



DimpVis: Exploring Time-varying Information Visualizations by Direct Manipulation

Brittany Kondo, Christopher Collins
VIS 2014
presented by Antoine Ponsard



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Direct manipulation

```
mv file.txt ./folder
```

Direct manipulation

Ben Schneiderman, 1983



file.txt



folder

DimP: Direct Manipulation Player

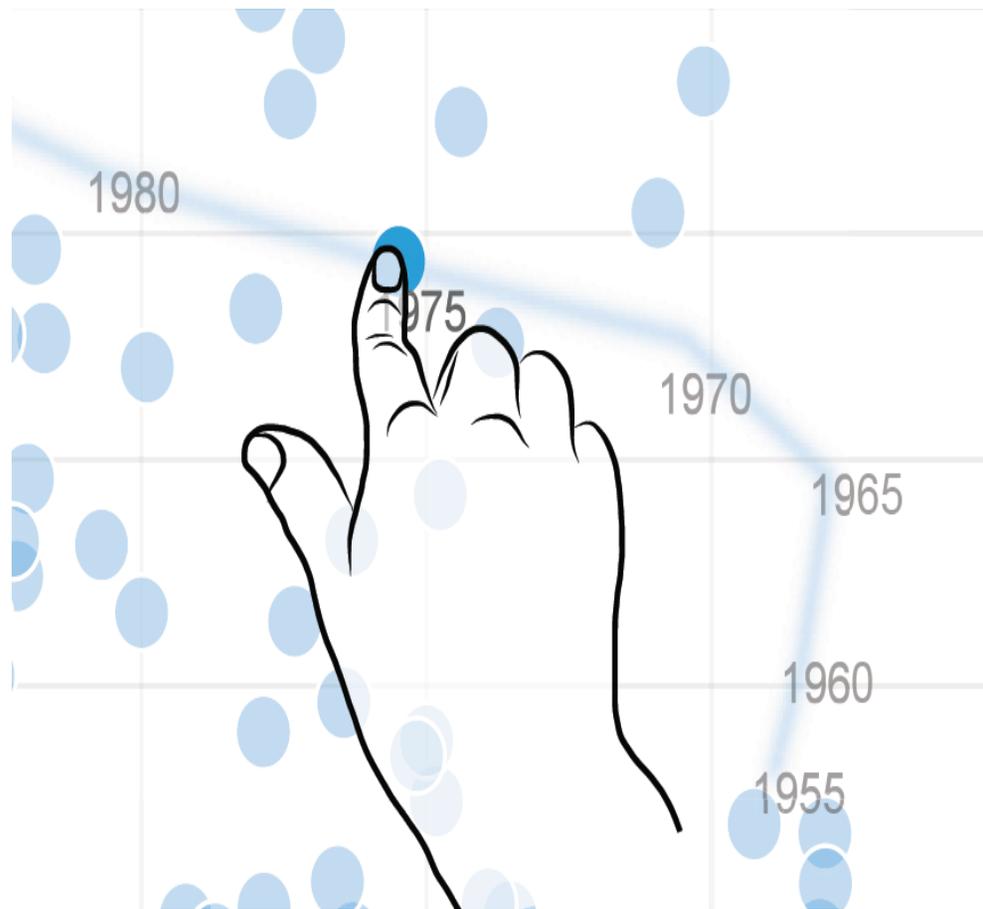


Video Browsing by Direct Manipulation

Dragicevic, P., Ramos, G., Bibliowicz, J.,
Nowrouzezahrai, D., Balakrishnan, R.,
and Singh, K. (CHI '08)



DimpVis



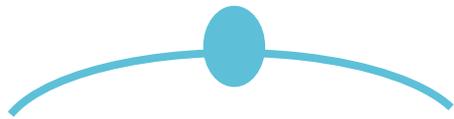
How: Manipulate – Change view over time

What: Any data with time as a key

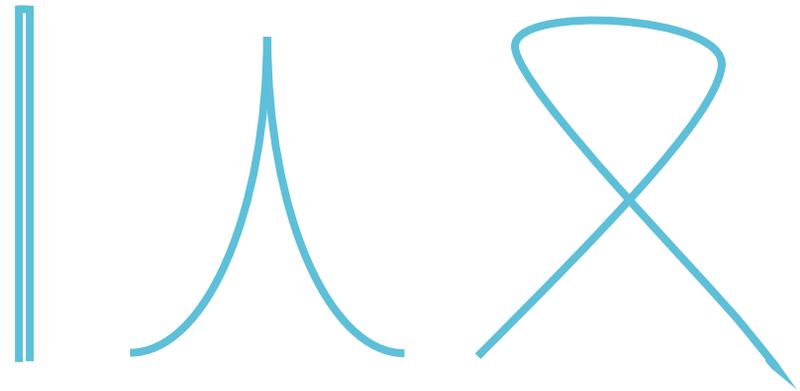
Design guidelines

- ✓ Object-centric navigation
- ✓ Connectedness
- ✓ Flexibility
- ✓ Minimal visual change

Design challenges

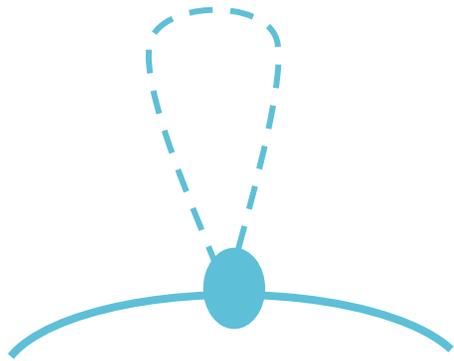


stationary

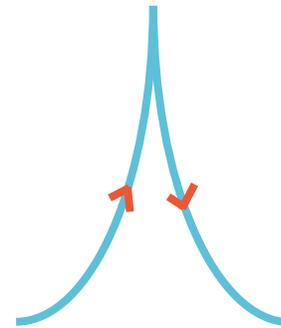


overlapping

Design challenges

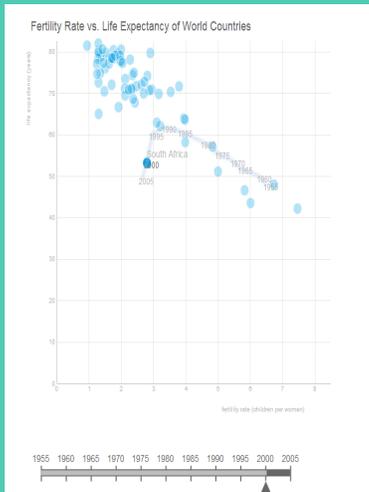


stationary

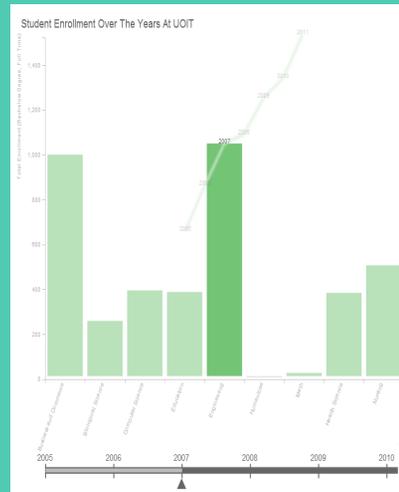


overlapping

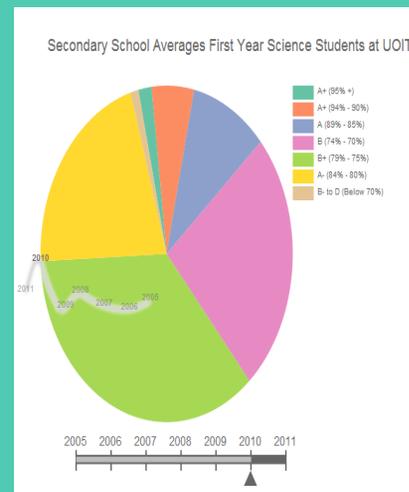
How: Encode



scatterplot



histogram

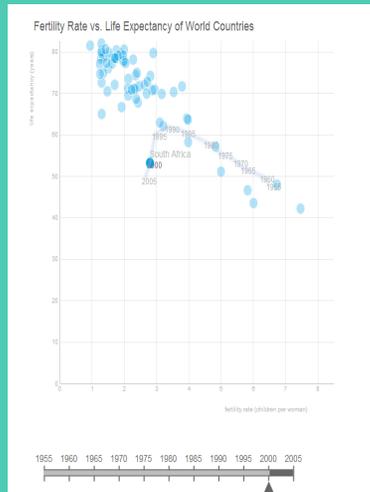


pie chart



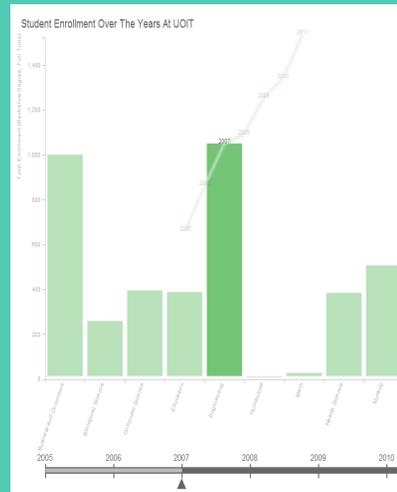
heatmap

2D



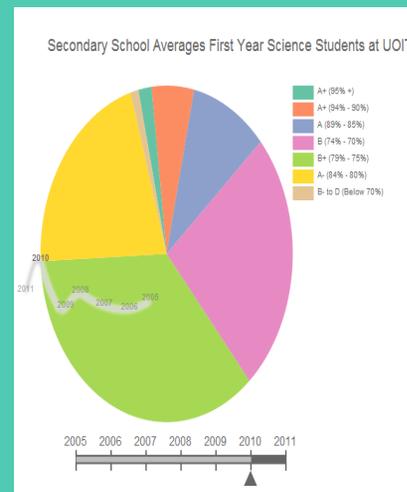
scatterplot

1D



histogram

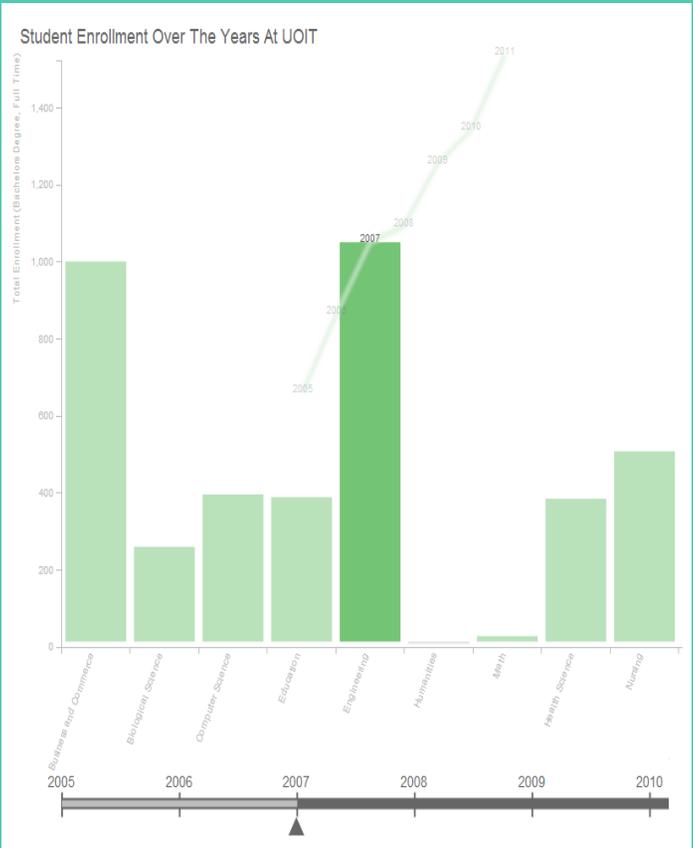
0D



pie chart



heatmap



Experiment

Why: Tasks

Lookup: *when does A equal this?*

Compare: *when is A greater than B?*

Characterize temporal distribution of A

Identify outliers

3 techniques

DimpVis

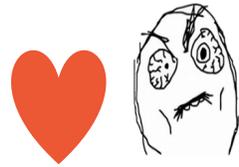
Time slider

Small multiples

Change over
time

Facet

Results



Scatterplot: DimpVis ~ slider < small multiples

Histogram: DimpVis ~ slider ~ small multiples



Good points

- idea
- design principles
- different types of visualization
- new design to solve problems
- controlled experiment
- web prototype

Bad points

- results are pretty bad
 - most favorable conditions
 - unfair comparison with slider
- issues in their designs
 - too strict on design principles
- multi-items tracking



That's all Folks!

Any questions?