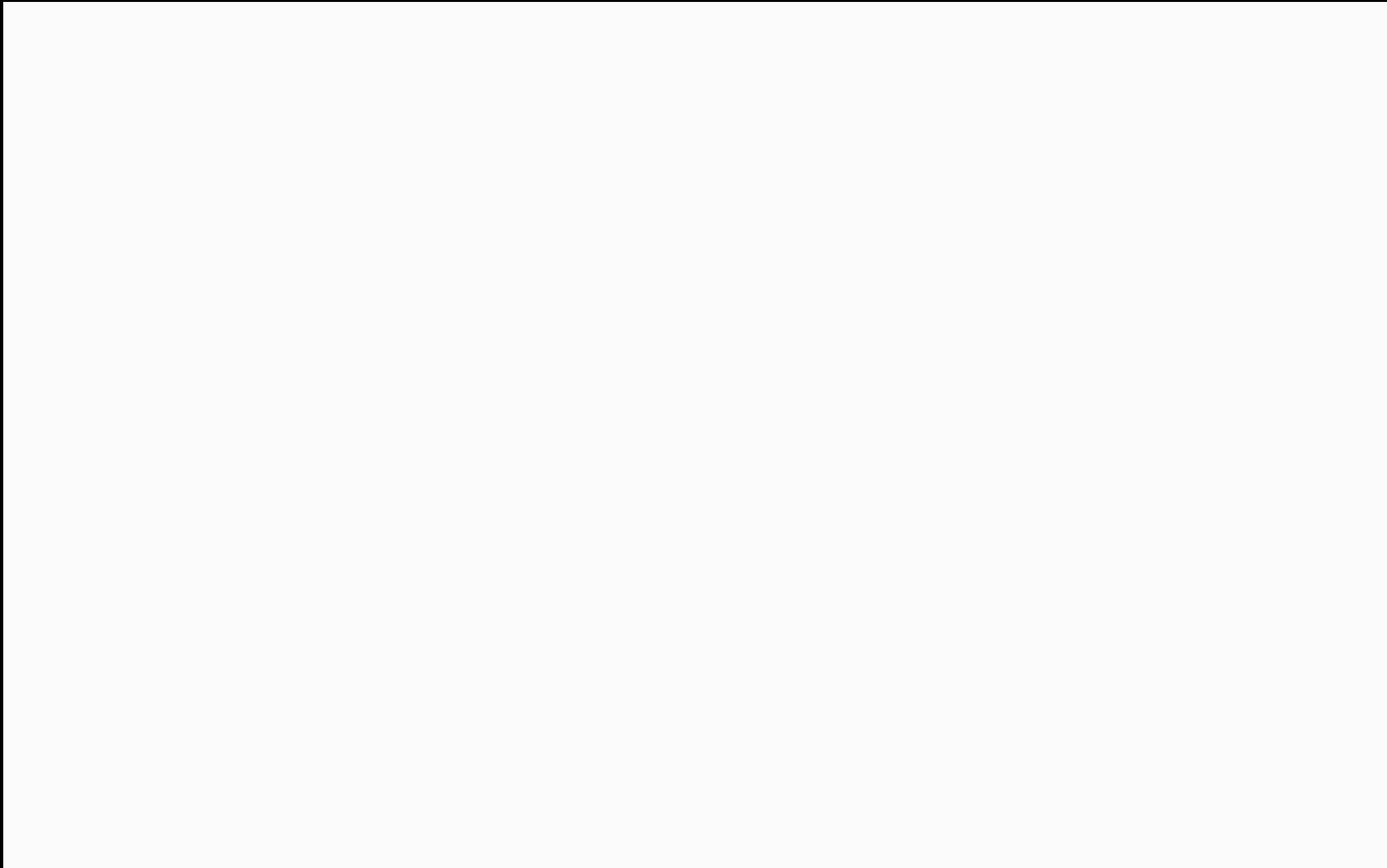
# **straight lines vs. curves**

**fade in / fade out**



**using animation to visually  
track changes on the page**

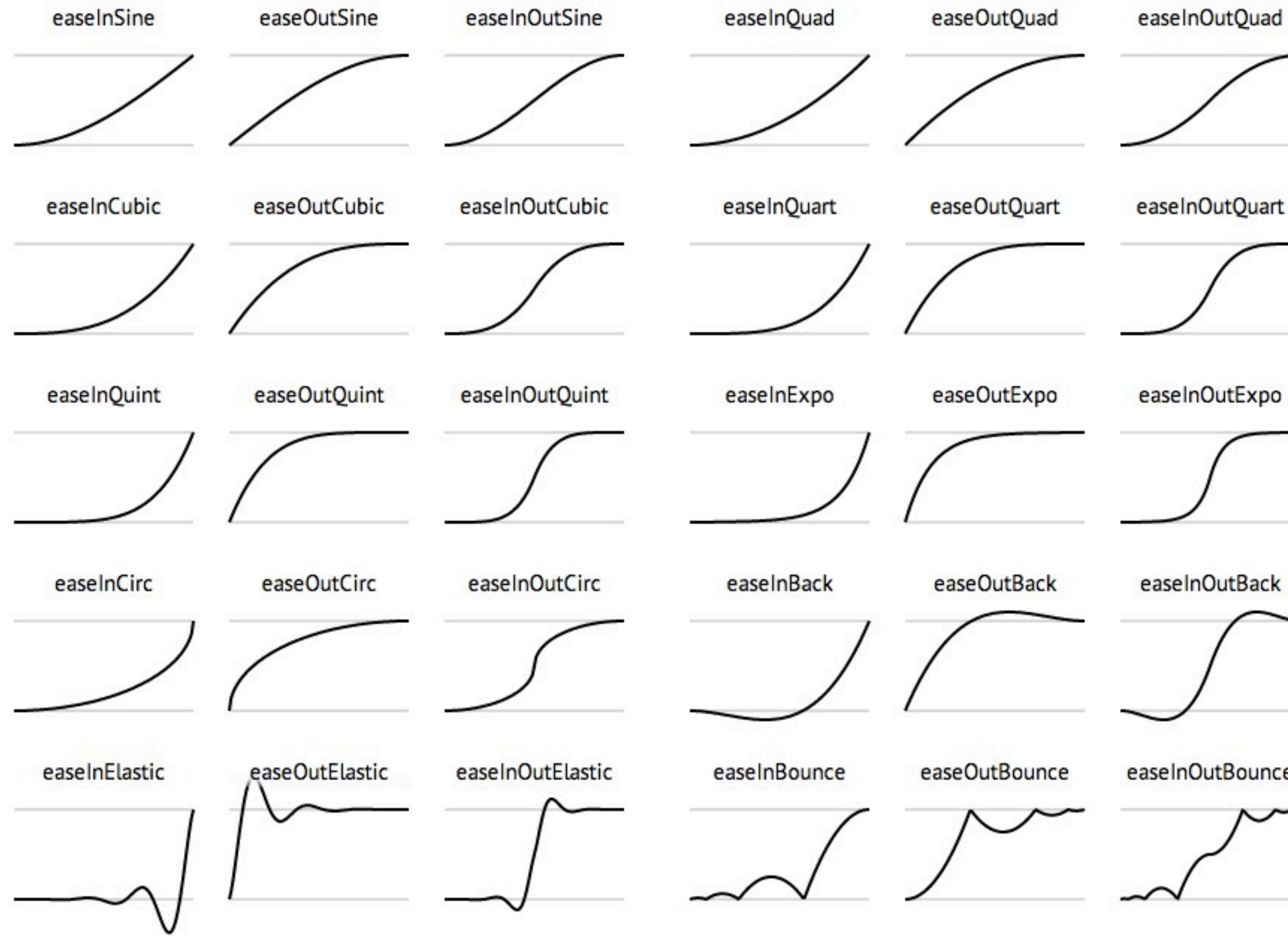




# .transition()

**interpolate:**  
**position, shape, size,**  
**color, opacity**

# easing functions





**linear**



**poly**



**quad**



**cubic**



**sin**

http://sta.mn/2t6



**exp**



**circle**



**elastic**



**bounce**



**.ease()**

**.ease("cubic")**

**.ease("cubic-in")**

**.duration()**

**.delay()**

**“knob twiddling”**

`.each( “end”, function )`  
**method chaining**

```
d3.select(this)
  .attr("r", 60)
  .transition()
    .attr("r", 10)
    .each("end", animateSecondStep);

function animateSecondStep(){
  d3.select(this)
    .transition()
      .attr("r", 40);
}
```

**exercise:**  
**Explore d3.js Transitions**

- 1) animate different attributes
- 2) explore easing functions
- 3) method-chain an animation
- 4) bonus: motion along a curve

# project time!