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Data literacy and misinformation

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Data citizenship: rethinking data literacy in the age of disinformation, misinformation, and malinformation

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DATA LITERACY

Infodemic Resilience. How Data Literacy Can Empower Individuals Against Misinformation

In the realm of digital information, the lines between truth and misinformation/disinformation often blur, complicating our collective ability to discern the truth.

KEVIN HANEGAN

https://www.turningdataintowisdom.com/infodemic-resilience/

Data literacy

- https://gi.de/dataliteracy GESELLSCHAFT FÜR INFORMATIK
- https://thedataliteracyproject.org Data Literacy Project
- Many Universities offer data literacy certificates
  - https://uni-tuebingen.de/studium/studienangebot/ueberfachliche-kompetenzen/zertifikate/zertifikat-data-literacy/
  - https://www.uni-mannheim.de/universitaet/lehre/lehrprojekte/data-literacy/
  - https://uni.ruhr-uni-bochum.de/de/dataliteracyrub
  - ….

Data literacy

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This course focuses soley on biomedical data and has a methodological focus on statistics and machine learning.

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Biomedical data

- So let us look into the ‘biomedical data. Let’s start with biomedicine

Genealogy of the Term Biomedicine
Biomedicine as a term first arose in the early twentieth century. The terms ‘biomedicine’ (and ‘biomedical’) have different origins and trajectories in English, German (‘Biomedizin’), and French (‘biomédecine’), but very similar meanings today. ‘Biomedical’ first appeared in the writing of American and British authors in the 1920s, and was followed a decade later by ‘biomedicine’ (or ‘bio-medicine’) (Keating and Cambrosio, 2003: Chapter 3). From the onset, biomedicine and biomedical research referred to a kind of medicine that was closely associated with experimentation and the laboratory rather than the experience of physicians and the clinic. The American Illustrated Medical Dictionary defined biomedicine as “clinical medicine based on the principles of physiology and biochemistry” rather than the expertise physicians gained through clinical observation (Dorland, 1923: 172).

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Biomedical data

Biological and/or medical data with a potential to impact human biology and clinical questions

"Biological data": Data from model organisms and theoretical work

- "*Biomedicine is the kind of medicine that was closely associated with experimentation and the laboratory rather than the experience of physicians and the clinic. The American Illustrated Medical Dictionary defined biomedicine as "clinical medicine based on the principles of physiology and biochemistry"*

"Medical data": Data from patients or volunteers:

- Data can be consented if patients agreed to enter a specific study, or unconsented otherwise: use of unconsented data has additional limitations and privacy issues.
- Patient information: date of birth, sex, date of study entry/exit
- Routine medical data: height, weight, blood pressure, cholesterol levels, medications used
- Specialized laboratory data: proteins, lipids, metabolites, glycans, imaging
- Genetic data: genotype or sequencing
- Gene expressions, epigenetic data (DNA methylation) or proteomics data

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Biomedical information

- Biomedical information is information that relates to (or could reasonably be perceived as relating to) human health. Generally speaking, such information should be supported by a reputable **biomedical** source, such as review articles, higher-level medical textbooks, and professional reference works.
- **Attributes of a disease or condition**
- Symptoms, causes, prognoses; how a disease progresses; how it is caught or transmitted; the molecular or cellular basis of a disease.
- **Attributes of a treatment or drug**
- How a treatment works; whether a treatment works, and to what degree; factors that affect whether a treatment works; dosage and timing information; side effects, benefits, and disadvantages.
- **Medical decisions**
- How a condition is identified, tested for, or diagnosed; how useful or effective those methods are; what the standard of care is, and whether a specific treatment, practice, or decision meets the standard of care; results or expected results of a medical decision; what constitutes a medical error and whether a medical error occurred.

https://en.wikipedia.org/wiki/Wikipedia:Biomedical_information