

Dynamic Visualizations (II)

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Last time

Interactions for dynamic views:

- **switching**: moving “laterally” across views
- **filtering**: which data rows do we consider?

Remaining main interaction:

- **refining**

Sometimes referred to as drill-down, or cross tabulation.

Refining

- Split data into groups according to criteria
 - e.g., age groups
- Aggregate independently over each group
 - e.g., sum over the various age groups
- Visualize results for groups
- Can let splitting criteria be interactively chosen

Refining

Facebook users: 4600

Twitter users: 5600

Refining

		Male	Female
Facebook users:	4600	2000	2600
Twitter users:	5600	2600	3000

All numbers made up!

Refining

		<35	>35
Facebook users:	4600	3500	1100
Twitter users:	5600	4000	1600

All numbers made up!

Interpreting refinement

		<35	>35
Facebook users:	4600	3500	1100
Twitter users:	5600	4000	1600

All numbers made up!

Interpreting refinement

	<35	>35	
Facebook users:	4600	3500	1100
Twitter users:	5600	4000	1600

Percentage of facebook users < 35 y.o. 76%

Percentage of facebook users > 35 y.o. 24%

All numbers made up!

Interpreting refinement

		<35	>35
Facebook users:	4600	3500	1100
Twitter users:	5600	4000	1600
Total:	9000	6000	3000

All numbers made up!

Interpreting refinement

		<35	>35
Facebook users:	4600	3500	1100
Twitter users:	5600	4000	1600
Total:	9000	6000	3000

Percentage of <35 y.o. who use facebook 58%

Percentage of >35 y.o. who use facebook 66%

All numbers made up!

Basic aggregation

(Variant from last time)

```
var all = 0, count = 0;  
GLOBAL.data.forEach(function(r) {  
    all += 1;  
    c = r[media_col];  
    if (c==="Yes") {  
        count += 1;  
    }  
})
```

// returns # rows and count for specific media

Aggregation + filtering

(Variant from last time)

```
var all = 0, count = 0;
GLOBAL.data.forEach(function(r) {
  if (keepSelectorsRow(r)) {
    all += 1;
    c = r[media_col];
    if (c==="Yes") {
      count += 1;
    }
  }
})
```

// returns # rows and count for specific media

Aggregation + filtering

(Variant from last time)

```
var all = 0, count = 0;
GLOBAL.data.forEach(function(r) {
  if (keepSelectorsRow(r)) {
    all += 1;
    c = r[media_col]
    if (c==="Yes") {
      count +=
    }
  }
})
// returns # ro
```

Check that row r is kept by the various selector

Aggregation + refining

```
var all = 0, counts = {};  
GLOBAL.data.forEach(function(r) {  
  c = r[media_col];  
  if (c==="Yes") {  
    all += 1;  
    var group = r[split_col];  
    if (group in counts) {  
      counts[group] += 1;  
    } else {  
      counts[group] = 1;  
    }  
  }  
})
```

// returns media count and media count for each group

Refining in practice

- Refining is sometimes selector-based
 - “choose a variable by which to group the data”
- Can attach refining to chart elements
 - “click on element to refine”

Aggregation + filtering + refining

```
var all = 0, counts = {};  
GLOBAL.data.forEach(function(r) {  
  if (keepSelectorsRow(r)) {  
    c = r[media_col];  
    if (c==="Yes") {  
      all += 1;  
      var group = r[split_col];  
      if (group in counts) {  
        counts[group] += 1;  
      } else {  
        counts[group] = 1;  
      }  
    }  
  }  
})
```


Aggregation + filtering + refining

```
var all = 0, counts = {};  
var result = countSplitByColumn  
              (GLOBAL.data,  
               function(r) {  
                 return keepSelectorsRow(r) &&  
                        r[media_col]==="Yes"; },  
               split_col);  
all = result.all;  
counts = result.counts;
```

Aggregation + filtering + refining

```
var all = 0, counts = {};  
var result = countSplitByColumn  
    (GLOBAL.data,  
     function(r) {
```

Note that original *aggregation* + *filtering* can be done with this function:

```
var result = countSplitByColumn  
    (GLOBAL.data,  
     function(r) { return keepSelectorsRow(r); },  
     media_col);  
var all = result.all;  
var count = result.counts.Yes;
```

More interactions: tooltips

- On mouseover, create a tooltip
 - shape
 - data to put in tooltip (details)
- On mouseout, remove tooltip
- Some subtleties
 - clicks
 - getting the right data
 - creating versus reusing tooltip