IGR 204 Information Visualization Spring 2016-2017 (S2P4)

Final exam

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Your name:

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Instructions:
- You have 1 hour 30 minutes to complete this exam.
- No notes and no electronic devices are authorized.
- Exception: paper dictionaries are permitted.
- All work should be yours and yours alone.
- Answers should be short and clear. They should fit in the space provided.
- You may respond in either English or French.
- There are 34 points total.

True/False (6 points, +1 per correct response, -½ per incorrect response)

_____ 1. The axes of a chart should always start at zero.

_____ 2. Selections in D3 are useful for associating data to visual attributes.

_____ 3. Three important things in visualization are: tasks, representations, and interaction.

_____ 4. Tree-maps are good for showing edge attributes in a hierarchy.

_____ 5. In a matrix drawing of a graph, a fully-connected subcomponent (clique) looks like a plus.

_____ 6. Visualization, machine learning, and statistical methods are in competition with each other.

Short Answer Questions

7. Give an example of a nominal dataset, a dataset that is ordinal but not quantitative, and a quantitative dataset. (3 points, 1 point each)

8. You are given a dataset crew members lost for each of the Star Trek captains and commanders: James T. Kirk, Jean-Luc Picard, Benjamin Sisko, Kathryn Janeway, and Jonathan Archer. It contains the attributes: the commander, the episode number, and the color of each crew member's uniform (red, blue, gold/yellow). Define a spatial mapping for these data and how you would encode these three dimensions. What tasks does your mapping help satisfy? Justify your response. (6 points)

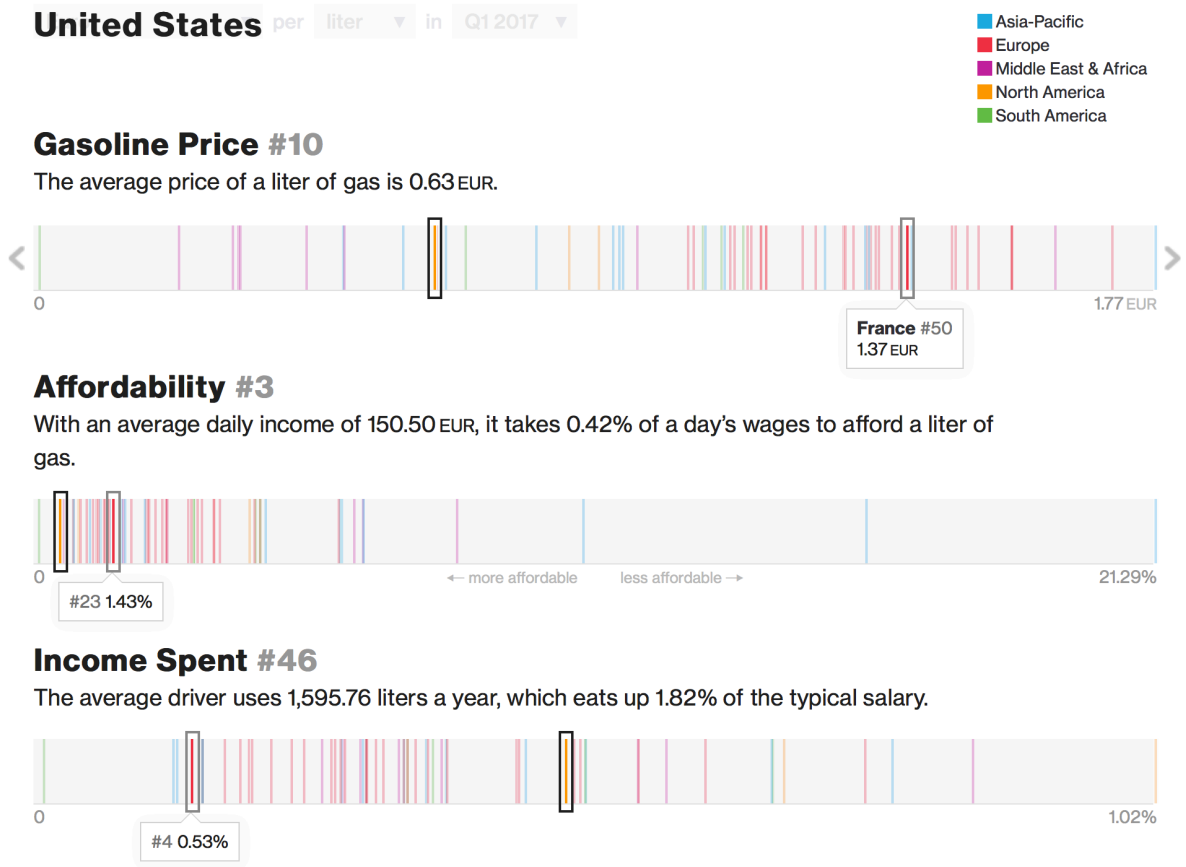
9. Edward Tufte argues that a visualization should not lie about the data. What are three ways that we have seen for a visualization to lie? (3 points)

10. Describe one advantage and one problem with using a greyscale encoding (e.g. ). (2 points)

11. Give an example of a visualization technique for (a) univariate, (b) bivariate, (c) trivariate, and (d) hypervariate data. (4 points, 1 point each)

12. Identify two distinct ways that we have seen in class for drawing a tree. Provide a name and a drawing of each. (4 points)

13. Critique the visualization shown on the following page. a) Identify one pertinent task for which it is well-suited and one pertinent task for which it is ill-suited. b) Describe two problems with this visualization and, for each problem, how you would fix it. (6 points)



Source: Bloomberg