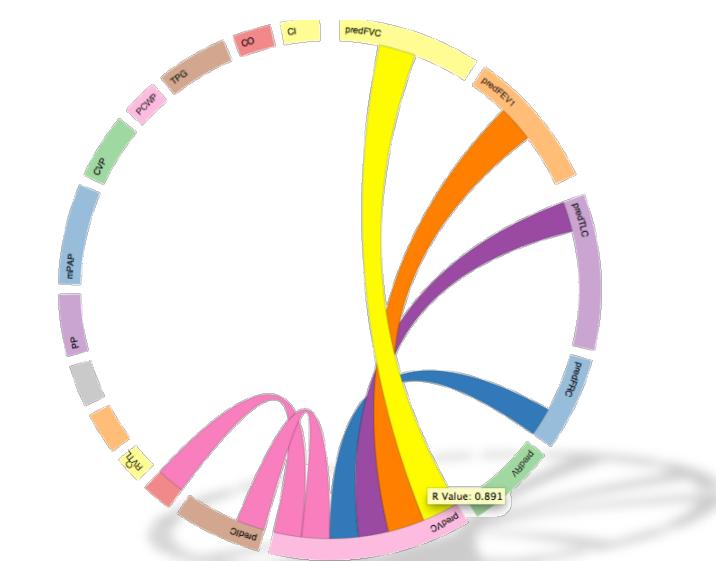




Module #1b

History of Data Visualization



EN 605.462

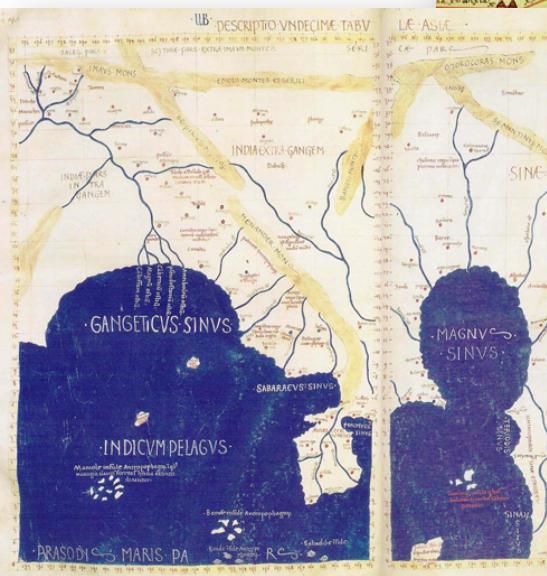


BRIEF HISTORY

Maps (366-335BC)

- The Romans were renowned mapmakers, as they needed to efficiently plan for the movement of their armies and trade throughout the empire.
- The Ptolemy world map is a map of world known to Hellenistic society in the 2nd century.

- the most significant contributions of Ptolemy's maps are the first uses of longitudinal and latitudinal lines



Ptolemy's Map, 2nd century AD



Reproduction from 13th century



Positions of the Sun, Moon, and Planets (950 AD)

- It uses a grid system to combine both the time and location of planetary bodies 800 years before the first true time plotted graphics

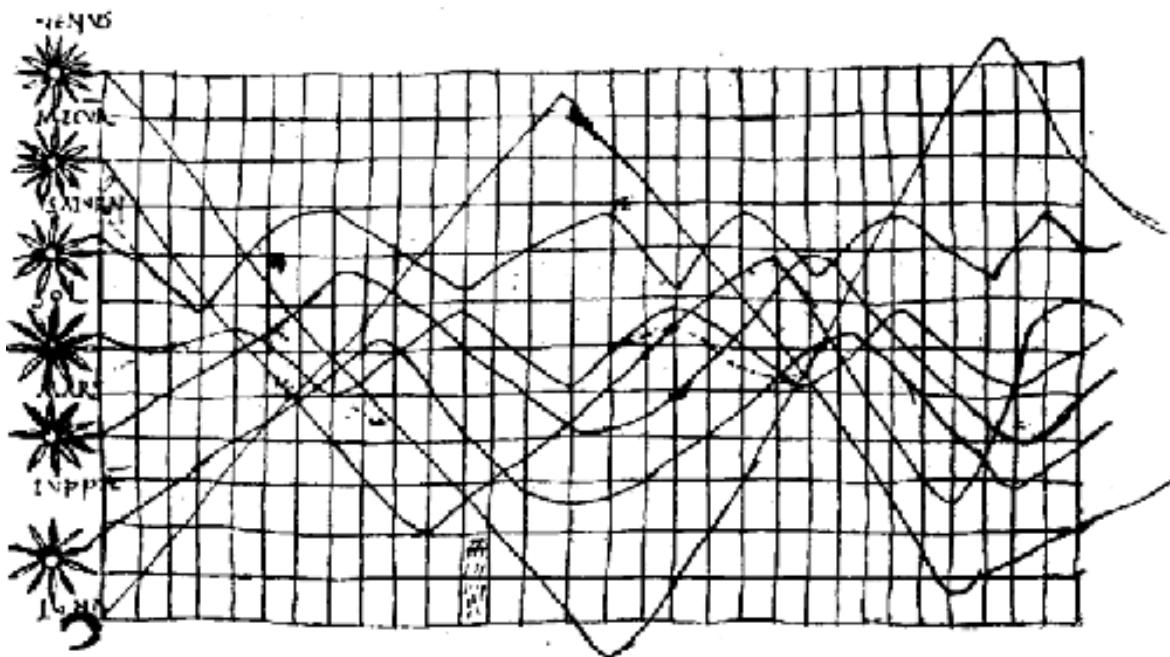
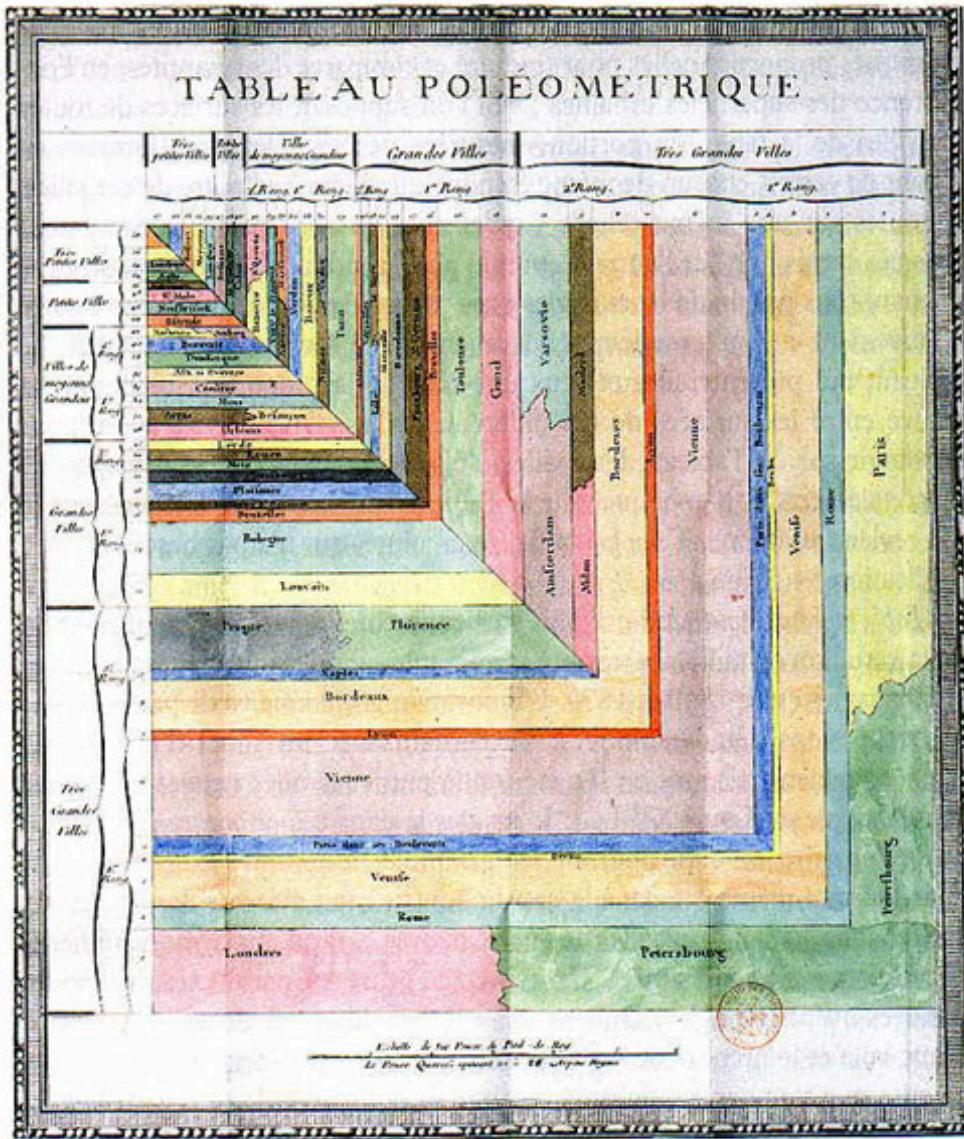
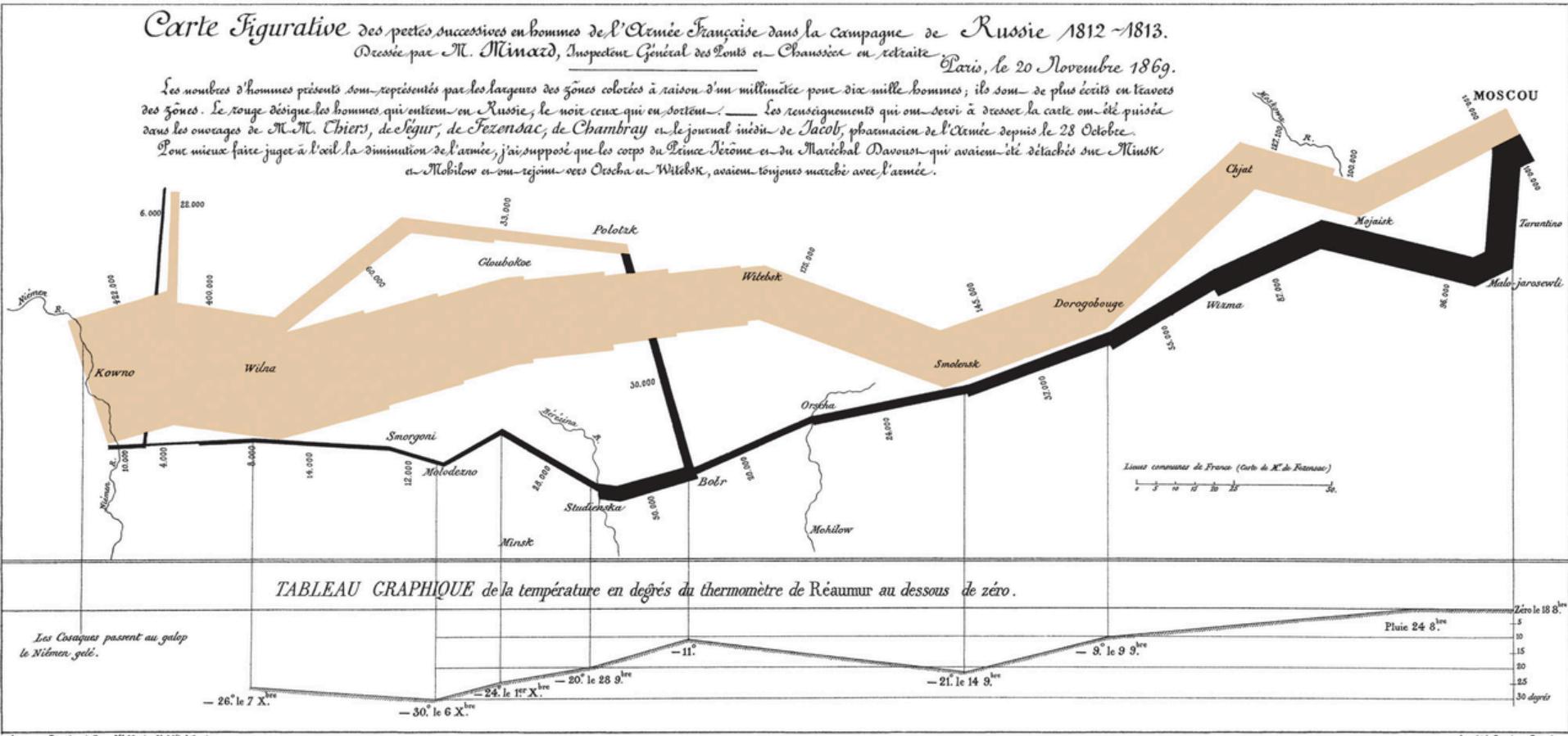


Tableau Poléometrique (1782)

- Charles Louis de Fourcroy French mathematician who created Tableau poleometrique. (1782)
- Each city is represented by a square whose area is proportional to the geographic area occupied by the city. This results in visual groupings which lead the author to propose an 'urban classification.'



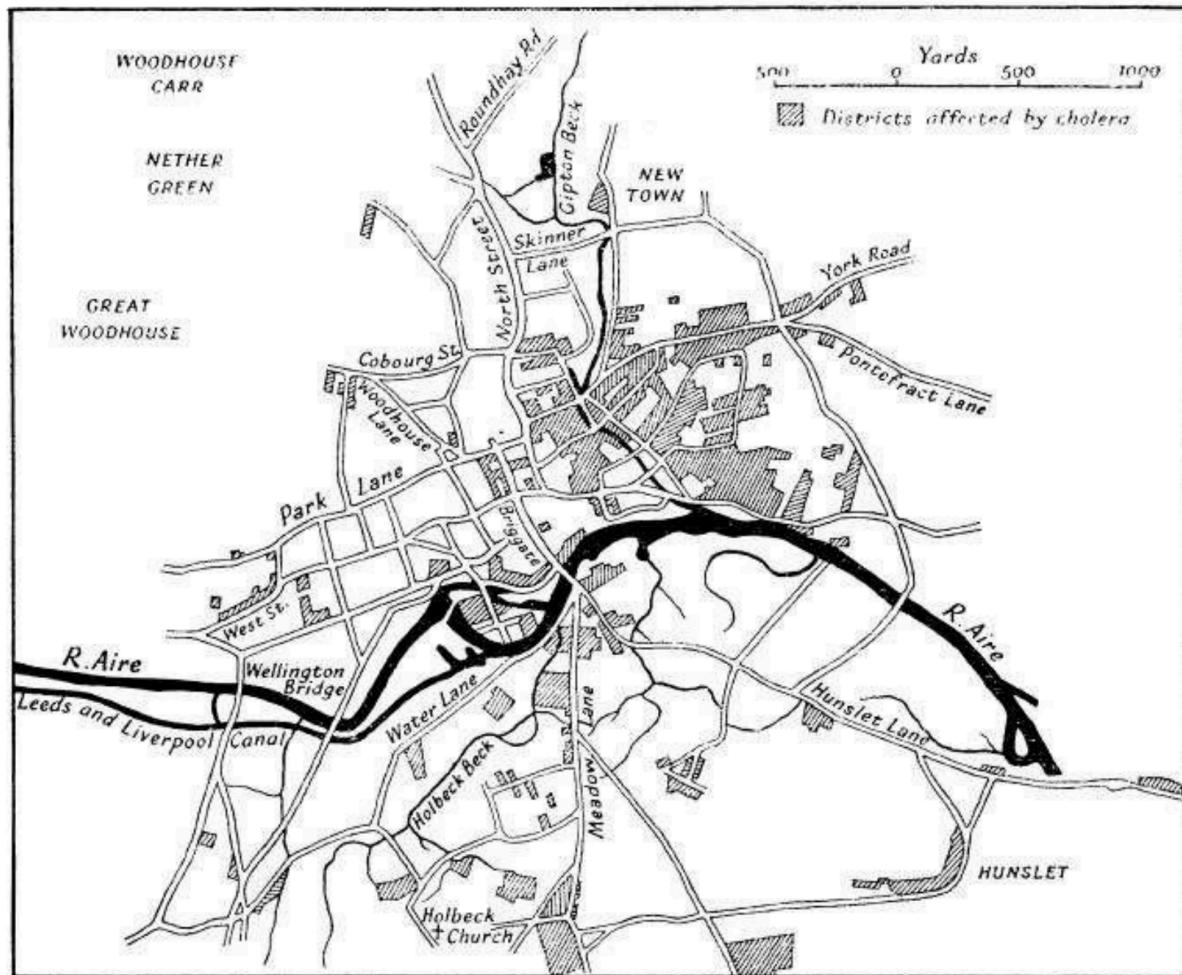
Napoleon's 1812 Russian Campaign
(Charles Minard)

- Fate of Napoleon's army as it advanced and retreated from Moscow in the winter of 1812
- It displays six types of data in two dimensions: the number of Napoleon's troops; the distance traveled; temperature; latitude and longitude; direction of travel; and location relative to specific dates.



Cholera epidemic in the 1800s

- In October 1831, the first case of cholera occurred in Great Britain
- 52,000 people died in the epidemic that ensued over the next 18 months
- Dr. Robert Baker (1833), shows the districts of Leeds “affected by cholera”
- Subsequent cholera epidemics in 1848–1849 and 1853–1854



Cholera epidemic in the 1800s

- Dr. John Snow believed that if the disease was caused by:
 - air then the incidents of disease would be evenly spread throughout the streets of London
 - poisoned water, cases would cluster in locations around the source of the contamination.
- By analyzing the distribution of black dots in relation to the water pumps, Snow was able to track the origin of outbreak in Soho to Broad Street (1854).





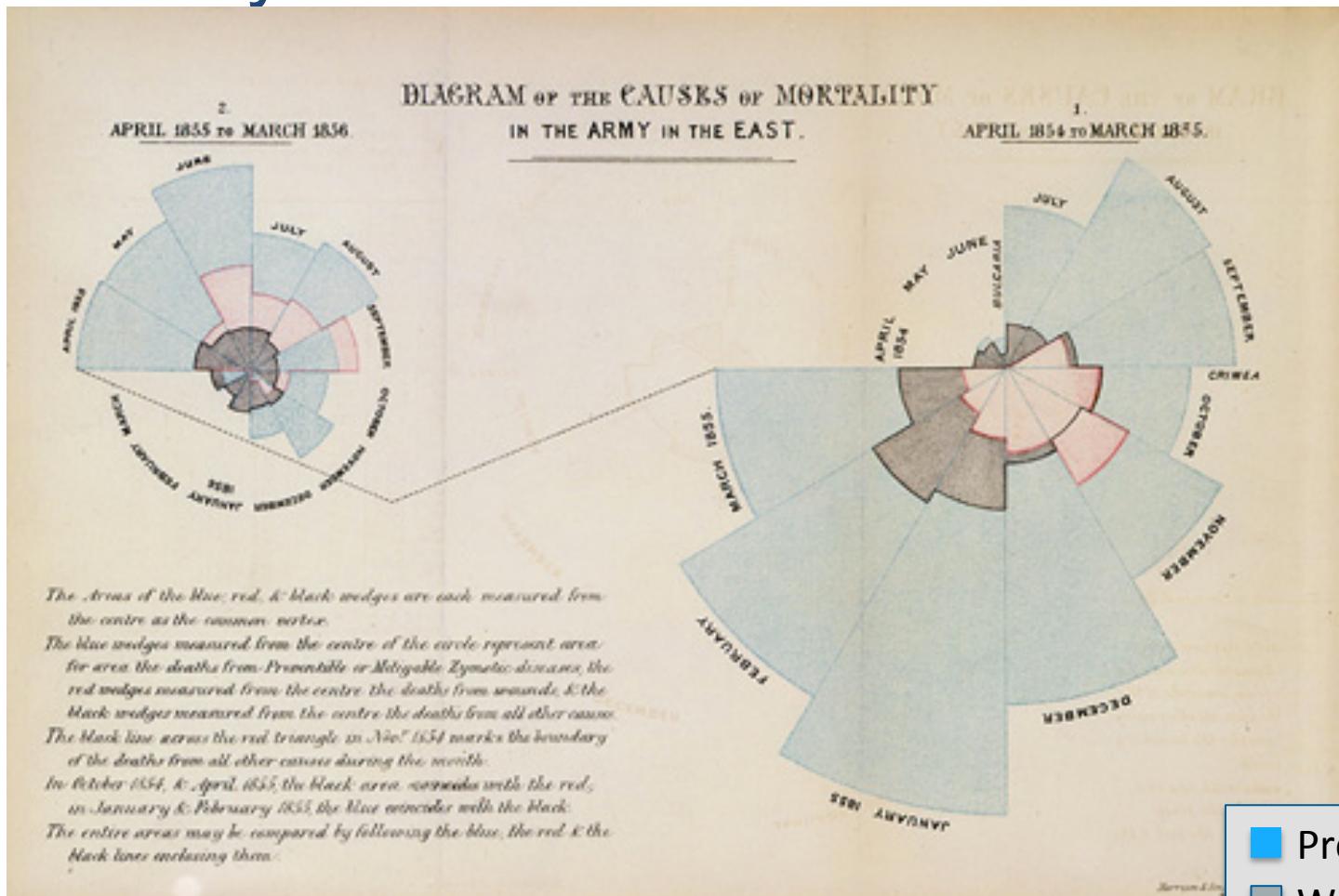
Sanitary conditions during Crimean War

- During the Crimean War, the sanitary conditions of hospitals in Turkey (where British soldiers were being treated) were awful
- Florence Nightingale, a pioneer in establishing the importance of sanitation, arrived in October 1854
- To improve living conditions for the wounded troops, she kept records of the death toll in the hospital.



Florence Nightingale,
1854

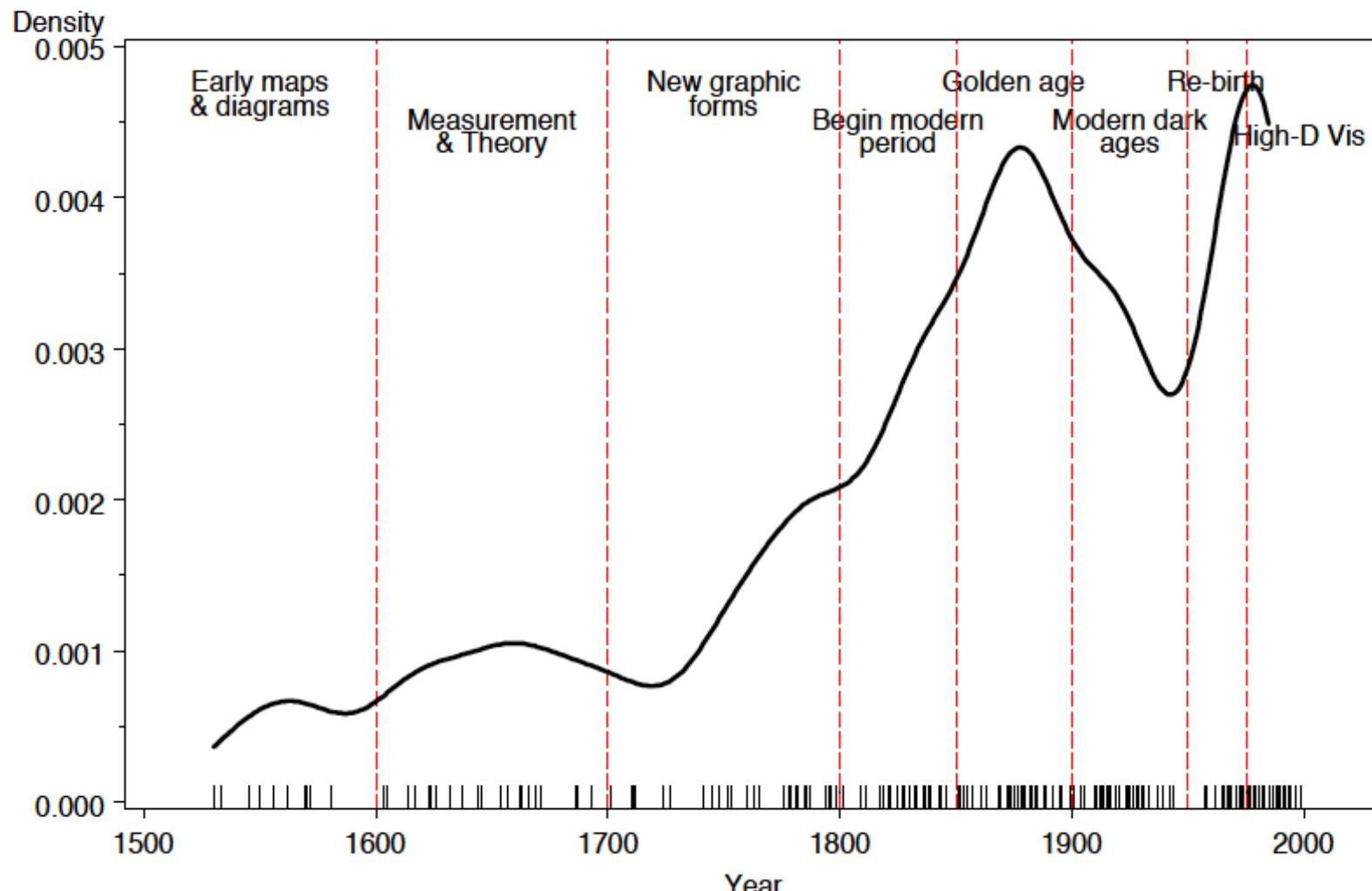
Polar Diagram (1858): Sanitary conditions vs. soldier's deaths



- Preventable
- Wounds
- Other causes



Milestones: Time course of developments



Source: Michael Friendly, "A Brief History of Data Visualization"

How Popular is Data Visualization?

The screenshot shows the PubMed homepage with a search bar at the top containing the term "data visualization". Below the search bar, there are several search results listed:

- 1. [Public health nurse perceptions of Omaha System data visualization.](#)
Lee S, Kim E, Monsen KA.
Int J Med Inform. 2015 Oct;84(10):826-34. doi: 10.1016/j.ijmedinf.2015.06.010. Epub 2015 Jul 3.
PMID: 26187244
[Similar articles](#)
- 2. [Infographics And Public Policy: Using Data Visualization To Convey Complex Information.](#)
Otten JJ, Cheng K, Drewnowski A.
Health Aff (Millwood). 2015 Nov 1;34(11):1901-7. doi: 10.1377/hlthaff.2015.0642.
PMID: 26526248
[Similar articles](#)
- 3. [The Persuasive Power of Data Visualization.](#)
Pandey AV, Manivannan A, Nov O, Satterthwaite M, Bertini E.
IEEE Trans Vis Comput Graph. 2014 Dec;20(12):2211-20. doi: 10.1109/TVCG.2014.2346419.
PMID: 26356935
[Similar articles](#)
- 4. [NaviCell Web Service for network-based data visualization.](#)
Bonnet E, Viara E, Kuperstein I, Calzone L, Cohen DP, Barillot E, Zinovyev A.
Nucleic Acids Res. 2015 Jul 1;43(W1):W560-5. doi: 10.1093/nar/gkv450. Epub 2015 May 9.
PMID: 25958393 [Free PMC Article](#)
[Similar articles](#)
- 5. [Development, implementation and evaluation of an information model for archetype based user responsive medical data visualization.](#)
Kopanitsa G, Veseli H, Yampolsky V.
J Biomed Inform. 2015 Jun;55:196-205. doi: 10.1016/j.jbi.2015.04.009. Epub 2015 Apr 29.
PMID: 25934466
[Similar articles](#)
- 6. [Acquired Codes of Meaning in Data Visualization and Infographics: Beyond Perceptual Primitives.](#)
Byrne L, Angus D, Wiles J.
IEEE Trans Vis Comput Graph. 2016 Jan;22(1):509-18. doi: 10.1109/TVCG.2015.2467321.
PMID: 26529716
[Similar articles](#)

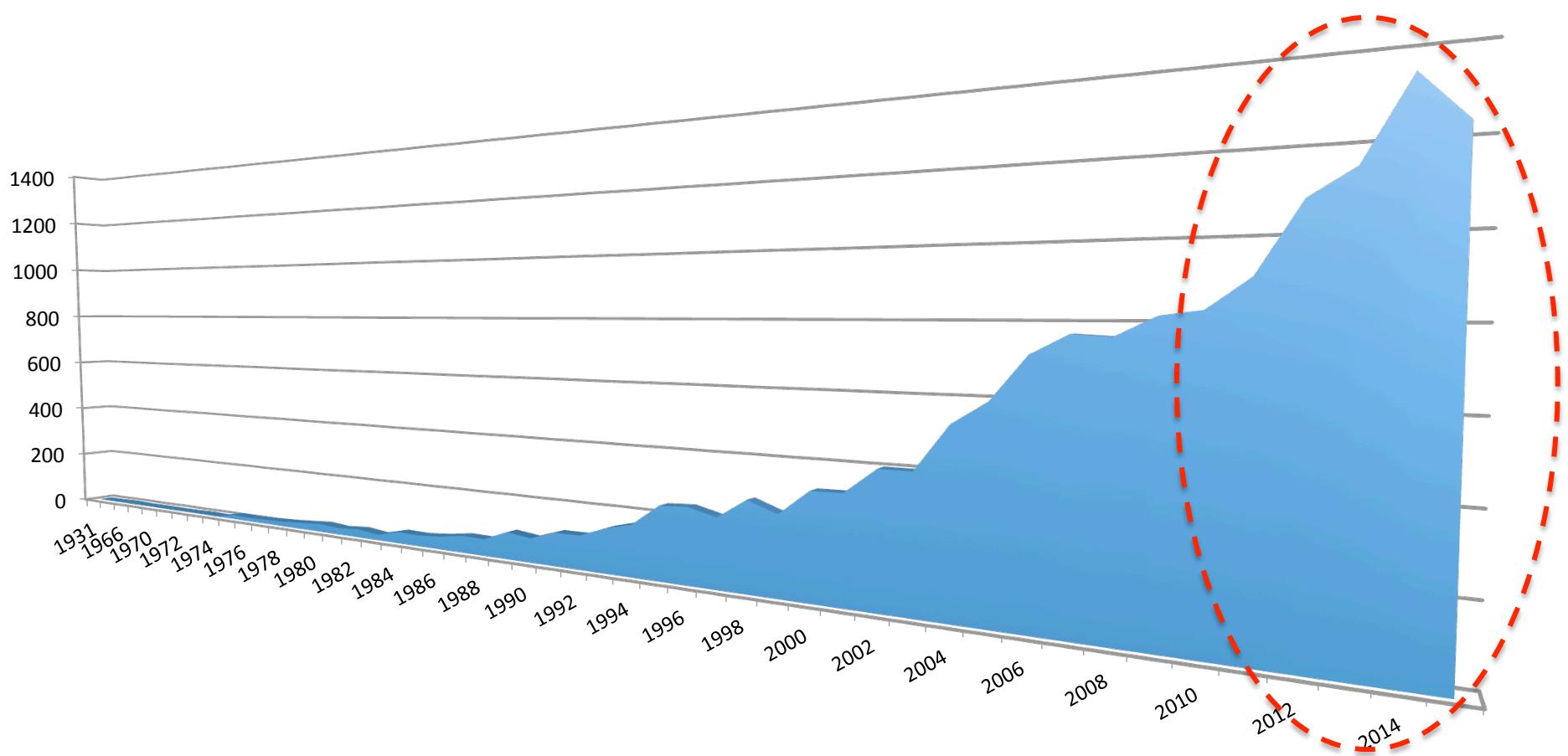
On the left side of the page, there is a sidebar with links to "Using PubMed" sections: "PubMed Quick Start Guide", "Full Text Articles", "PubMed FAQs", "PubMed Tutorials", and "New and Noteworthy" (with an RSS icon).

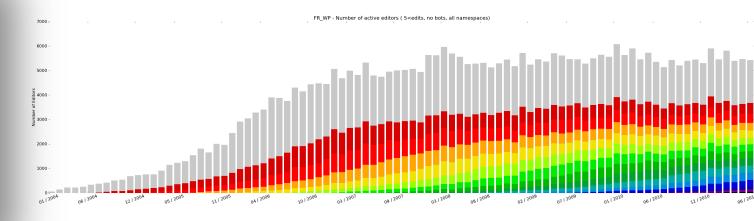
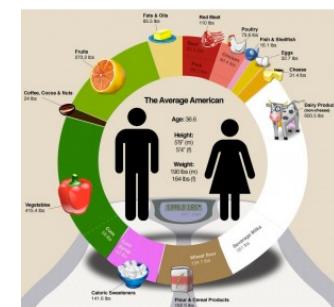
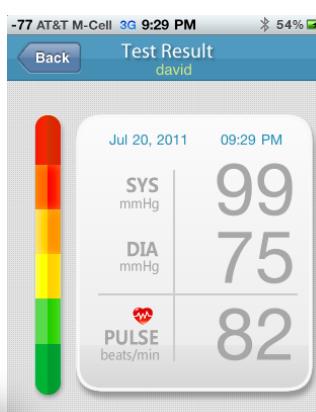
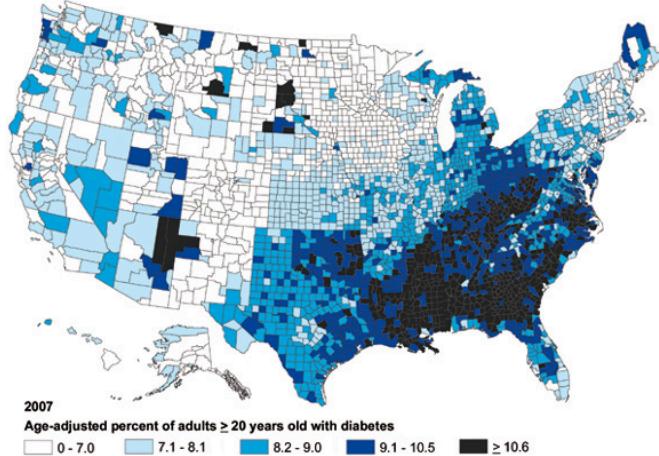
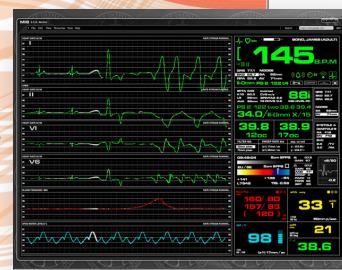
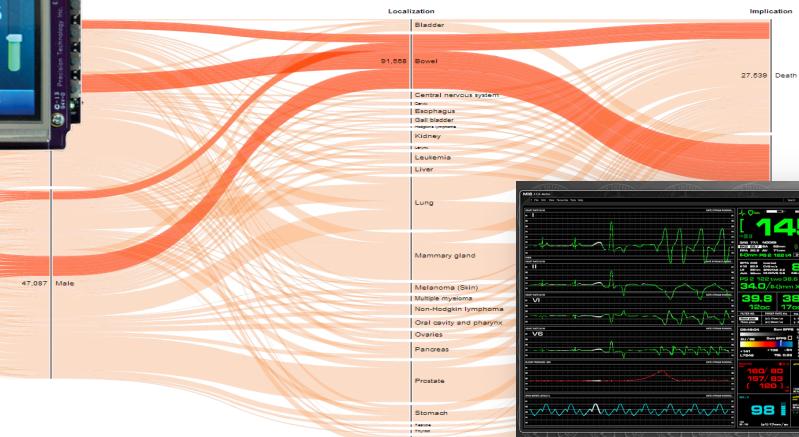
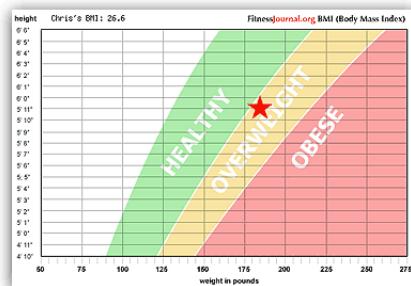
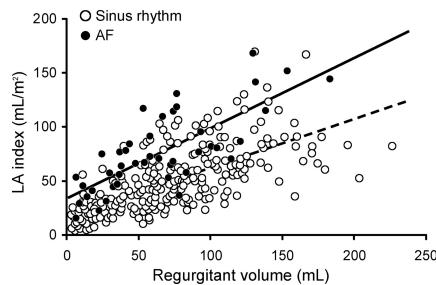
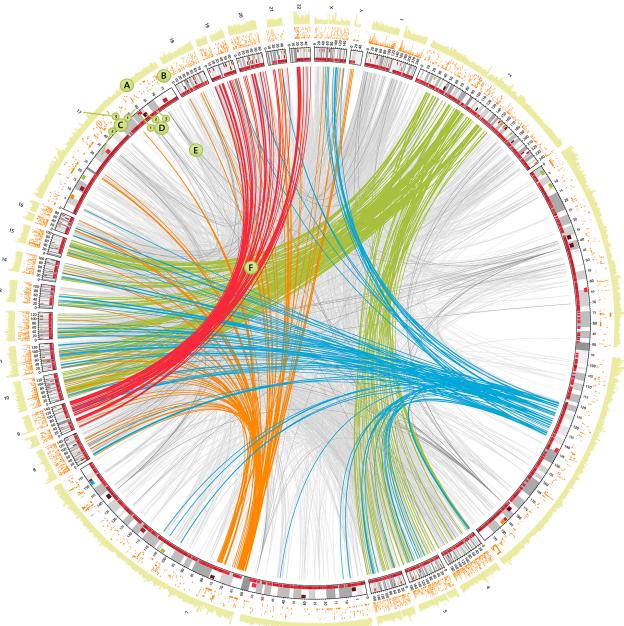
The screenshot shows the NCBI homepage with a search bar at the top right containing the term "Search". Below the search bar, there is a "Sign in to NCBI" link and a "Help" link. On the left, there is a "Mentions" section with a blue bar and some icons. On the right, there is a news feed with the following item:

- Nov 13 Club @NephJC recaps discussion of treatment in chronic kidney disease

How Popular is Data Visualization?

Frequency of "Data Visualization" Papers in PubMed







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WHITING SCHOOL
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