Final exam

James R. Eagan   7 February 2014

Your name:

Instructions:
• You have 1 hour 30 minutes to complete this exam.
• No notes and no electronic devices are authorized.
• Exception: 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.

True/False (12 points, 2 points per response)

_____ 1. A goal of an information visualization is to substitute rapid perceptual inferences for difficult logical inferences.

_____ 2. A cognitive map is a useful visualization technique for representing geographic data.

_____ 3. Information visualization is better suited for browsing tasks than search tasks.

_____ 4. Metadata is the study of data encoding formats.

_____ 5. People can discriminate shapes pre-attentively.

_____ 6. The parallel-coordinates technique scales well with the number of data cases, but not with the number of dimensions.
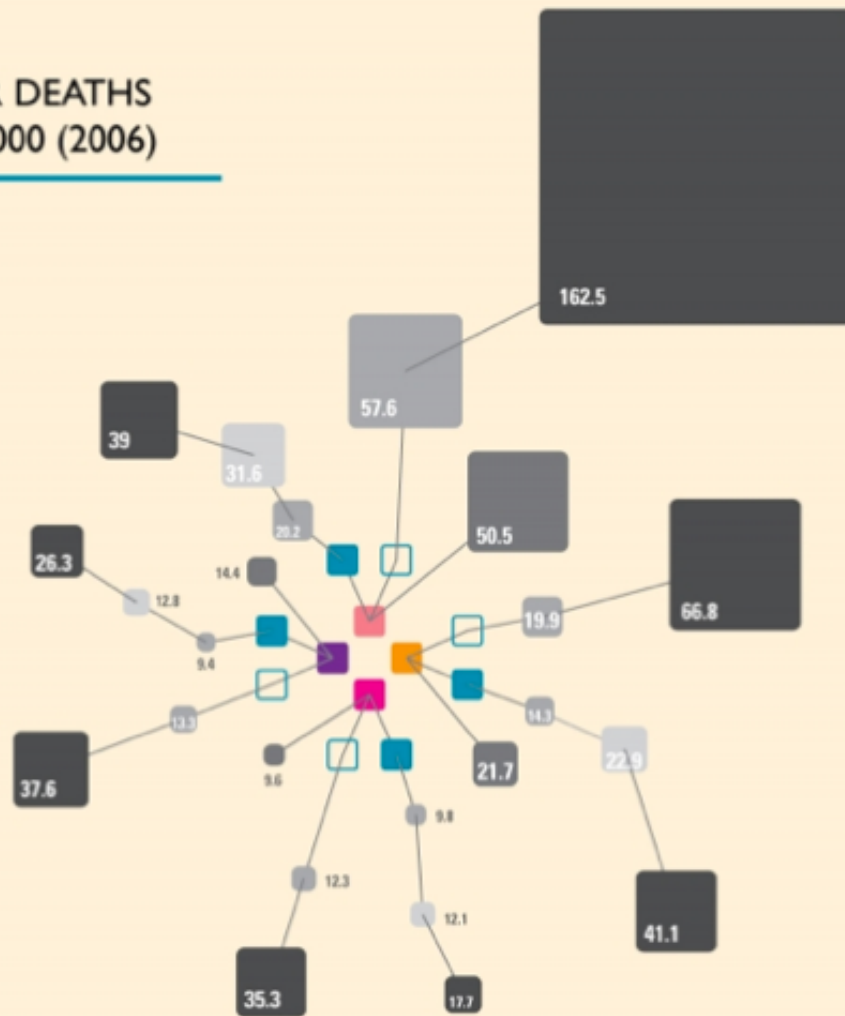
Short Answer Questions

7. Give an example of a set of data values that might be interpreted both as a nominal and an ordinal data set. Why? (6 points)

8. How do dynamic query displays and brushing histogram displays differ? (4 points)

9. Describe three of Edward Tufte's design principles. (6 points)

10. What is pre-attentive processing? (3 points)

11. Give an example of a visualization technique for (a) univariate, (b) bivariate, (c) trivariate, and (d) hypervariate data. (8 points, 2 points each)

12. What is brushing? (4 points)

13. It has been said that InfoVis is about asking better questions. What does this claim mean, and what are its implications for InfoVis design? (6 points)

14. List three characteristics of Dynamic Queries interfaces. (6 points)

CANCER DEATHS
PER 100,000 (2006)

Legend:
- Black
- White
- Asian
- American Indian
- Female
- Male
- Breast
- Colorectal
- Prostate
- Lung

Data values: 162.5, 57.6, 39, 31.6, 20.2, 26.3, 14.4, 12.8, 9.4, 50.5, 19.9, 66.8, 13.3, 14.3, 22.9, 37.6, 9.6, 21.7, 9.8, 41.1, 12.3, 12.1, 35.3, 17.7

15. The chart on the previous page represents cancer death rates, broken down by racial group, gender, and type of cancer, in that order. Briefly (in one or two sentences) describe one positive aspect of the visualization. Then briefly describe three problems with the visualization and, for each problem, one suggestion on how to fix it. (10 points)