Interaction

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Graphic Design

Interaction Design

Data Analysis

User Interface Design

Interactive Data Visualization

Exploratory Data Analysis

Static Visualization
Why interaction?
When is (static) representation not enough?

- Scale
  - Too many data points
  - Too many dimensions

- Exploration

- Learning

- Storytelling
Few's Principles of Interaction

comparing
sorting
filtering
highlighting
aggregating
zooming and panning
details
annotating
re-encoding
selecting
Yi et al.’s Interactive Vis Techniques

Select
  mark something as interesting

Explore
  show me something different

Reconfigure
  show me a different arrangements

Encode
  change the visual representations

Abstract/Elaborate
  show me more or less detail

Filter
  conditionally show me something

Connect
  show me related items
This takes the reference to all circles and sets the cx attribute for each one. (Remember that, in SVG lingo, cx is the x position value of the center of the circle.) Our data has already been bound to the circle elements, so for each circle, the value d matches the corresponding value in our original dataset (5, 10, 15, 20, or 25).

Another value, i, is also automatically populated for us. (Thanks, D3!) Just as with d, the name i here is arbitrary and could be set to whatever you like, such as counter or elementID. I prefer to use i because it is concise, it alludes to the convention of using i in for loops, and it is very common, as you’ll see it in all the online examples.

So, i is a numeric index value of the current element. Counting starts at zero, so for our “first” circle i == 0, the second circle’s i == 1, and so on. We’re using i to push each subsequent circle over to the right, because each subsequent loop through, the value of i increases by one:
Select

mark something as interesting
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show me different arrangements

http://www.meandeviation.com/dancing-histograms/
Reconfigure
show me different arrangements

http://indexity.net/vis/hw/
Encode

change the visual representations
Abstract/Elaborate
show me more or less detail
Abstract/Elaborate

show me more or less detail

“details on demand”
Filter

conditionally show me something
Filter

conditionally show me something

http://benfry.com/zipdecode/
Query language

SELECT address FROM realestateDB WHERE sqFoot >= 1500 AND bedrooms >= 3 AND garage == TRUE AND price <= $300000

movies90 <- subset(movies, year>=1990 & year < 2000)
Dynamic queries

The yellow dots above are homes in the DC area for sale. You may get more information on a home by selecting it.

You may drag the 'A' and 'B' distance markers to your office or any other location you want to live near.

Select distances, bedrooms, and cost ranges by dragging the corresponding slider boxes on the right.

Select specific home types and services by pressing the labeled buttons on the right.
Dynamic queries

http://www.kayak.com/explore/
Brushed histograms

http://square.github.io/crossfilter/
Connect

show me related items

brush and link

http://bl.ocks.org/mbostock/4063663
Connect

show me related items

Waldner et al. “Visual Links Across Applications”, 2010