

Week 2: What is a normal weight for a baby?

Seminar

Divide into groups of 3-4 students to complete the following exercises:

1. Look at the graphs and diagrams in the appendix, and discuss them within your group. For each, consider what aspects are visually effective, and what things do not work well visually. Are there any common themes in terms of what works well and what does not? Choose a graph you particularly like, or one you particularly don't like, and prepare to feed back to the rest of the seminar group on the reasons for your choice.
2. Describe how you would summarise, using numbers and/or graphs, each of the following small data-sets (you may want to sketch out graphs when thinking about these, but don't worry about making them too precise):

- a) The marks (out of 100, and ordered by size) of 20 students in an exam:

30, 35, 37, 40, 40, 49, 51, 54, 54, 55, 57, 58, 60, 60, 62, 62, 65, 67, 74, 89

- b) The number of days work missed by 20 workers in one year (ordered by size):

0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 2, 2, 3, 3, 4, 5, 5, 5, 8, 45

- c) The number of issues of a monthly medical journal read by 20 health professionals in a year:

0, 1, 11, 0, 0, 0, 2, 12, 0, 0, 12, 1, 0, 0, 0, 0, 12, 0, 11, 0

- d) Measurements of weight loss (in kg) in 8 patients treated with an experimental drug, and 8 patients treated with a placebo:

New drug: 6.1, 2.5, 4.3, 4.5, 1.5, 8.2, 2.9, 2.9

Placebo: 4.4, 5.0, 0.5, -0.7, 0.1, 1.6, 1.6, -0.7

3. Table 1 shows occupational class, housing tenure and the party voted for in a general election, amongst economically active men in Banbury in 1967. What is the outcome variable here, and what are the predictor variables? Could you add to or change the table to make it more interpretable? What kind of graph might make it easier to visualise the results?

Table 1: Numbers of economically active men in Banbury who voted for the Conservative candidate (Cons.) or for another candidate in the 1967 general election, according to occupational class and housing tenure

Occupational class	Housing tenure							
	Own outright		Mortgage		Rented (private)		Rented (council)	
	Voted Cons.	Voted other	Voted Cons.	Voted other	Voted Cons.	Voted other	Voted Cons.	Voted other
1&2	35	5	63	14	22	3	5	10
3a,4a	18	4	29	9	18	4	16	14
3b	12	3	30	44	16	83	24	42
4b	9	7	12	18	8	14	17	45
5	5	0	1	2	5	5	3	21

Finally, as a whole seminar group or at home:

4. Watch Hans Rosling's TED talk at www.ted.com/index.php/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html.

What tricks does Rosling use to squeeze a lot of information into his graphs while still making them clear and engaging?

Appendix: Gallery of graphs

1.

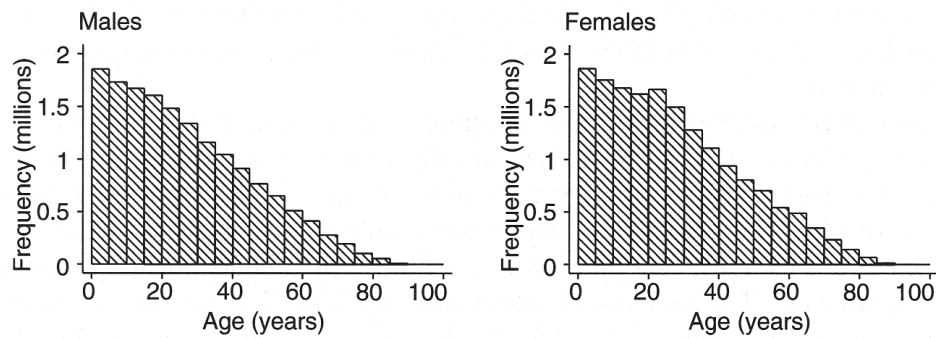
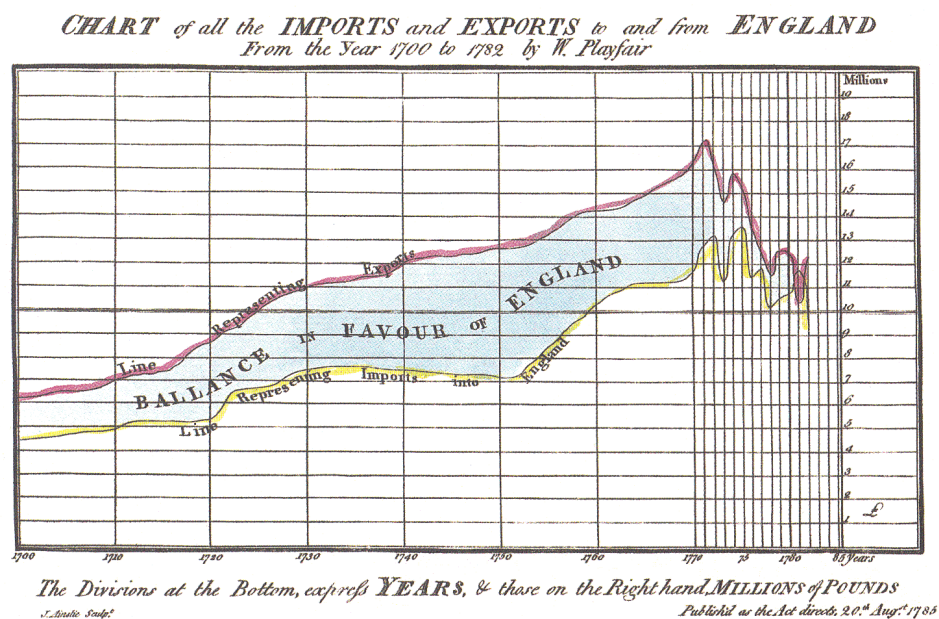
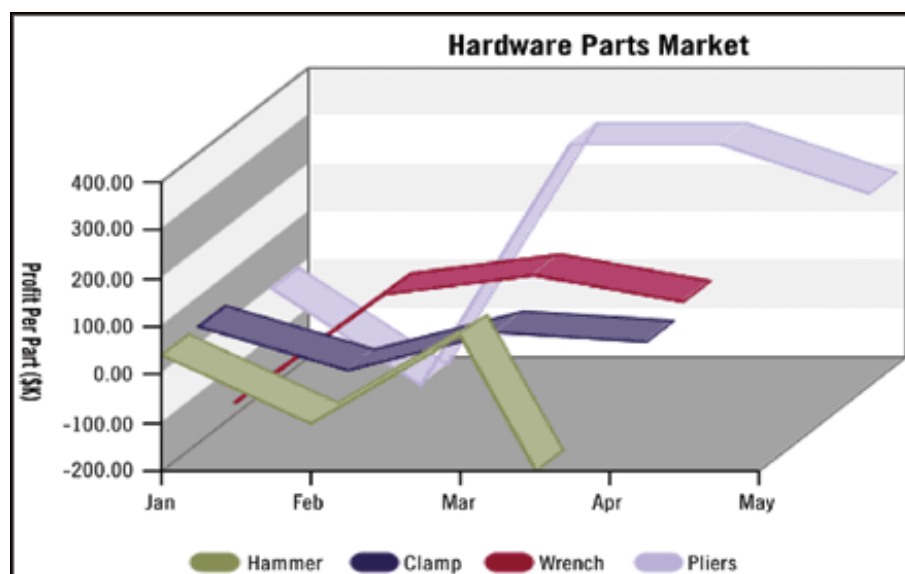


Fig. 16.1. Age distributions for the population of England and Wales, by sex, 1901

2.

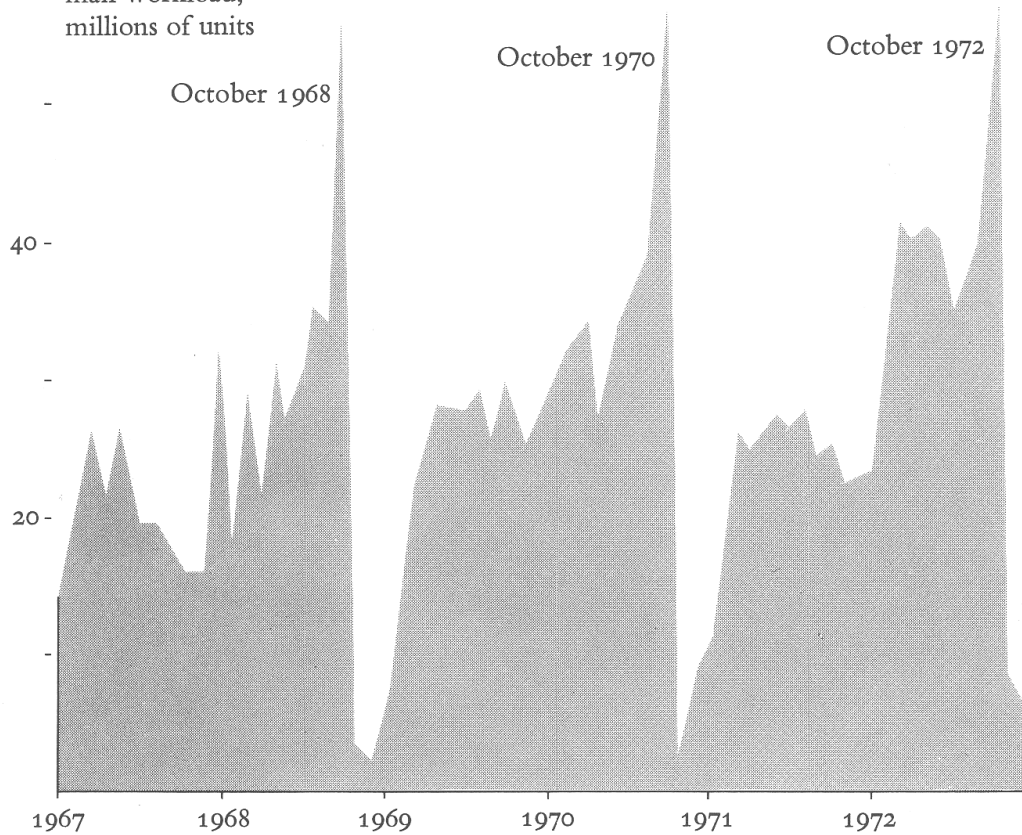


3.



4. Outgoing mail of the US House of Representatives

60 - Monthly outgoing
mail workload,
millions of units

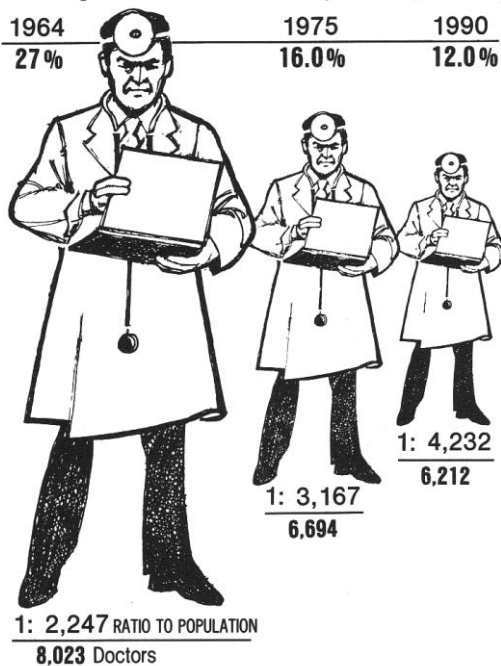


5.

THE SHRINKING FAMILY DOCTOR
In California

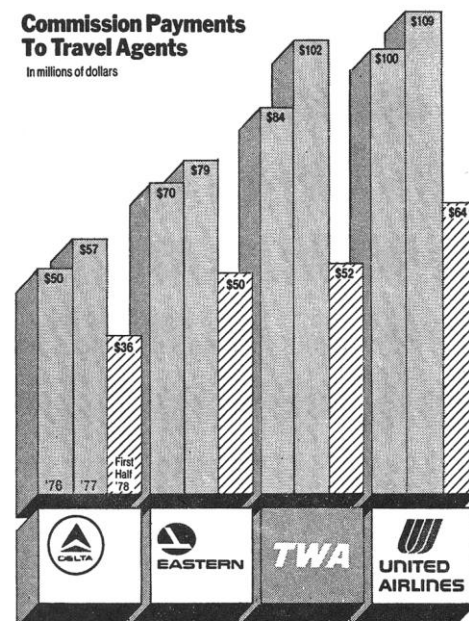
Percentage of Doctors Devoted Solely to Family Practice

1964	1975	1990
27%	16.0%	12.0%

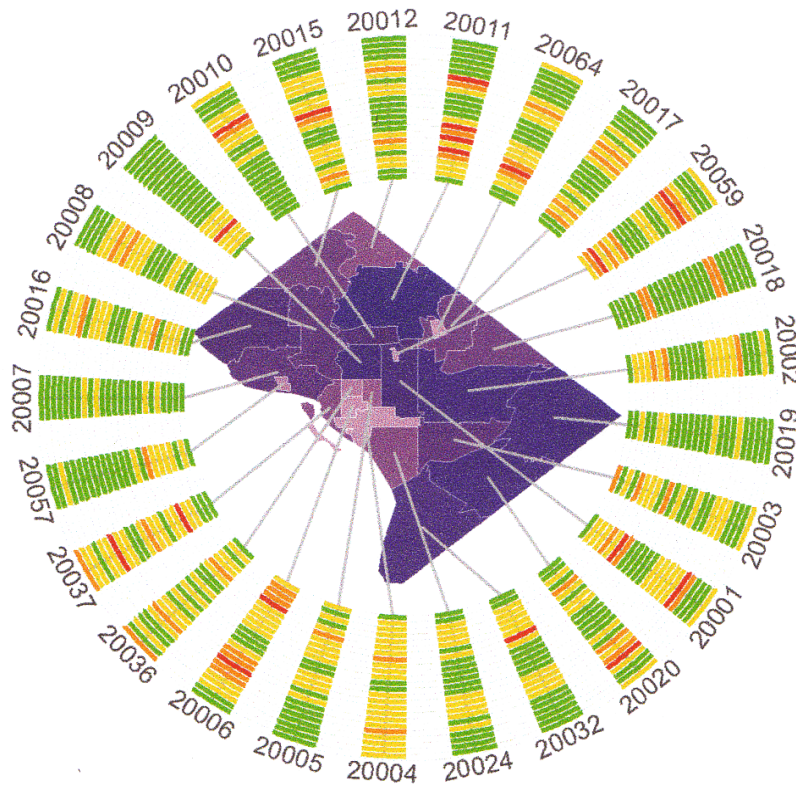


6.

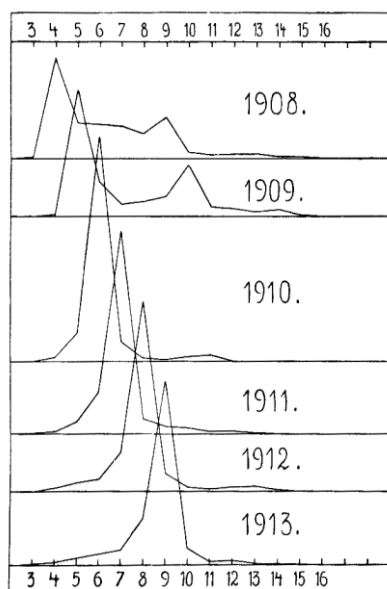
**Commission Payments
To Travel Agents**
In millions of dollars



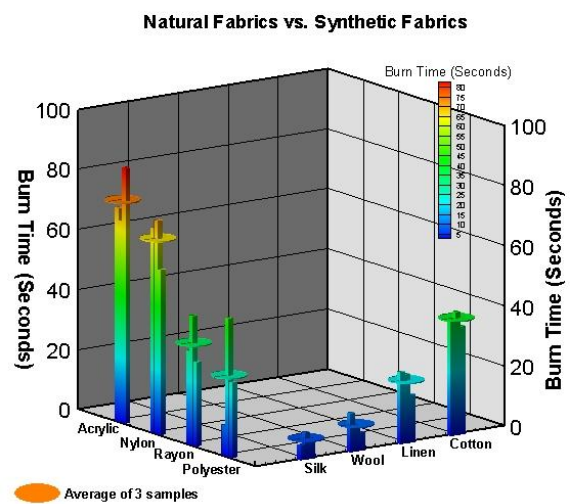
7. 24 weeks of disease alert status by ZIP code



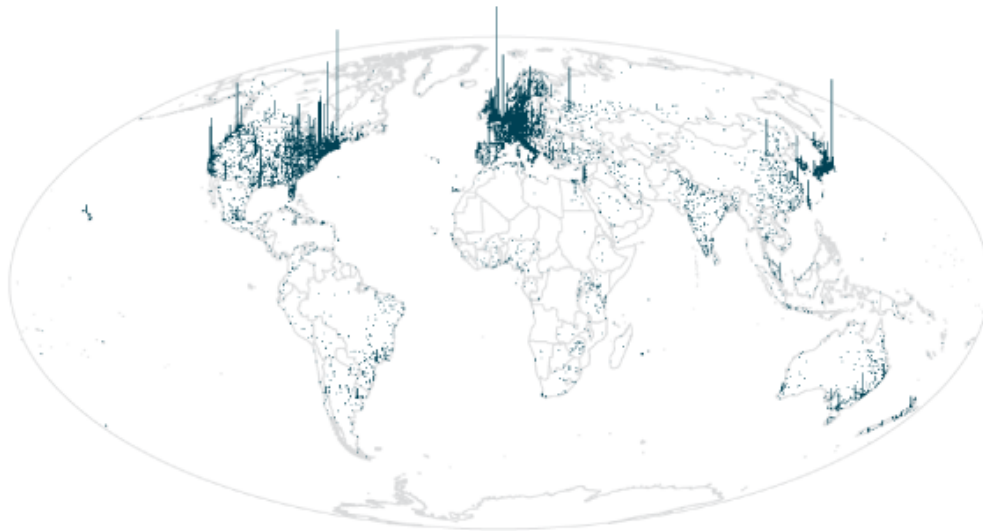
8. Age of herring caught between 1908 and 1913



9.



10.

Figure 2.4 **Where research takes place**²⁸

11.

