hi!

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Visual dictionary
thematic cartography and design for geovisualization
Cholera map (ghost map)

John Snow (1854)
cholera map (ghost map)

John Snow (1854)
Semiology of graphics

6 visual variables
1. Size
2. Color hue
3. Color value
4. Shape
5. Orientation
6. Texture

3 types of implementation marks
1. Points (symbols)
2. Lines
3. Areas

3 levels of organization of the variables
1. Categorical
2. Ordered
3. Quantitative

Jacques Bertin (1967)
# Common Elements in Geovisualization

<table>
<thead>
<tr>
<th>Visual Variables</th>
<th>Points (Symbols)</th>
<th>Areas</th>
<th>Best to Show</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape</td>
<td>□ □ △ □</td>
<td>Cartogram</td>
<td>Categorical Relations</td>
</tr>
<tr>
<td>Size</td>
<td>⋄ ⋄ ⋄ ⋄ ⋄</td>
<td>Cartogram</td>
<td>Order and Quantitative Relations</td>
</tr>
<tr>
<td>Color Hue</td>
<td>␁ ␁ ␁ ␁ ␁</td>
<td></td>
<td>Categorical Relations</td>
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<tr>
<td>Texture</td>
<td>␃ ␃ ␃ ␃ ␃</td>
<td></td>
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</tr>
</tbody>
</table>
Visual encoding on maps

Independent marks:
- Dot density map
- Bubble map
- Choropleth map

Part-to-a-whole symbols:
- Pie chart
- Donut chart
- Treemap
- Circular packing
- Stacked bar graph

Can you think about other symbols?
...but first some examples!
**Example 1 | Information Variable**

**Question 3**

How do you feel about data privacy?

**Answer A**

don't know, don't care

<table>
<thead>
<tr>
<th>Organization (fix) Category</th>
<th>Visual Variable</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>QUANTITY</td>
<td>Size</td>
<td>0a</td>
</tr>
</tbody>
</table>
**Example 2 | More Information Variables**

**Question 3**

How do you feel about data privacy?

- **Answer A:** don't know, don't care
- **Answer B:** GDPR

<table>
<thead>
<tr>
<th>Organization</th>
<th>Visual Variable</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Categories</td>
<td>Texture</td>
<td><img src="A" alt="Symbol" /></td>
</tr>
<tr>
<td>Quantity (A)</td>
<td>Size</td>
<td><img src="B" alt="Symbol" /></td>
</tr>
<tr>
<td>Quantity (B)</td>
<td>Size</td>
<td><img src="C" alt="Symbol" /></td>
</tr>
</tbody>
</table>

- **Single Symbol** with parts-to-a-whole relation.
Example 3 | RELATING VARIABLES FROM DIFFERENT QUESTIONS

QUESTION 3 (Answer A and B) +

QUESTION 7

When it comes to what role in food agriculture you feel:

**Answer A**  optimistic

**Answer B**  concerned

**Answer C**  pessimistic

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>VISUAL VARIABLES</th>
<th>SYMBOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Ordered Categories</td>
<td><strong>Color Value</strong></td>
<td>Area of a country</td>
</tr>
</tbody>
</table>

The selected color represents the most frequent answer.
Cartogram

Key:
- Square = Total of answers
- Area = Most predominant feeling (R.7)
- Area of arch = Frequency of answer B (R.3)
- Area of arch = Frequency of answer A (R.3)
your turn!

you have 30'

detailed instructions on the sheet
Resources

Spreadsheet
available on:
john.doe/noCopyBook

Slides
available on:
www.juliagiannella.com/TFF

Toolkit
map, paper and markers

Instructions
Instructions

- gather in groups of 3 to 5;
- you have 30 minutes
- choose information variables from the google sheet → http://goo.gl/QM53nF
- choose visual marks to represent information
- choose visual variables to encode information taking in consideration its level of organization
- choose a country, try encoding its information, values, try another country; And another
- consider scale, but don’t worry too much
- plot information values for each country on the map
- you may want to use labels for the countries’ name
thank you!

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