Expectations for Tables and Graphs in 140.653-4

Science involves several steps performed iteratively
1. Generation of competing hypotheses
2. Experiment or observation that generates data
3. Quantification of the evidence in the data that supports some hypotheses relative to others
4. Communication of study findings.

High quality graphics and tabular displays are essential in each step. This note sets expectations for graphs and tables in this course.

Principles
1. Tables ⇔graphs are both visualizations of data as evidence. Must accurately represent the evidence.
2. Displays should be designed to **accurately communicate scientific patterns** in the data **to viewers**.
3. The viewers' perspective should drive the display design
4. Effective displays use a micro/macro design – broad patterns apparent; details included to facilitate discovery
5. Learn to make effective displays by looking and critiquing others

Expectations
1. Tables ⇔graphs; title, label axes from the viewer's perspective
2. Don't distort the evidence
3. Don't distract the viewer with wasted ink or chart-junk
4. Don't be too clever using 2 or 3 above – simpler is better
5. Don't turn in a display without looking at it with fresh eyes to see what it communicates. (DLT – display, look, think).

Review the following:
https://www.biostat.wisc.edu/~kbroman/presentations/IowaState2013/graphs_combined.pdf
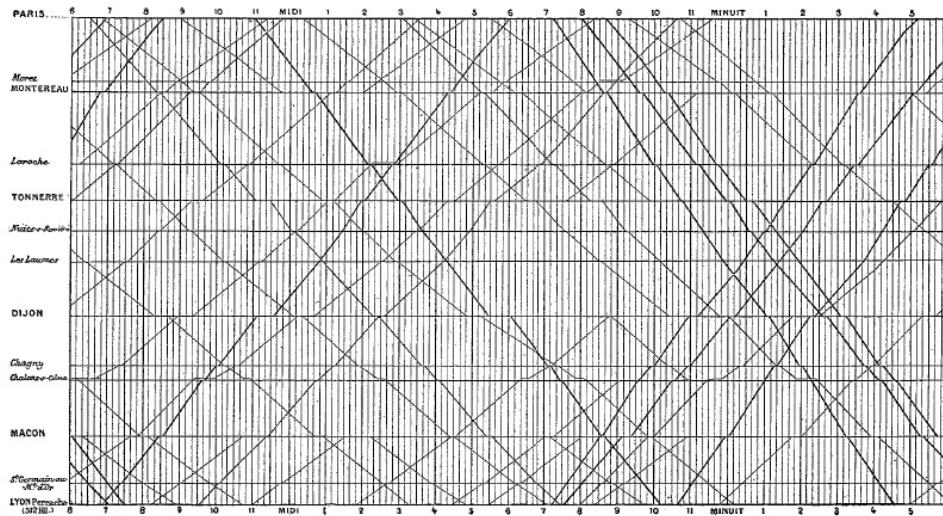
E. J. Marey, *La Méthode Graphique* (Paris, 1885), p. 20. The method is attributed to the French engineer, Ibry.

AGE STRUCTURE OF COLLEGE ENROLLMENT

Percent of total enrollment

72.0
70.8
67.2
67.0
66.4

UNDER 25

25 AND OVER

33.6
32.8
33.0
29.2
28.0

1972   1973   1974   1975   1976