

From a single chart to elaborate data driven storytelling, Google Chart Tools now provides a crisp and accessible experience based on our new HTML5 gallery. Come and learn how you can use animations, annotations and other visual semantics and to take user-interaction with rich data, to the next level



About Michael Fink

[View full profile](#)

Michael Fink joined Google Research at 2005. Since then Michael initiated several media based projects including YouTube's Interactive Video Annotations, which enables embedding hyperlinks onto objects in YouTube videos. In the last three years, Michael is leading the Google Trends and Chart Tools teams. In his 20% time Michael originated the new Center for Design, Media and Technology in the Jerusalem Leper Colony.

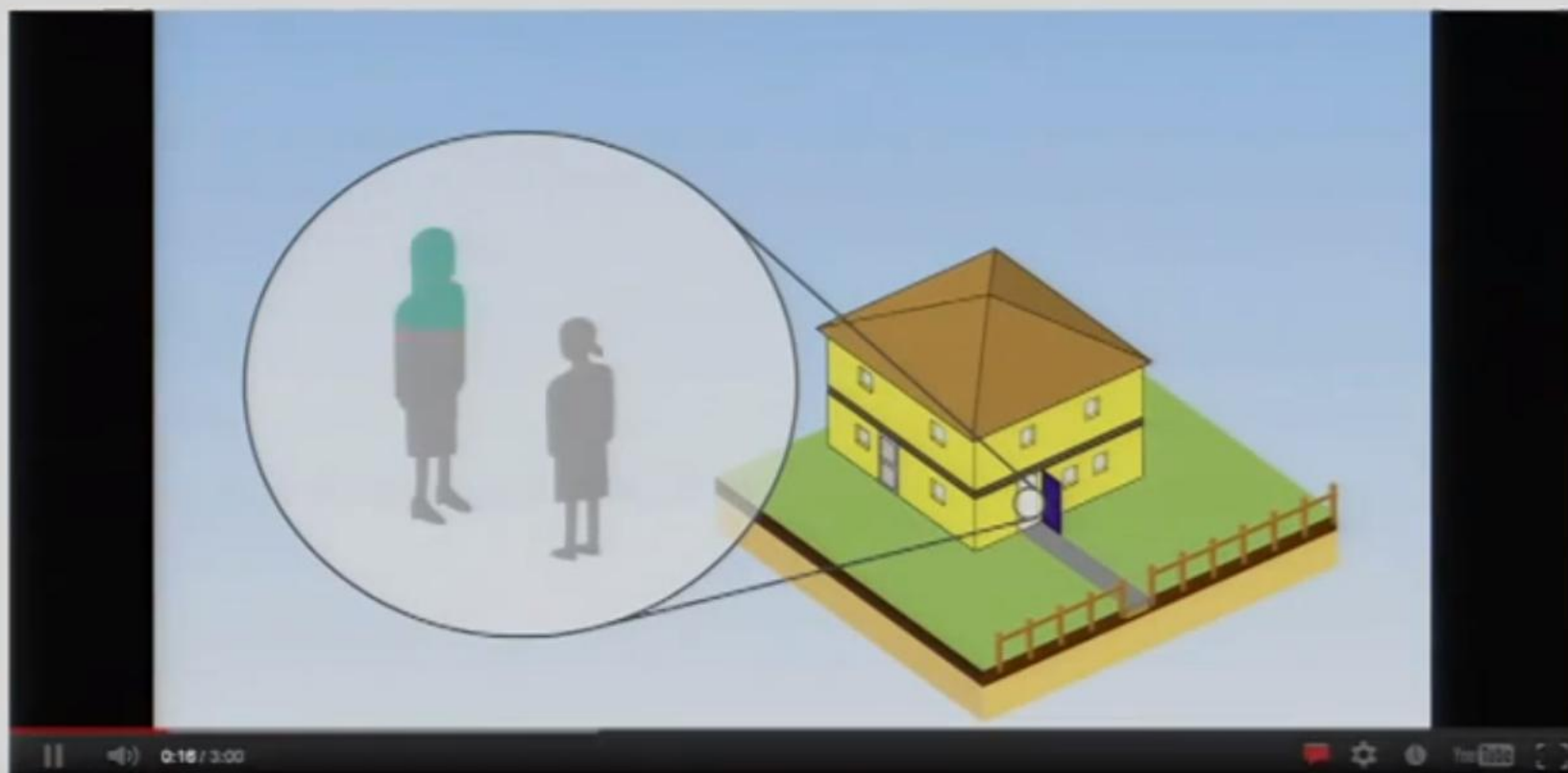


About Yinnon Haviv

[View full profile](#)

Yinnon is a Software Engineer for Google Chart Tools, providing an extensive, consistent and beautiful set of interactive visualizations, accessed through a clean API. Before joining Google, Yinnon developed various static analysis algorithms for identifying web application security flows and for identifying the impact of configuration changes in SAP applications.

Data driven storytelling... our inspiration



source: Tomas Nilsson



Data Driven Storytelling

Yinnon Haviv - Software Engineer, Google
Michael Fink - Product Manager, Google

Outline



Data Exploration



Storytelling





Data Exploration

Hand over the control to your users

Our data cube: Performer's search trends

Time	Country	Performer	Popularity
Dec 08	United States	Beyonce	17.11
Dec 08	United States	Madonna	5.74
Dec 08	United Kingdom	Beyonce	16.64
Dec 08	United Kingdom	Madonna	7.23
Jan 09	United States	Beyonce	15.60
Jan 09	United States	Madonna	5.02
Jan 09	United Kingdom	Beyonce	11.95
Jan 09	United Kingdom	Madonna	5.70

Using controls to explore your data



Dashboards

are easy

JAVASCRIPT

```
var dashboard = new google.visualization.Dashboard(dashboardDiv);
var timePickerControl = new google.visualization.ControlWrapper({
  'controlType': 'ChartRangeFilter', ... });
var countryPickerControl = new google.visualization.ControlWrapper({
  'controlType': 'CategoryFilter', ... });
var performerPicker = new google.visualization.ControlWrapper({
  'controlType': 'CategoryFilter', ... });
var tableChart = new google.visualization.ChartWrapper({
  'chartType': 'Table', ... });

dashboard.bind([ timePickerControl ], [ countryPickerControl ]);
dashboard.bind([ countryPickerControl ], [ performerPicker ]);
dashboard.bind([ performerPicker ], [ tableChart ]);

dashboard.draw(data);
```


Dashboards

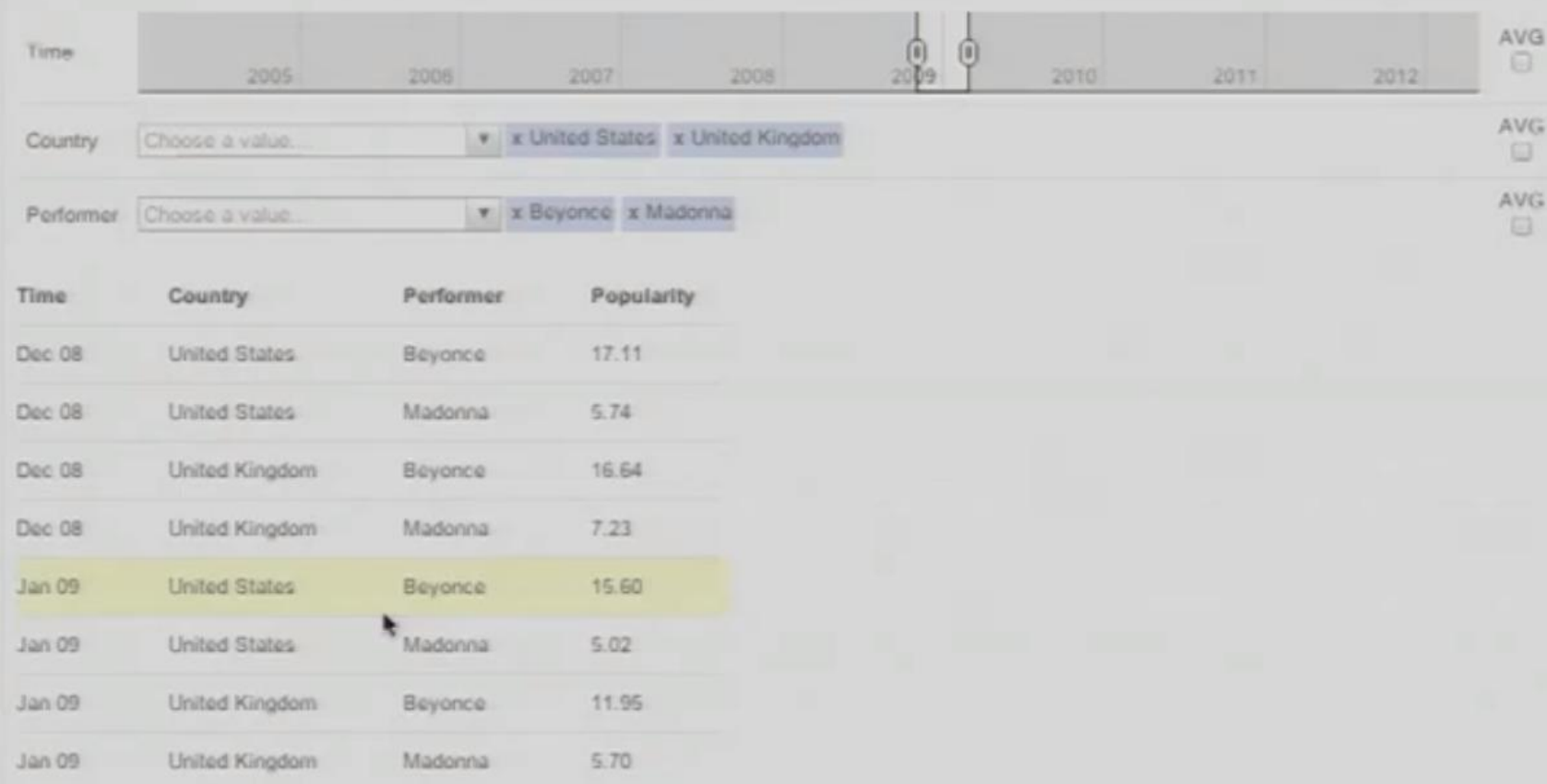
are flexible

JAVASCRIPT

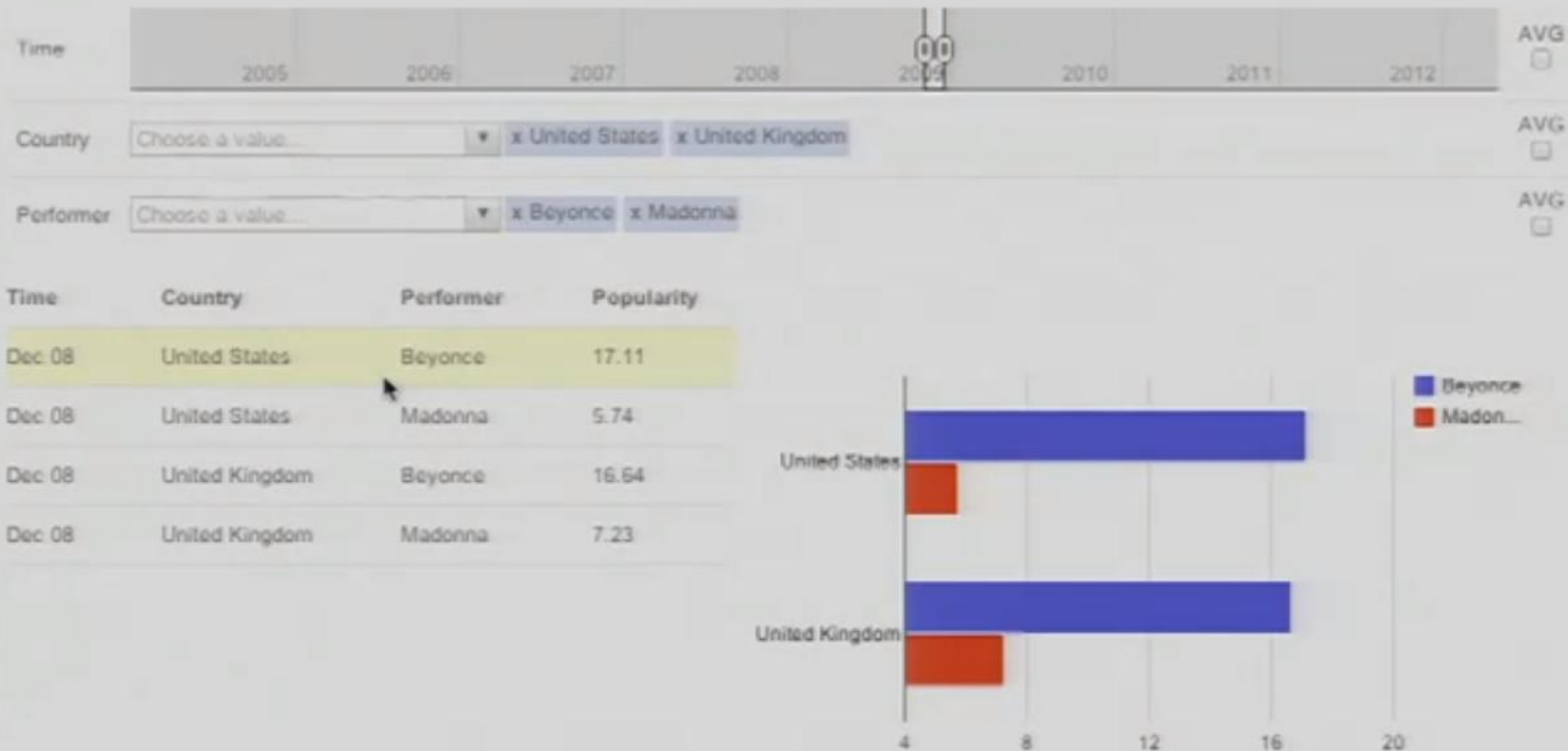
```
var timePickerControl = new google.visualization.ControlWrapper({  
  'controlType': 'ChartRangeFilter',  
  'containerId': 'timePicker',  
  'options': {  
    'filterColumnIndex': 0,  
    'ui': { ... },  
    'minRangeSize': 27*24*60*60*1000, // 27 days  
  },  
  'state': {  
    'range': { 'start': new Date(2008, 10, 2), 'end': new Date(2009, 2, 1) }  
  }  
});
```

More on dashboards: [Chart Tools GoogleIO 2011](#)

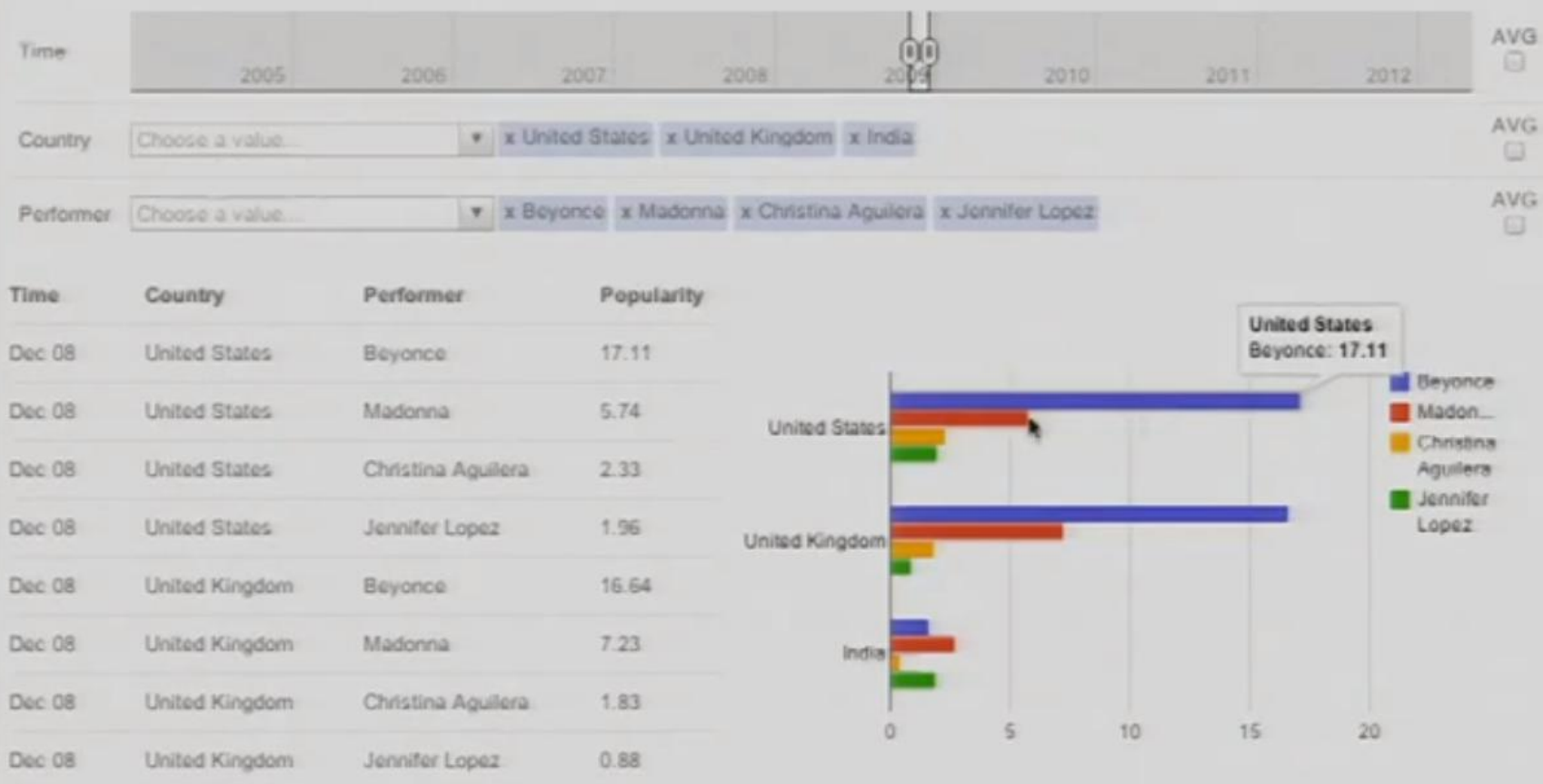
Visualizing your data slice



Visualizing your data slice



Visualizing your data slice



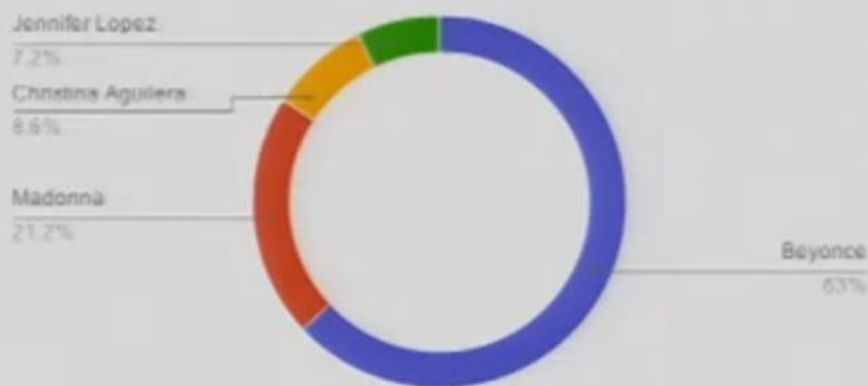
Visualizing your data slice

Time: 2005 2006 2007 2008 2009 2010 2011 2012 AVG ☐

Country: Choose a value... x United States AVG ☐

Performer: Choose a value... x Beyonce x Madonna x Christina Aguilera x Jennifer Lopez AVG ☐

Time	Country	Performer	Popularity
Dec 08	United States	Beyonce	17.11
Dec 08	United States	Madonna	5.74
Dec 08	United States	Christina Aguilera	2.33
Dec 08	United States	Jennifer Lopez	1.96



Visualizing your data slice

Time 2005 2006 2007 2008 2009 2010 2011 2012 AVG

Country Choose a value... x United States AVG

Performer Choose a value... x Beyonce AVG

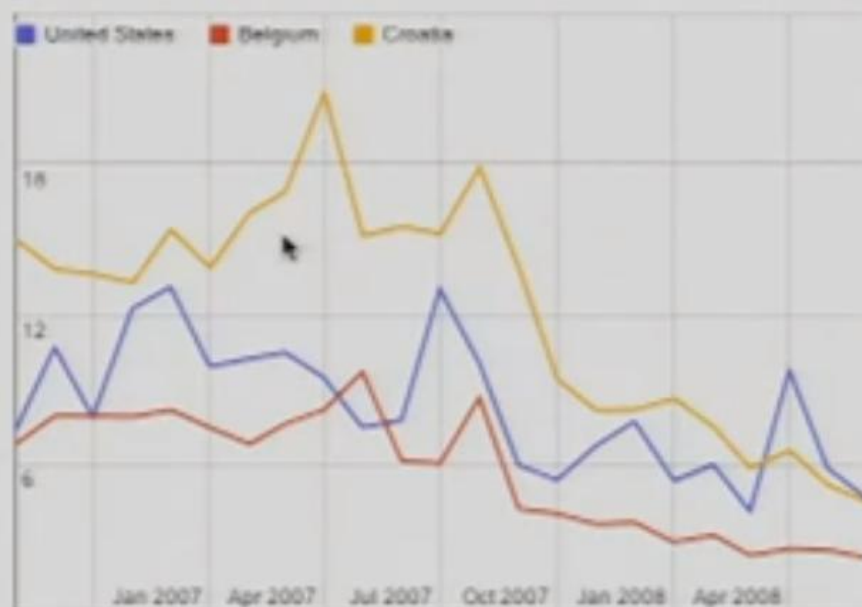
Time	Country	Performer	Popularity
Dec 08	United States	Beyonce	17.11



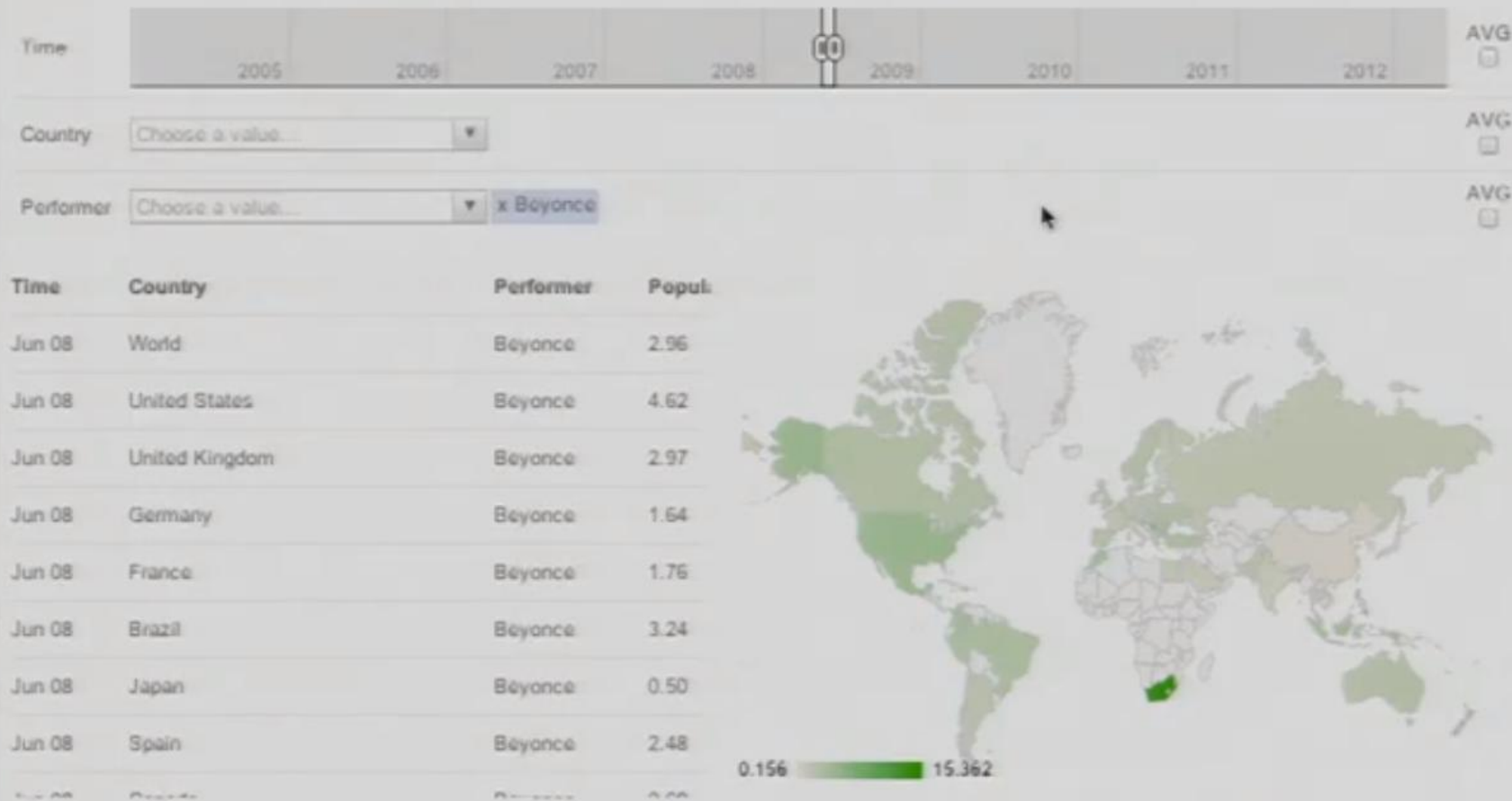
Visualizing your data slice



Time	Country	Performer	Popularity
Aug 06	United States	Beyonce	7.32
Aug 06	Belgium	Beyonce	6.79
Aug 06	Croatia	Beyonce	14.95
Sep 06	United States	Beyonce	10.66
Sep 06	Belgium	Beyonce	7.92
Sep 06	Croatia	Beyonce	13.76
Oct 06	United States	Beyonce	7.87
Oct 06	Belgium	Beyonce	7.92
Nov 06	United States	Beyonce	7.87
Nov 06	Belgium	Beyonce	7.92
Nov 06	Croatia	Beyonce	13.76



Visualizing your data slice





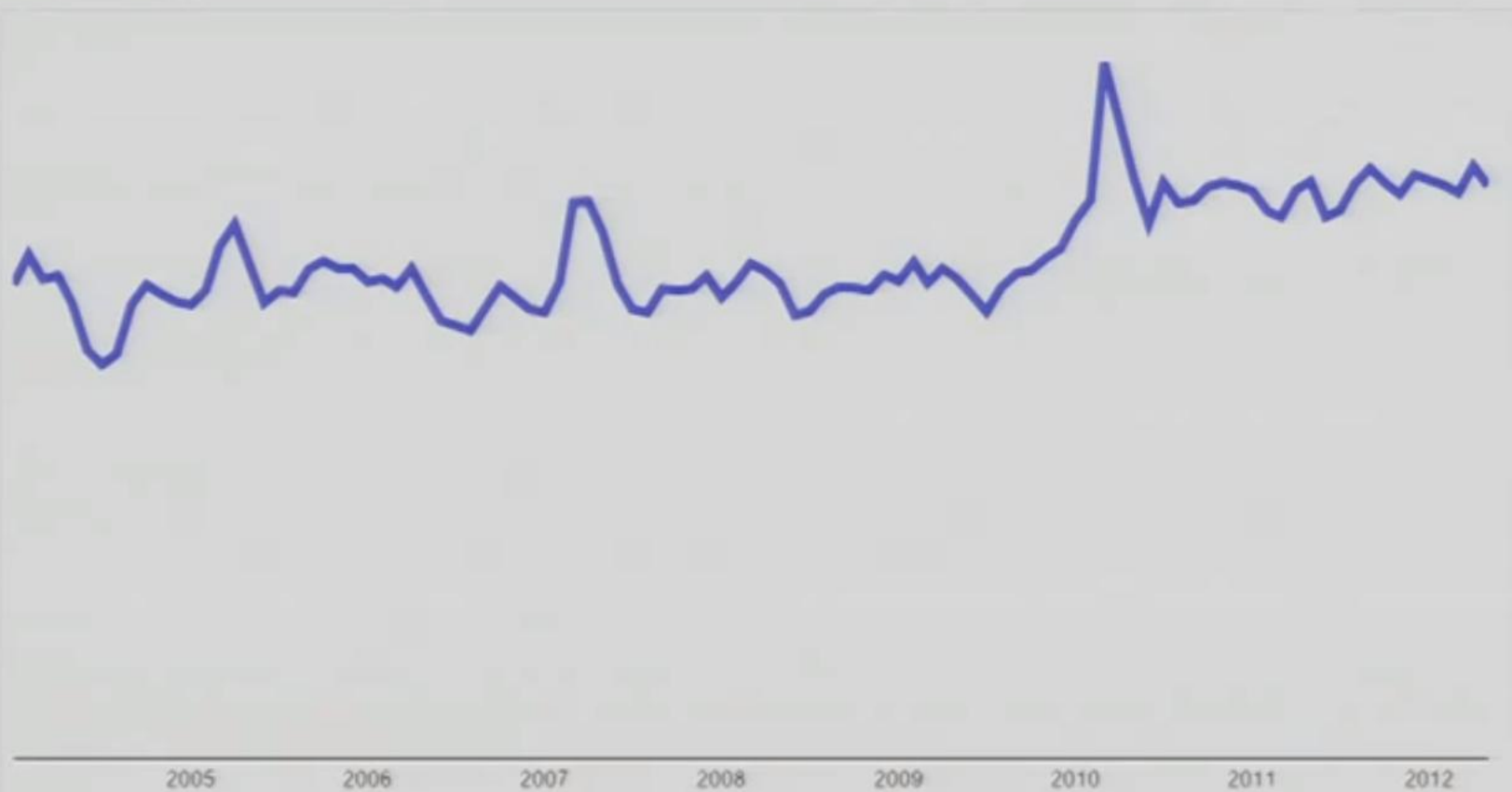
Data Driven Storytelling

Walk your users through a curated path

Narrative 101

- Act 1
 - Protagonist and antagonist
 - Time and space
 - Conflict
- Act 2
 - Attempts to resolve the conflict
 - Secondary conflicts emerge
- Act 3
 - Climax
 - Comedy vs. tragedy

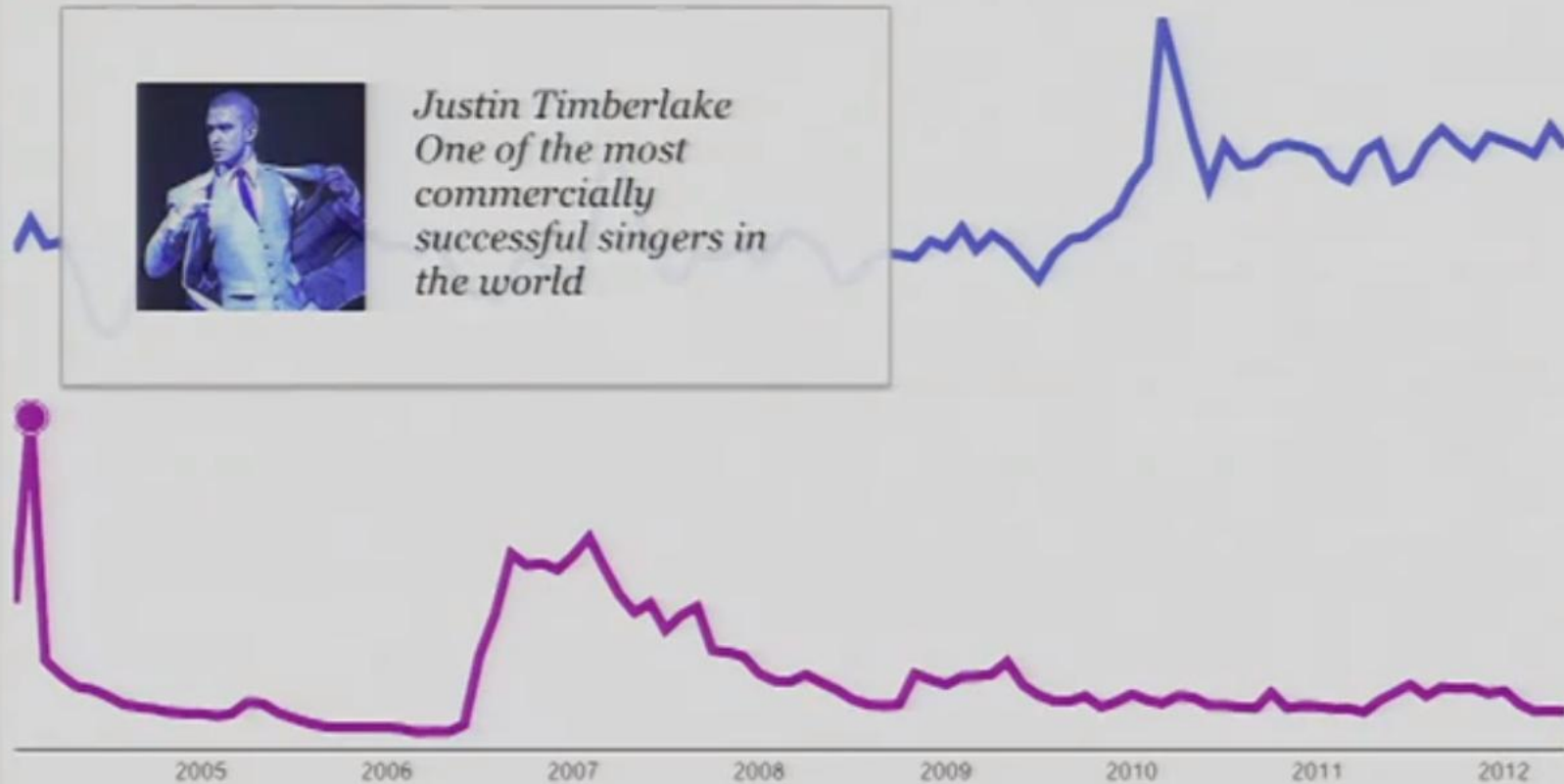
Reaching for the stars



Reaching for the stars



*Justin Timberlake
One of the most
commercially
successful singers in
the world*

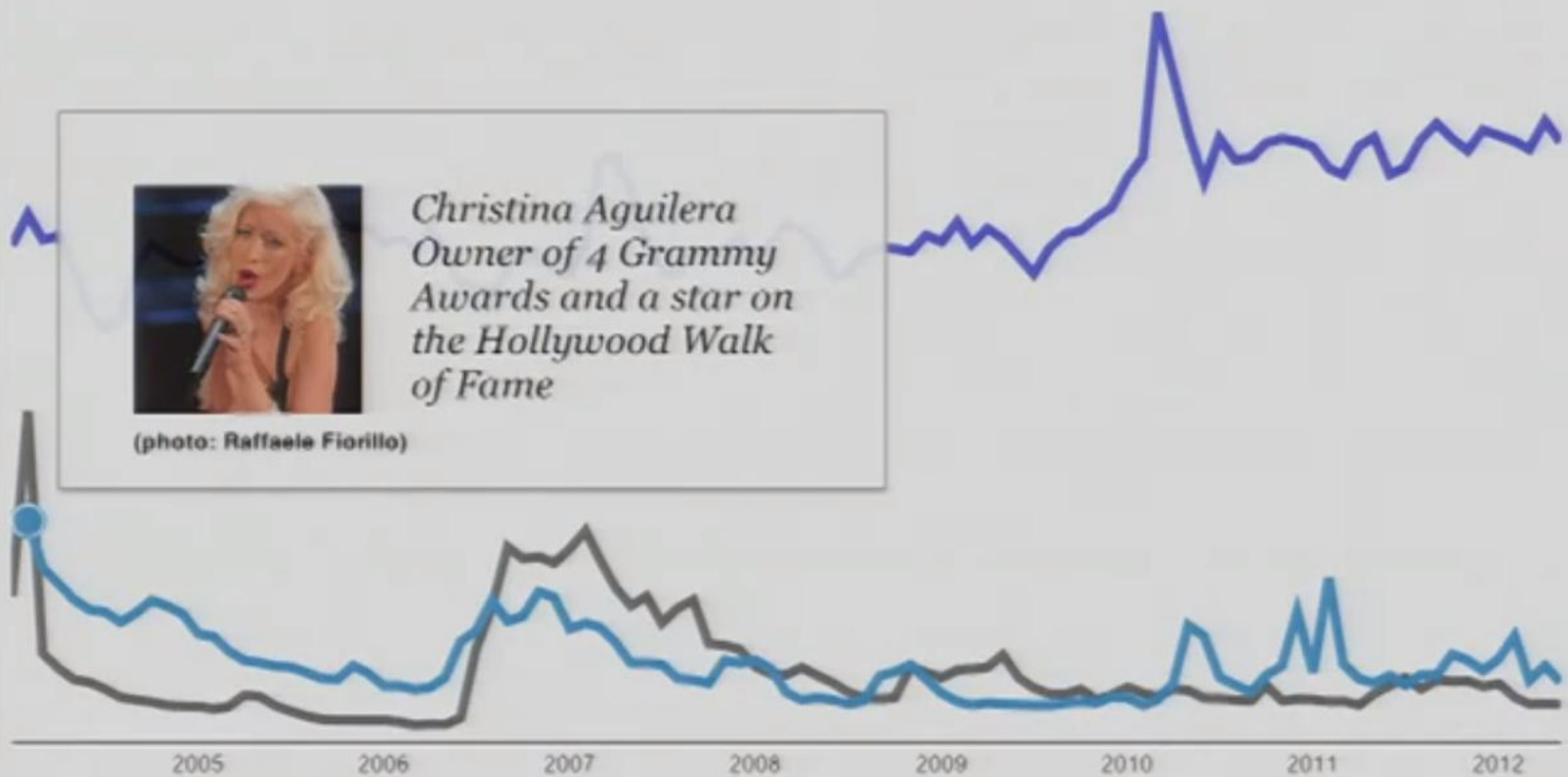


Reaching for the stars



(photo: Raffaele Fiorillo)

*Christina Aguilera
Owner of 4 Grammy
Awards and a star on
the Hollywood Walk
of Fame*

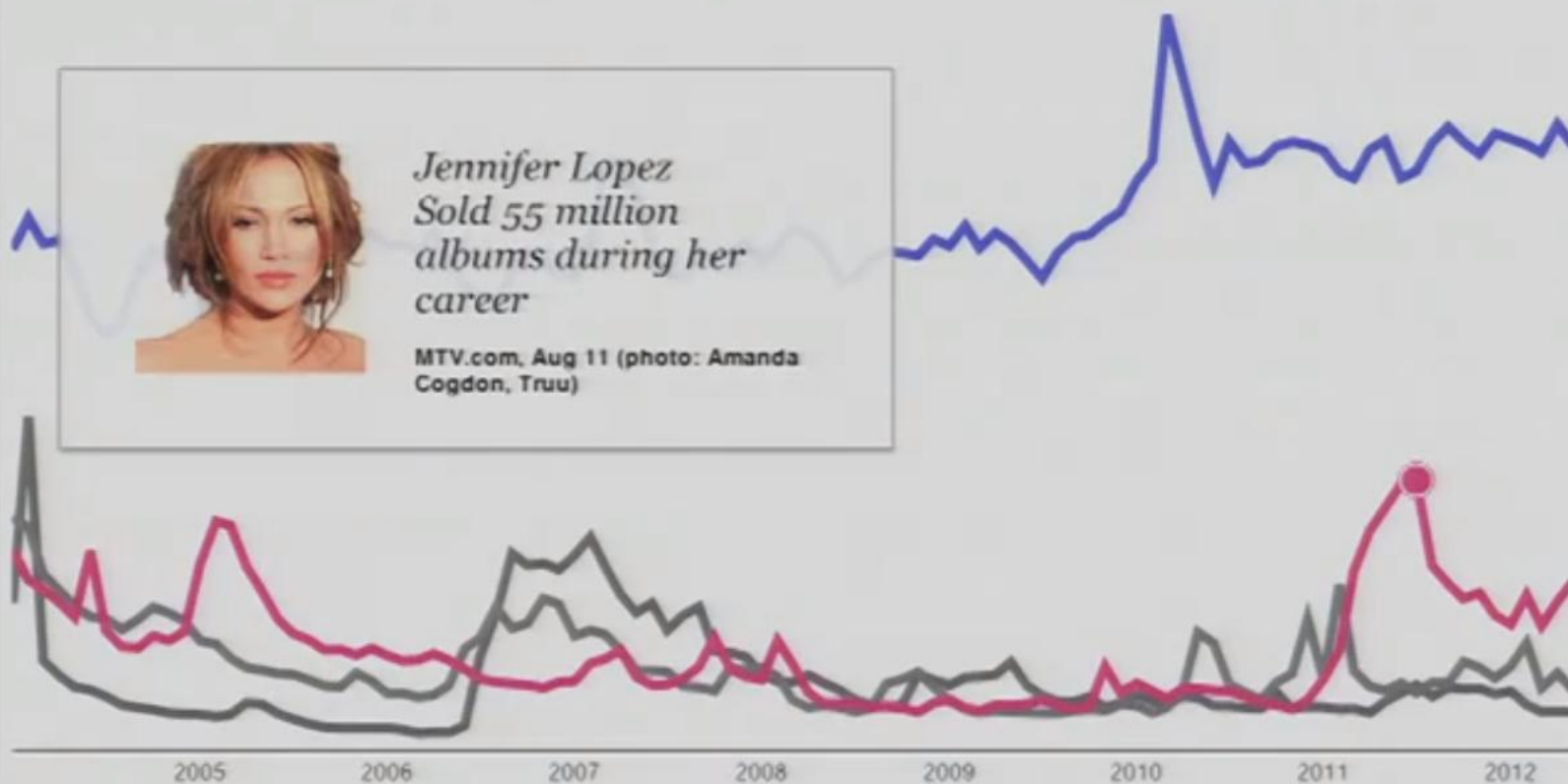


Reaching for the stars



*Jennifer Lopez
Sold 55 million
albums during her
career*

MTV.com, Aug 11 (photo: Amanda
Cogdon, Truu)

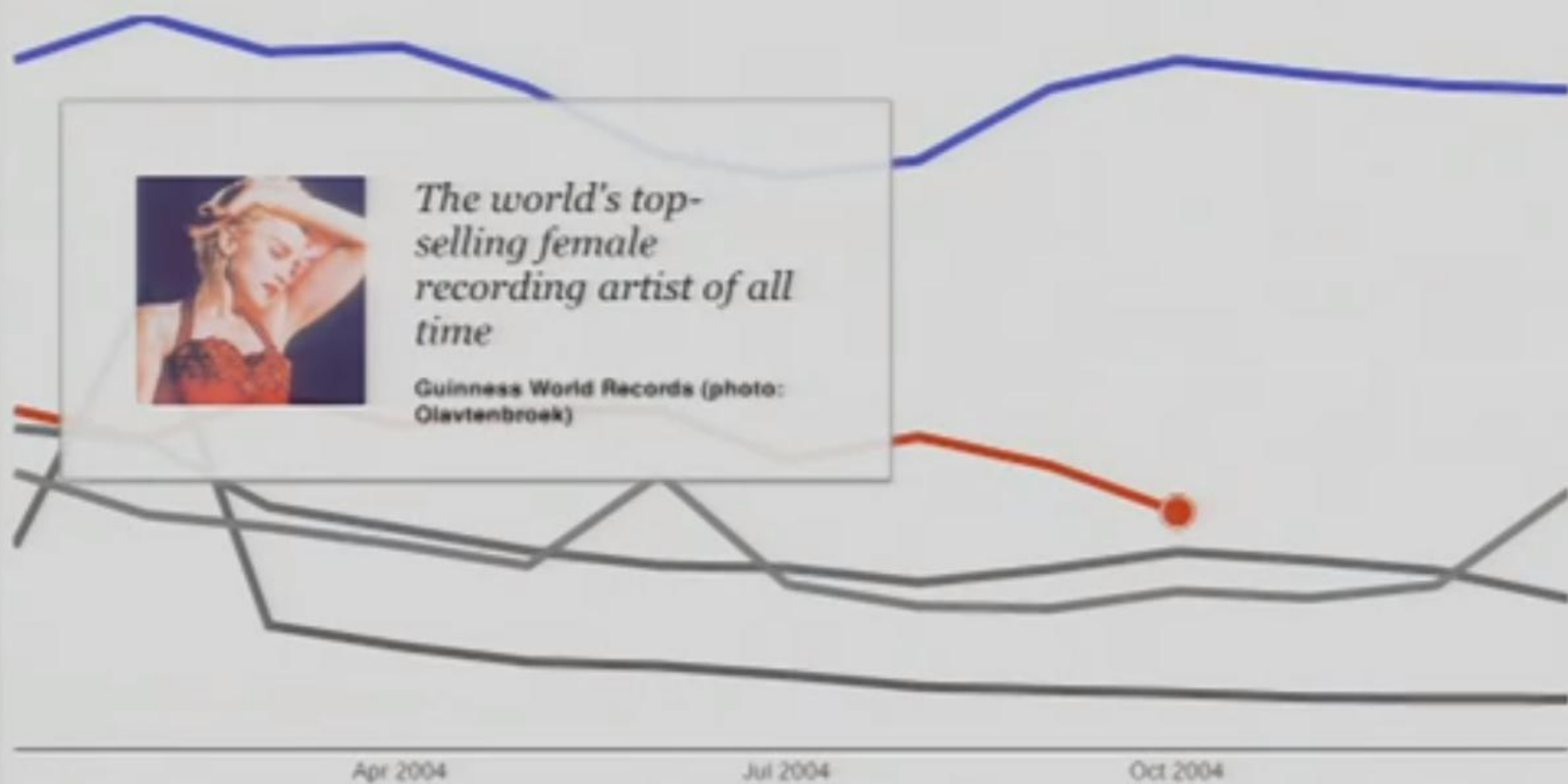


Reaching for the stars

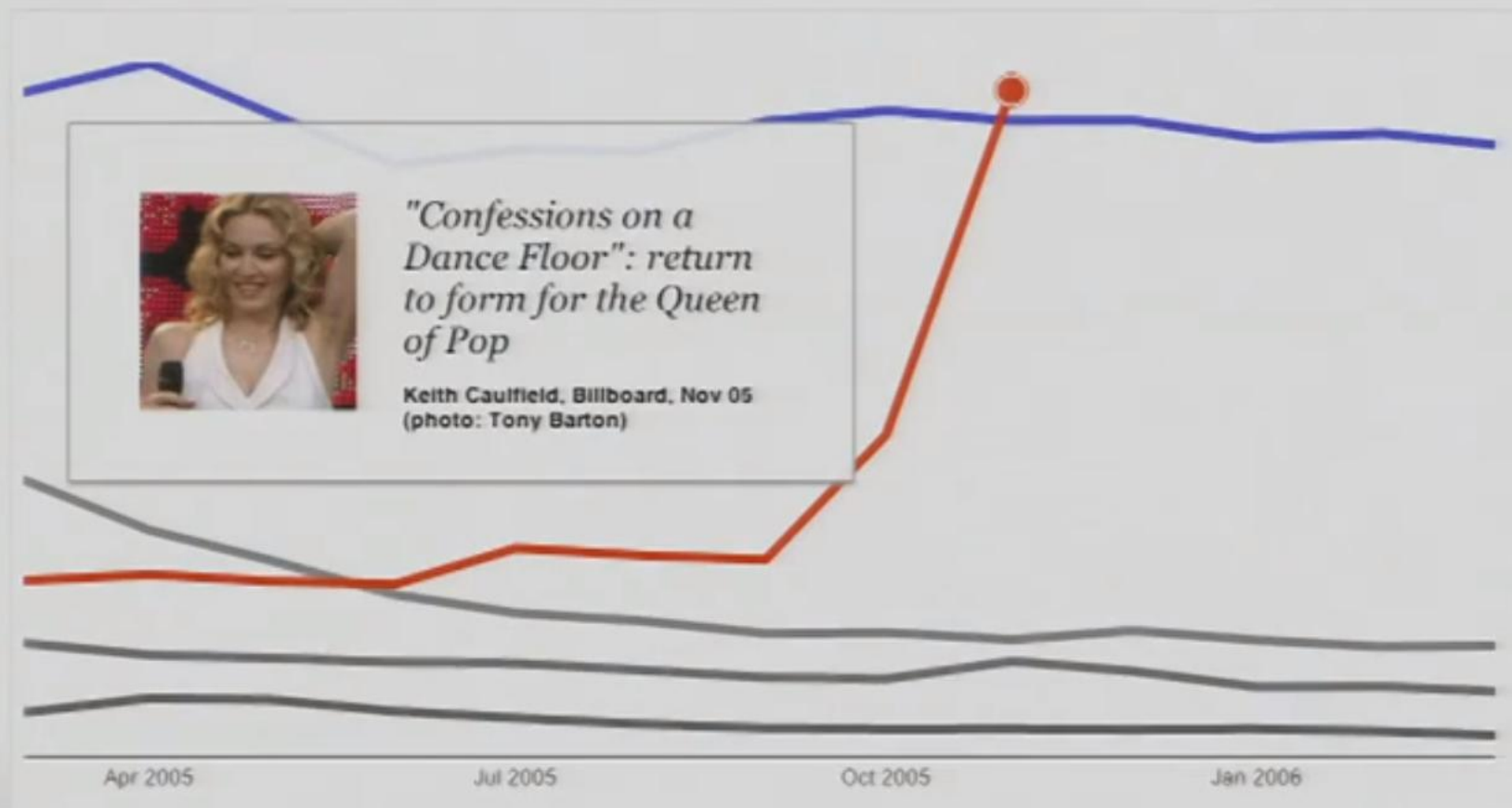


The world's top-selling female recording artist of all time

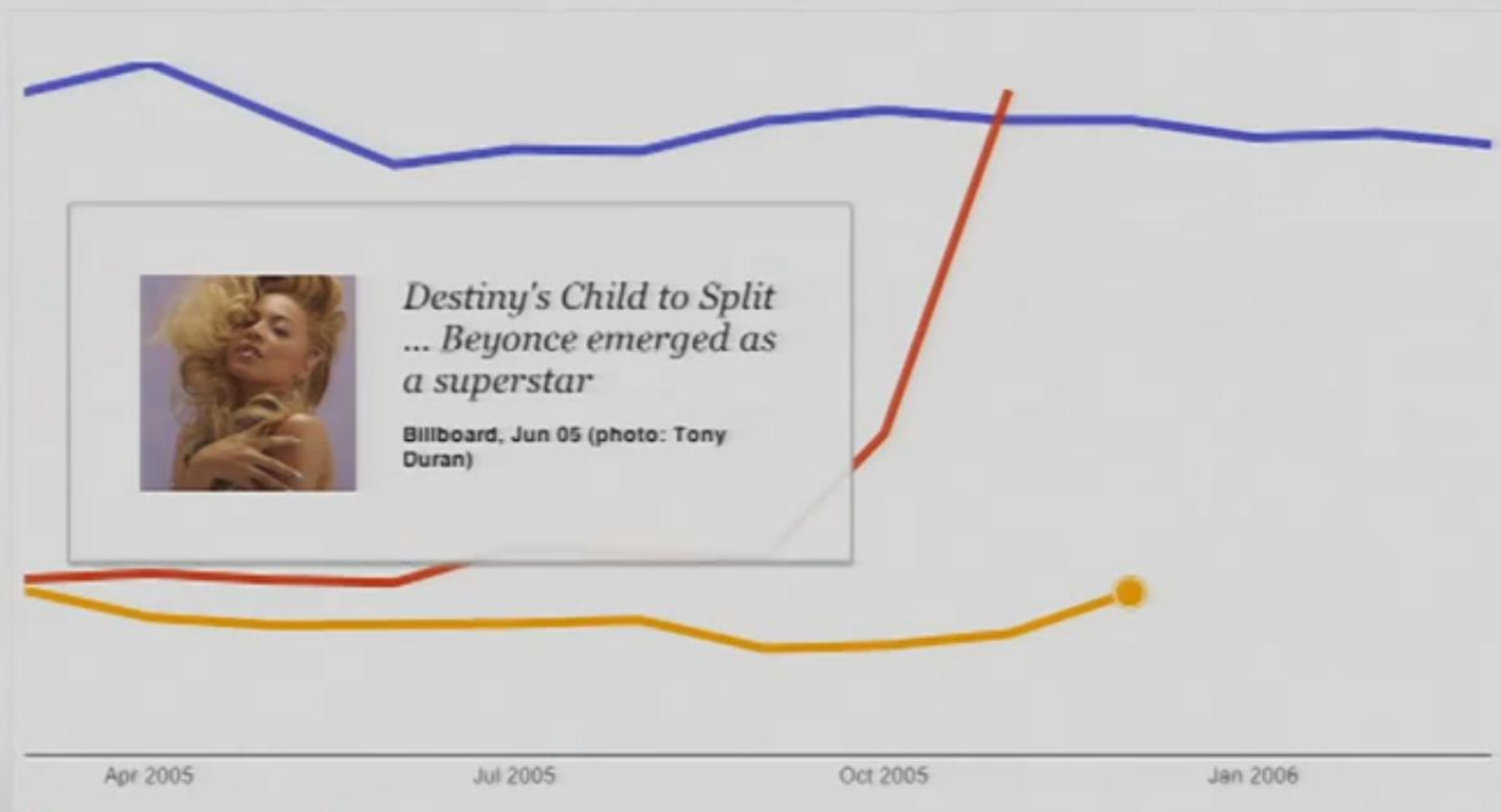
Guinness World Records (photo: Olavtenbroek)



Reaching for the stars



Reaching for the stars



Reaching for the stars



Beyoncé's 'B-Day'
Makes Big Bow at #1

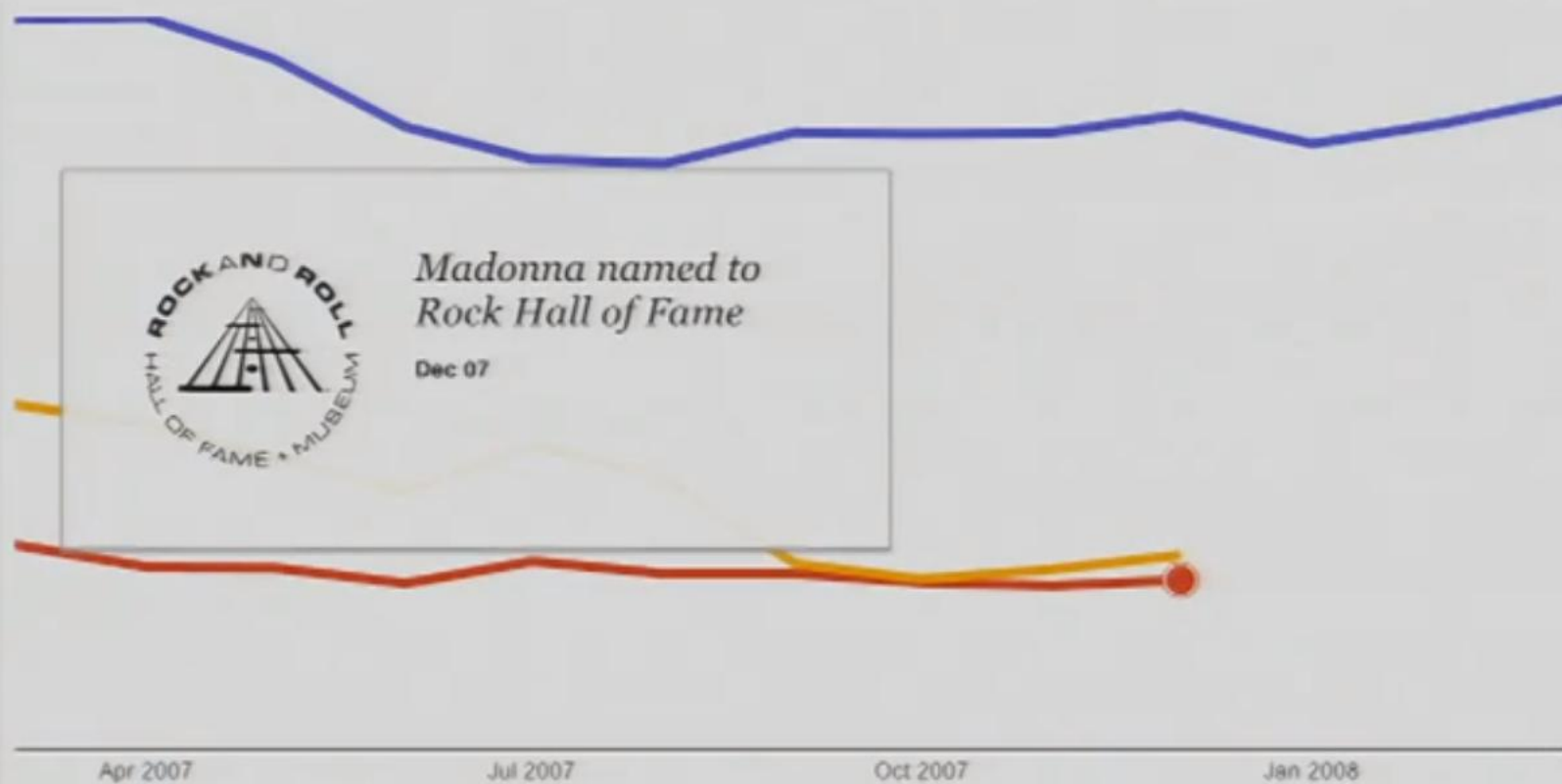
Sep 06 (photo: Cornel Pex)

Apr 2006

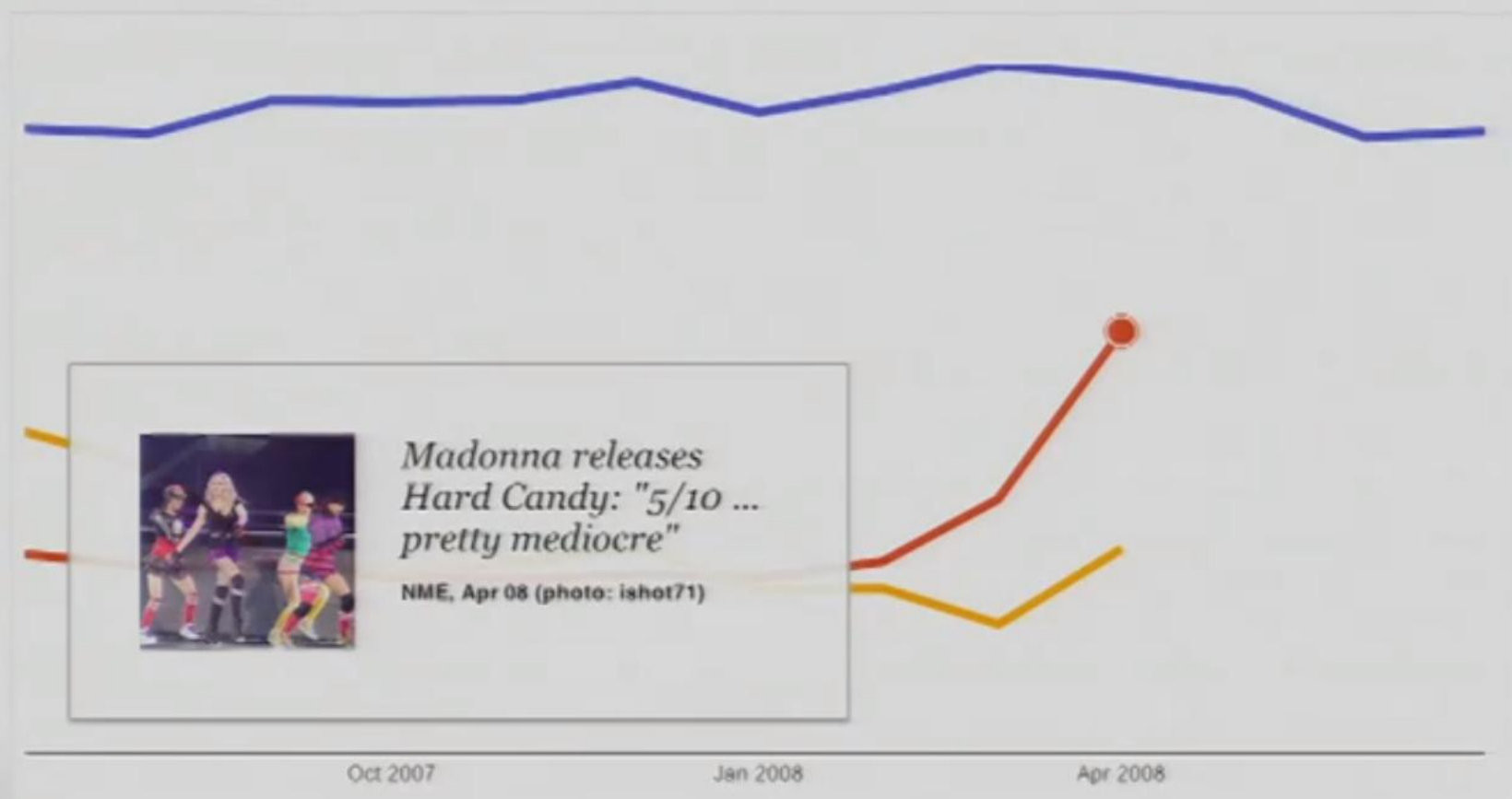
Jul 2006

Oct 2006

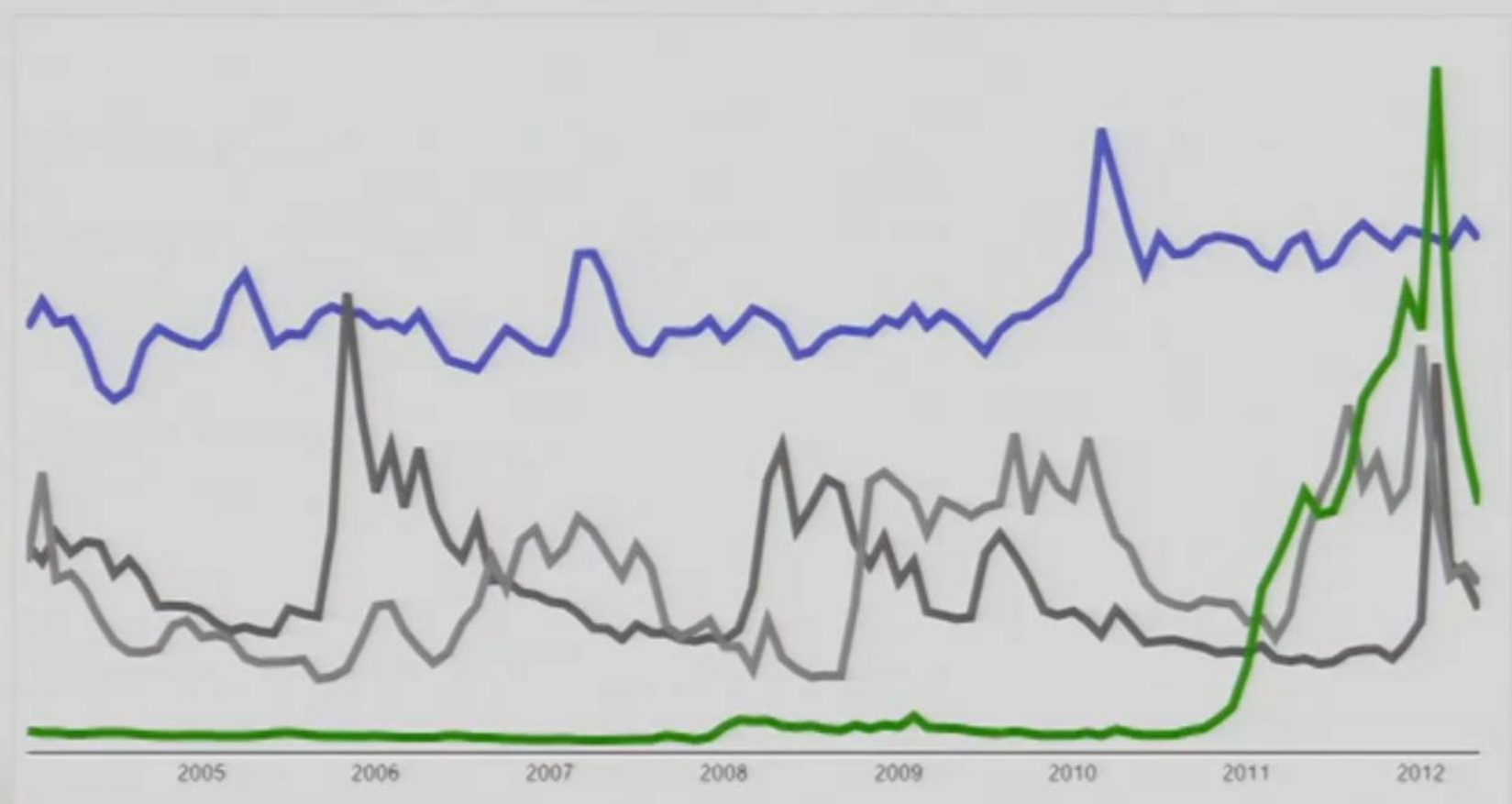
Reaching for the stars



Reaching for the stars

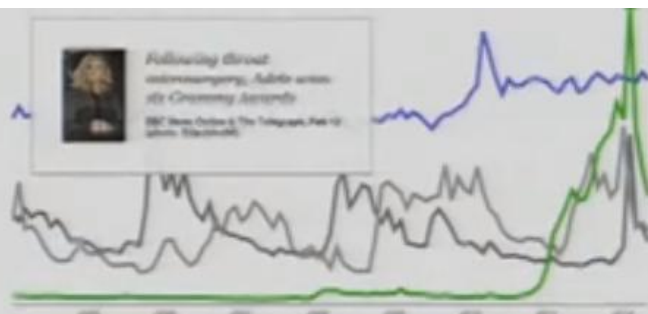


Reaching for the stars



Data Column Roles

Scope and Tooltip

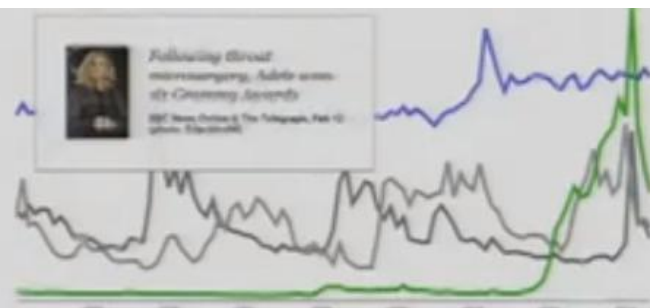


```
// Columns: [Time, Madonna, MadonnaScope, Beyonce, BeyonceScope, Adele, AdeleTooltip].
var frameView = new google.visualization.DataView(dataTable);
frameView.setColumns([
  0, // Time
  1, // Madonna
  // All data values are marked with 'scope': false, making the entire series out-of-scope.
  { role: 'scope', type: 'boolean', calc: function(dataTable, row) { return false; } },
  2, // Beyonce
  { role: 'scope', type: 'boolean', calc: function(dataTable, row) { return false; } },
  3, // Adele
  { role: 'tooltip', type: 'string',
    calc: function(dataTable, row) { return getHTMLTooltipContent('Adele', row); } }
]);
chart.draw(frameView, options);
```

JAVASCRIPT

Data Column Roles

Scope and Tooltip



```
// Columns: [Time, Madonna, MadonnaScope, Beyonce, BeyonceScope, Adele, AdeleTooltip]
var frameView = new google.visualization.DataView(dataTable);
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  3, // Adele
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    calc: function(dataTable, row) { return getHTMLTooltipContent('Adele', row); } }
]);
chart.draw(frameView, options);
```

JAVASCRIPT

Animation

View Window Animation

JAVASCRIPT

```
// Draw data for entire timeline (2004-2012).
options.hAxis.viewWindow = { min: new Date(2004, 0, 1), max: new Date(2012, 5, 1) };
google.visualization.events.addListener(chart, 'ready', zoomInTo2005);
chart.draw(data, options);

function zoomInTo2005() { // Perform animated zoom-in to 2005.
    options.hAxis.viewWindow = { min: new Date(2005, 0, 1), max: new Date(2005, 11, 31) };
    options.animation = { duration: 2000 }; // In milliseconds
    google.visualization.events.addListener(chart, 'animationfinish', panTo2006);
    chart.draw(data, options);
}

function panTo2006() { // Perform animated panning to 2006.
    // Same as above. View window size has not changed, so animation will pan (not zoom).
    options.hAxis.viewWindow = { min: new Date(2006, 0, 1), max: new Date(2006, 11, 31) };
    options.animation = { duration: 1000 }; // In milliseconds
    chart.draw(data, options);
}
```


Animation

View Window Animation

JAVASCRIPT

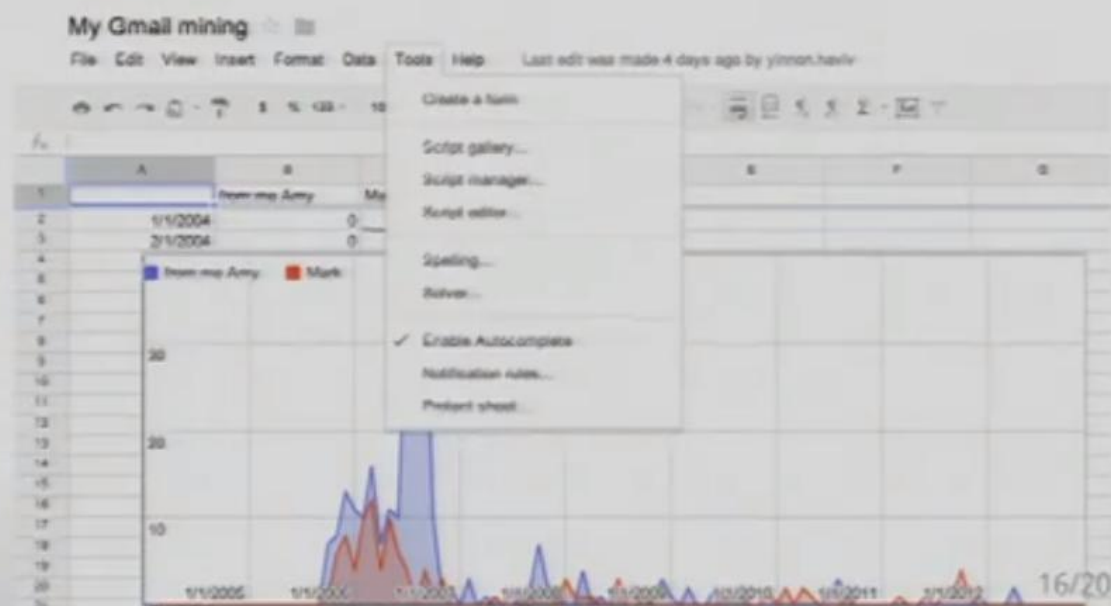
```
// Draw data for entire timeline (2004-2012);
options.hAxis.viewWindow = { min: new Date(2004, 0, 1), max: new Date(2012, 5, 1) };
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    options.animation = { duration: 2000 }; // In milliseconds
    google.visualization.events.addListener(chart, 'animationfinish', panTo2006);
    chart.draw(data, options);
}

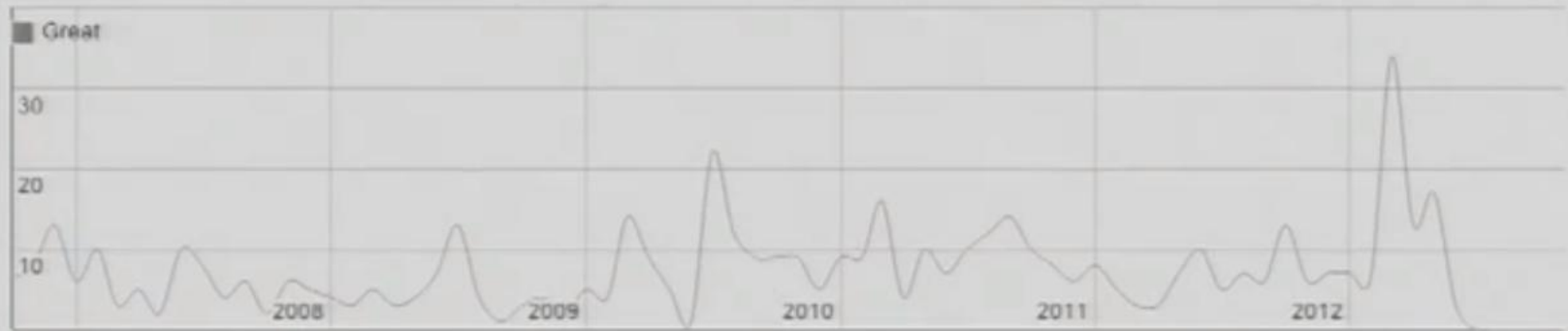
function panTo2006() { // Perform animated panning to 2006.
    // Same as above. View window size has not changed, so animation will pan (not zoom).
    options.hAxis.viewWindow = { min: new Date(2006, 0, 1), max: new Date(2006, 11, 31) };
    options.animation = { duration: 1000 }; // In milliseconds
    chart.draw(data, options);
}
```

The story of you - goo.gl/xw9C3

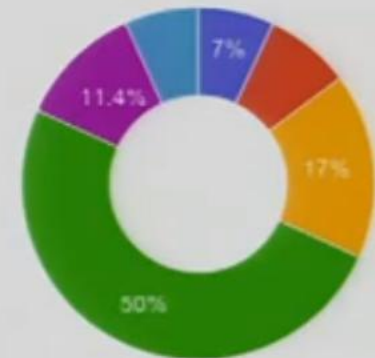
- Make your own copy of this spreadsheet
- Replace "Dan" and "David" with names of two friends
- Open Tools->Script Editor...
- Click RUN button and grant gmail access approvals to the script
- Run again and wait a few seconds for the data to load



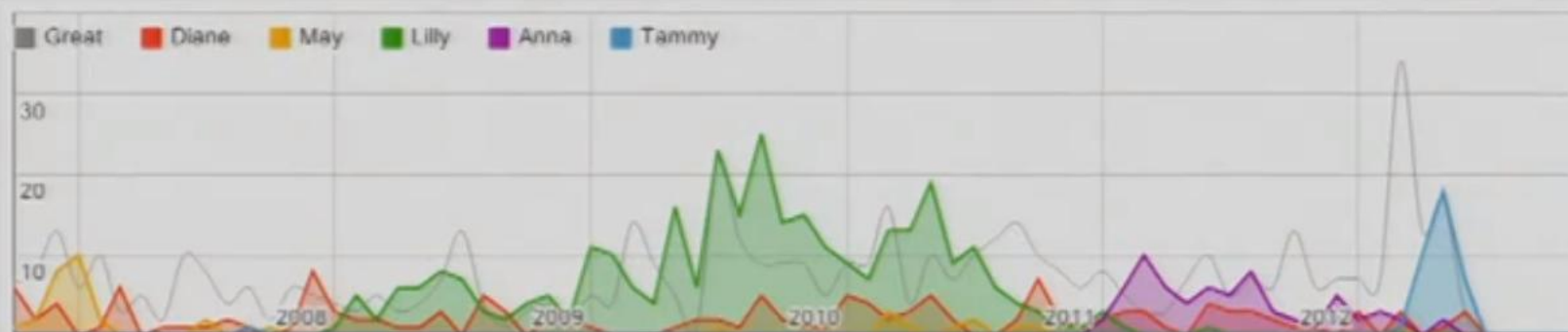
The story of me



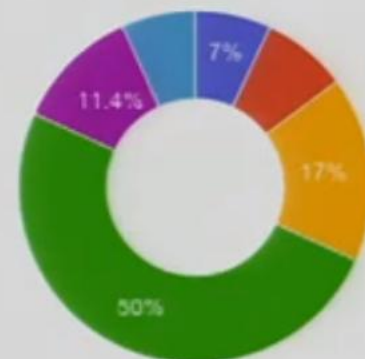
Areas of interest



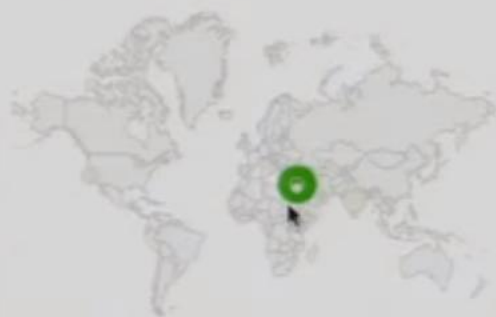
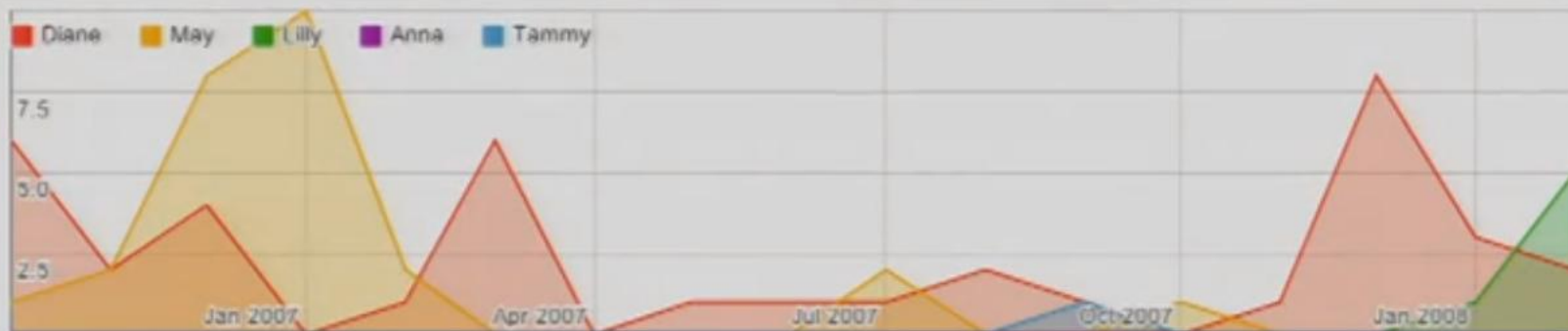
The story of me



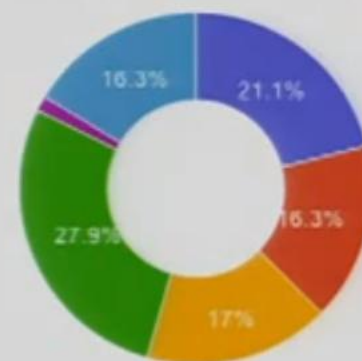
Areas of interest



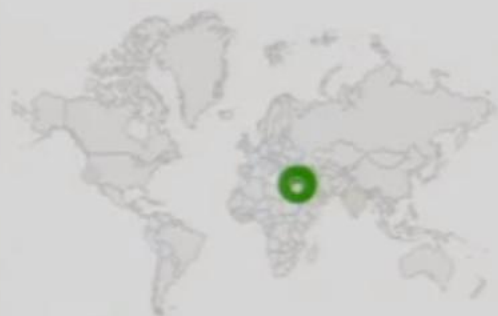
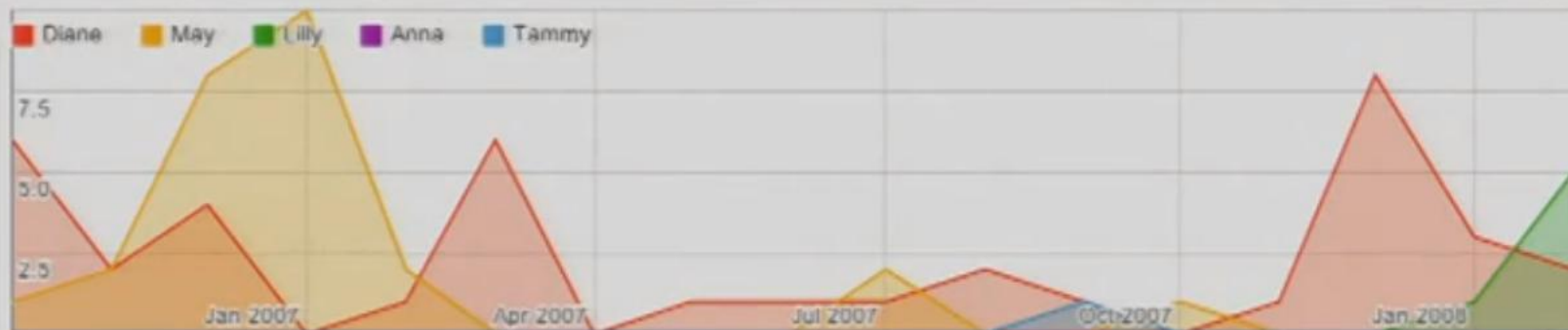
The story of me



Areas of interest



The story of me



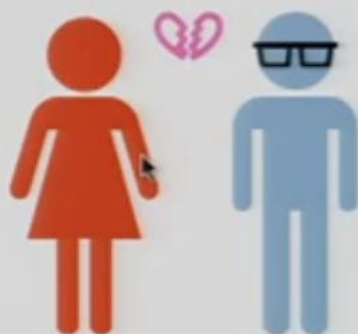
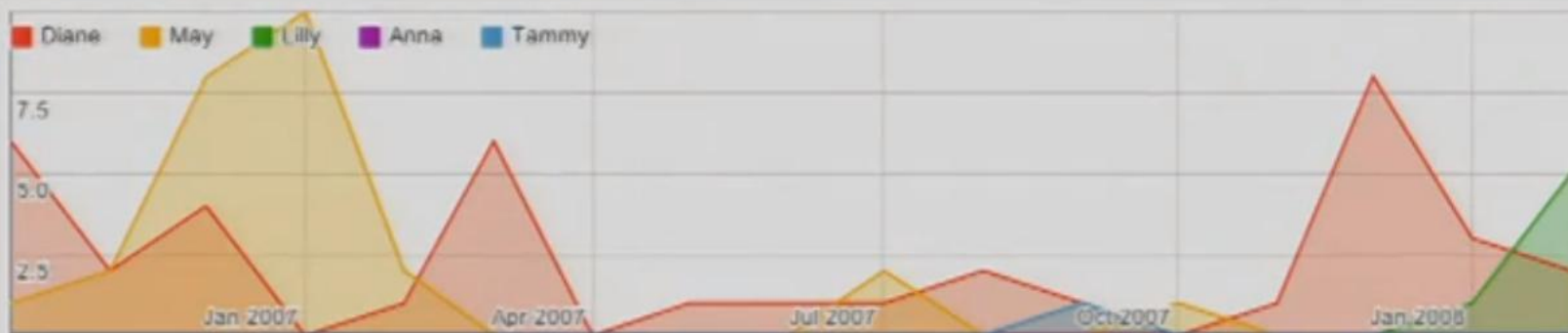
***Sane
Pretty
Interesting
Fun***

-- John the wise

The 2-traits theorem

Sane			Anna	Tammy
Pretty	May			Tammy
Interesting		Lilly		Tammy
Fun		Lilly	Anna	Tammy

The story of me



The 2-traits theorem

Sane			
Pretty			
Interesting			
Fun			

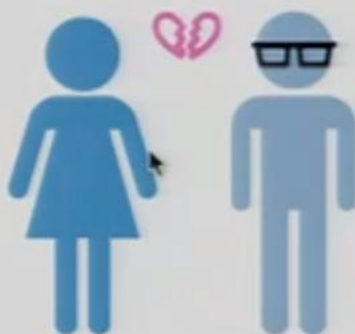
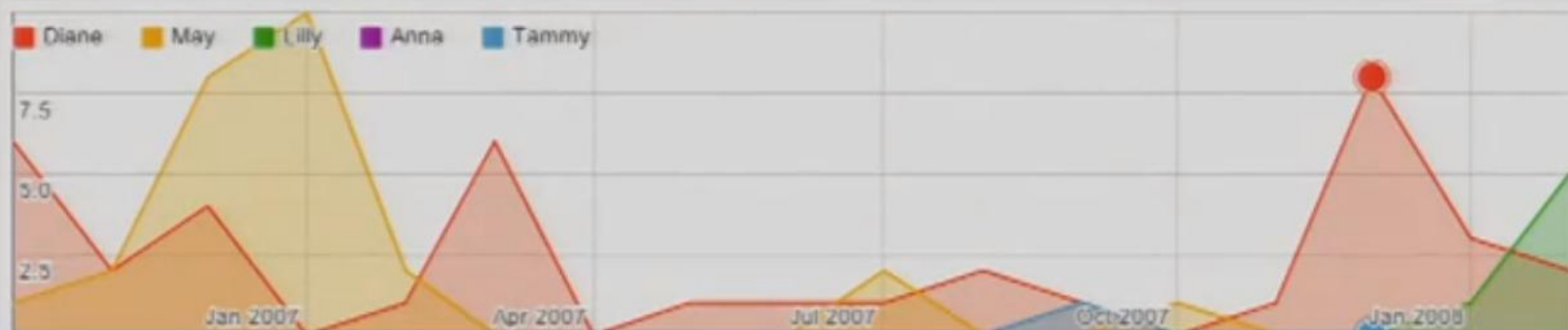
The story of me



The 2-traits theorem

Sane				
Pretty				
Interesting				
Fun				

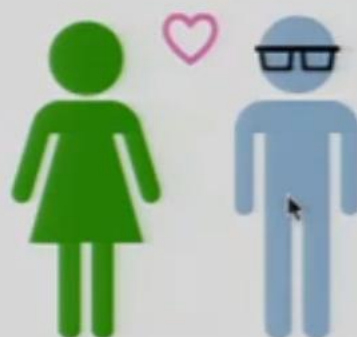
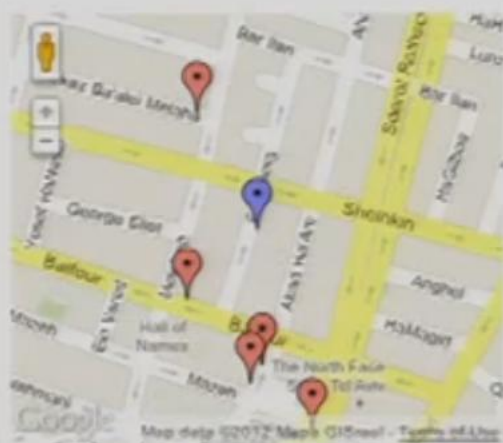
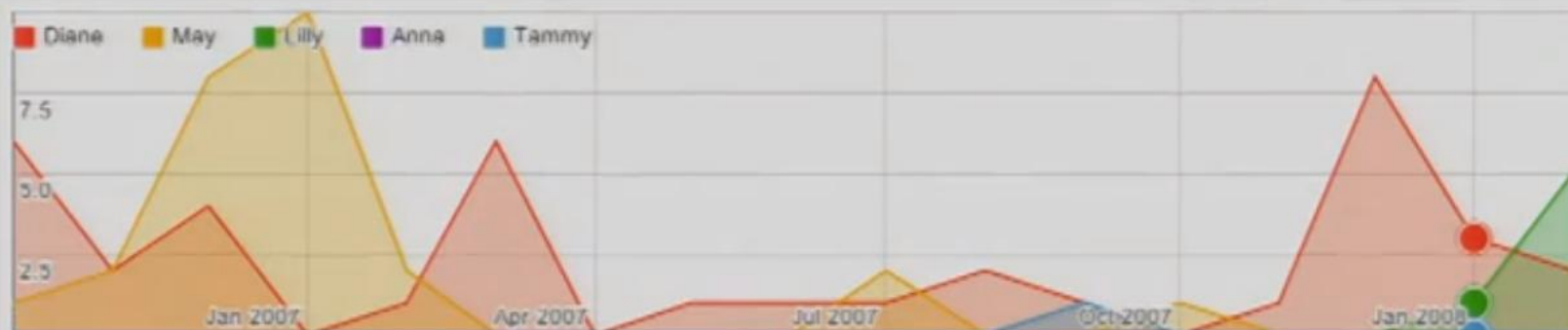
The story of me



The 2-traits theorem

Sane			
Pretty			
Interesting			
Fun			

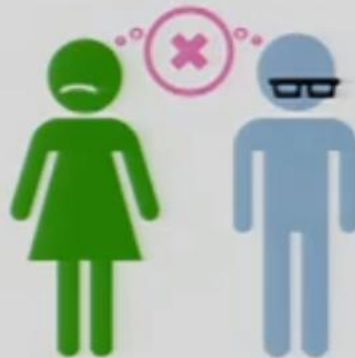
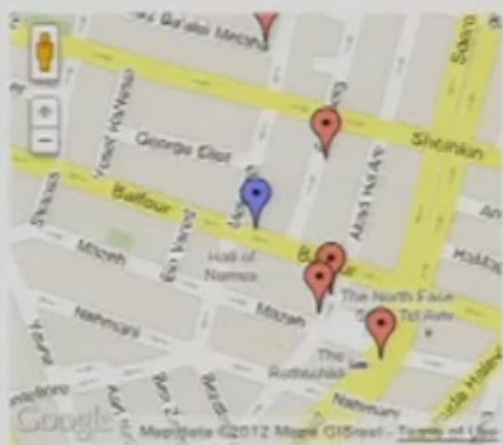
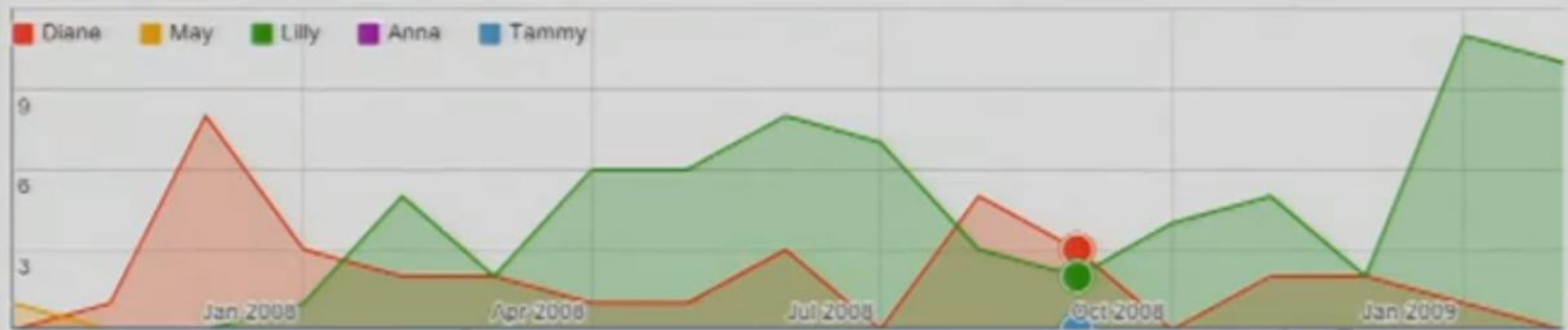
The story of me



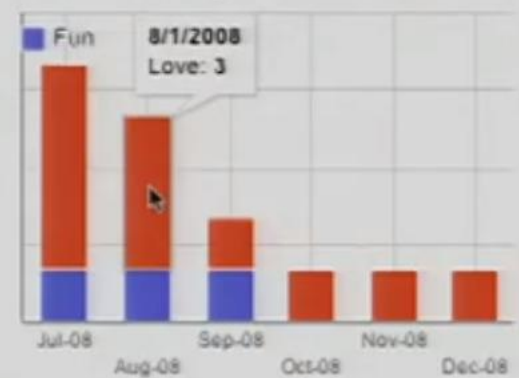
The 2-traits theorem

Sane			
Pretty			
Interesting			
Fun			

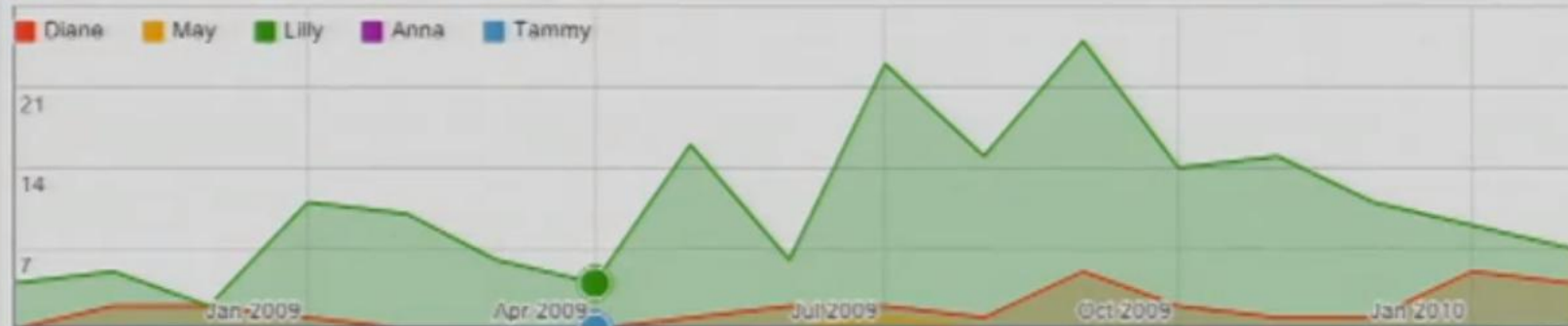
The story of me



How am I feeling?



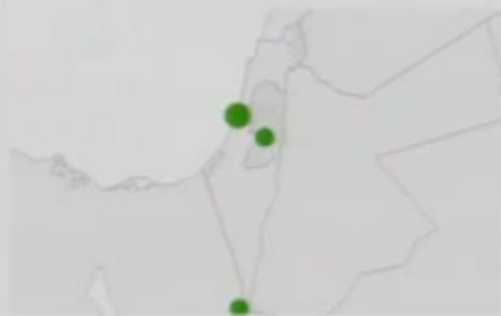
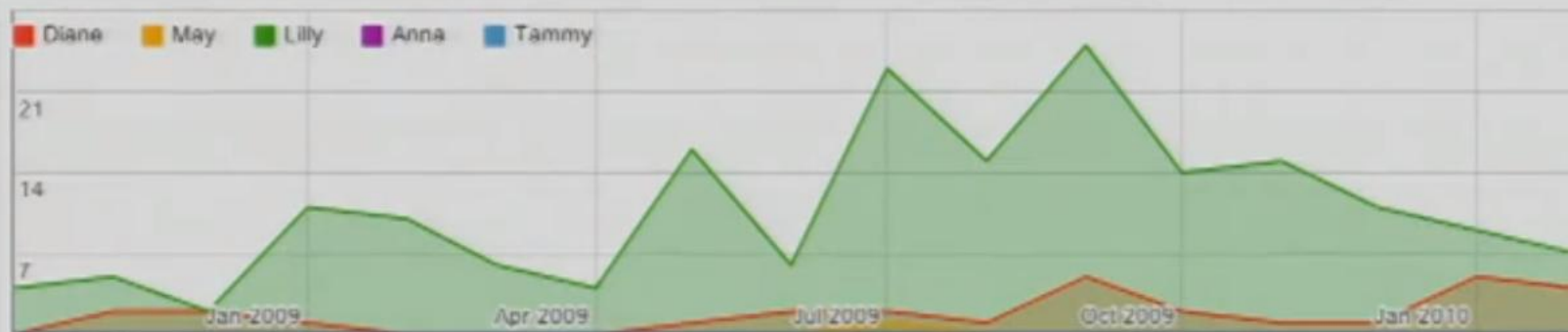
The story of me



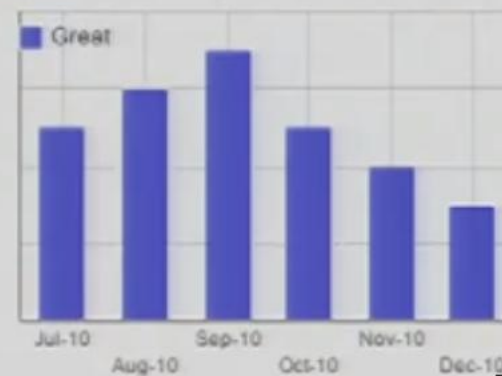
The 2-traits theorem

Sane			
Pretty			
Interesting			
Fun			

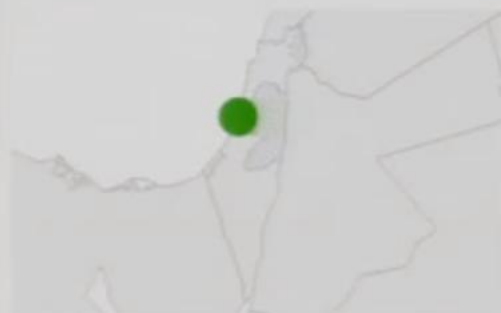
The story of me



How am I feeling?



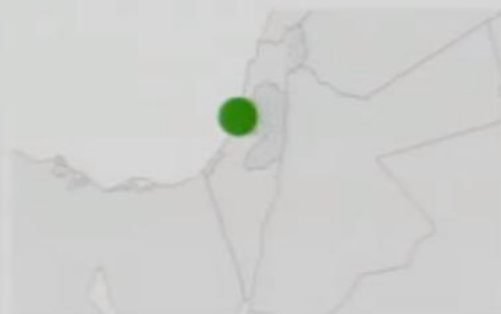
The story of me



The 2-traits theorem

Sane				
Pretty				
Interesting				
Fun				

The story of me



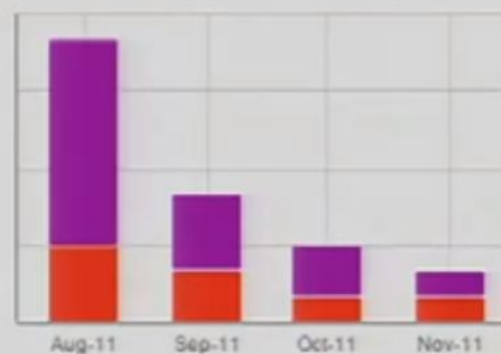
COMPOSE

Inbox (1)

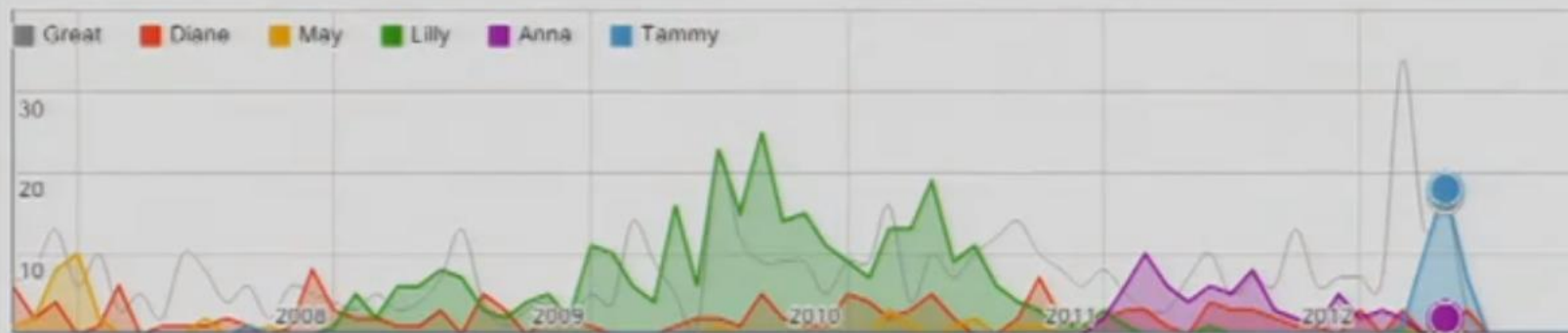
Starred

Imnotant

Emails to:



The story of me



The 2-traits theorem

Sane				
Pretty				
Interesting				
Fun				

Summary

	Data exploration	Storytelling
Model	A graph of all slices and legal transitions	A path of deliberate transitions
Component	Exponential	Linear
Point of view	Unbiased	Agenda driven
User	Active	Passive
Response	Overwhelming	Interesting

<Thank You!>

<https://developers.google.com/chart/>

Yinnon Haviv - Software Engineer, Google
Michael Fink - Product Manager, Google

