



@chapmanbe

Analyzing the Spread of Informatics with PubMed

BE Chapman¹, WW Chapman¹, J Chapman²

¹University of Melbourne

²Australian National University



What is medical informatics?

- Is medical informatics what we say it is (definition)?
- Or is medical informatics what we do (created artifacts)?
- Is medical informatics the same in Germany, USA, Australia, etc.?
 - Does the ecosystem affect the discipline?
- To what extent has medical informatics “infiltrated” medicine?

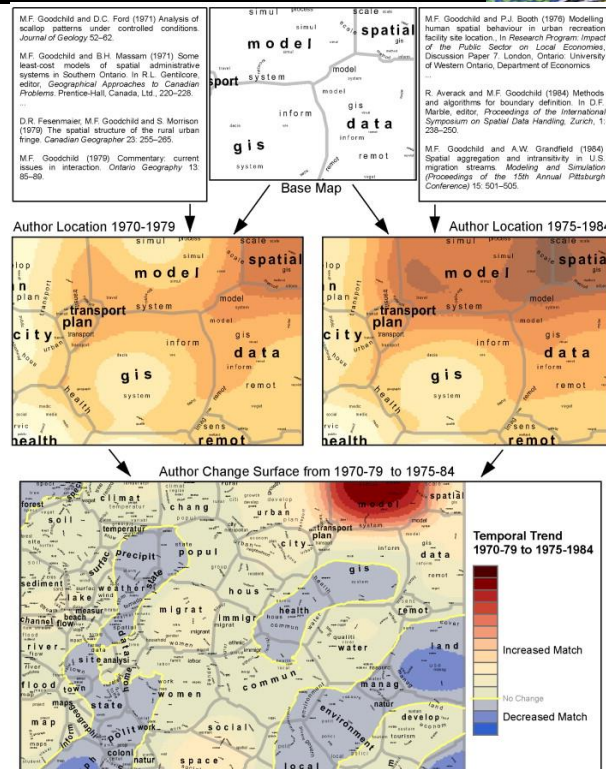


Scientific Artifacts from Biomedical Informatics

- Electronic medical records
- Software
- Databases
- Knowledge bases
- **Published literature**



Andre Skupin SDSU





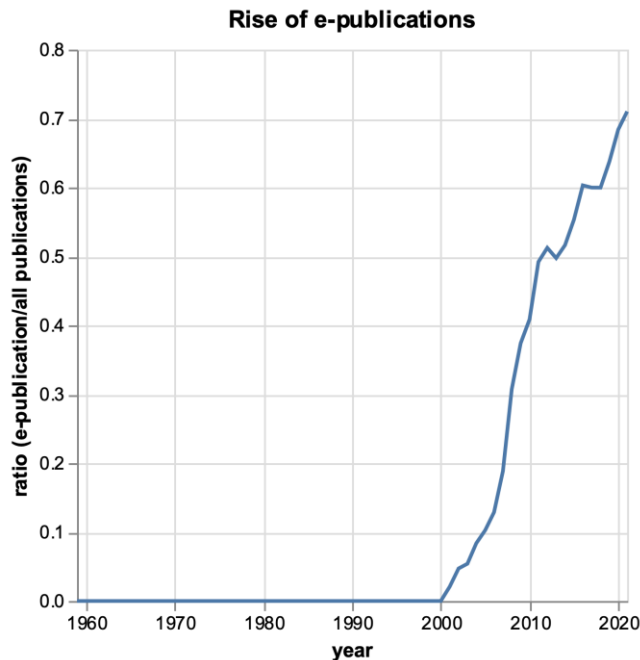
Objectives

- Use PubMed to understand how medical informatics has evolved over time and space
- Challenges:
 - Affiliation (unstructured) only added to MEDLINE in 1988
 - MeSH itself is dynamic, adding terms yearly and periodically getting restructured
- Approach
 - Created regular expression-based country detector
 - Limited similarity measures to across countries at same year (no year-to-year comparison)
 - Specific question: how has e-publication affected spread of concepts?



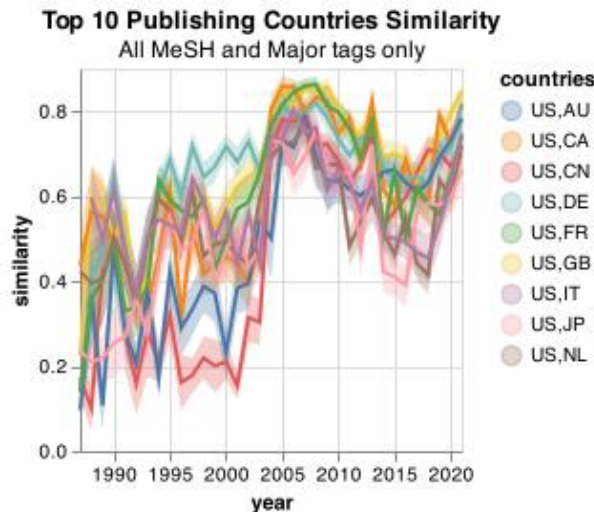
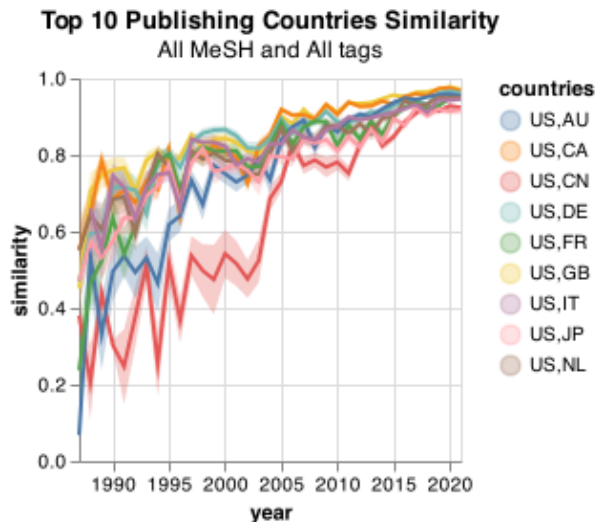
E-Publishing: Radical change in diffusion of ideas?

- < 2000 pre-e-publishing era
- > 2006 post-e-publishing era
- 2000-2006 transition





Increasing similarity of research across countries



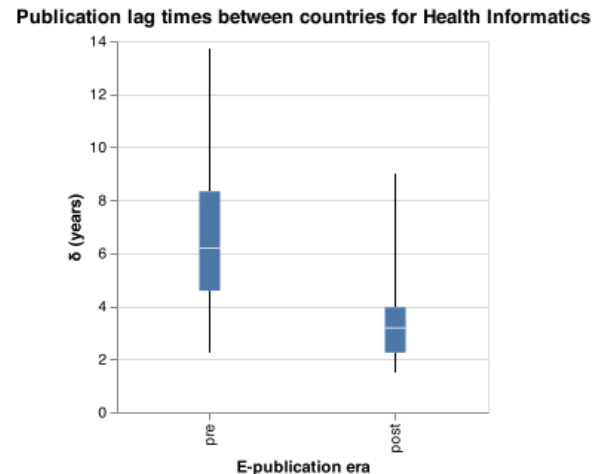
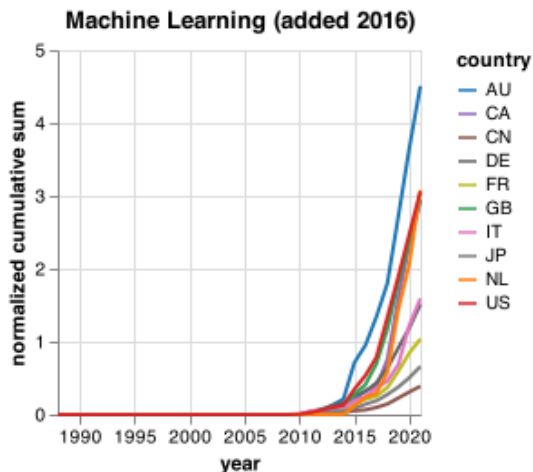
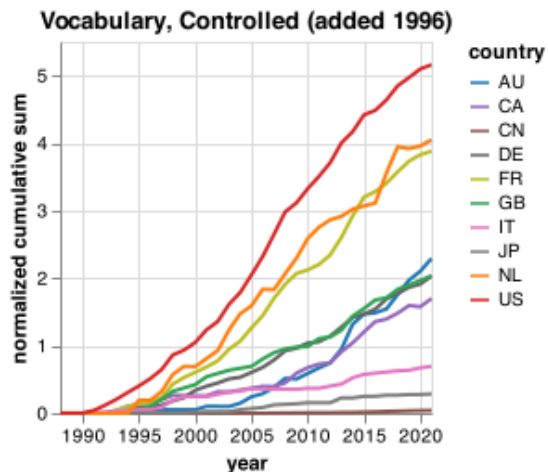
Why?



Using MeSH terms to measure spread of concepts

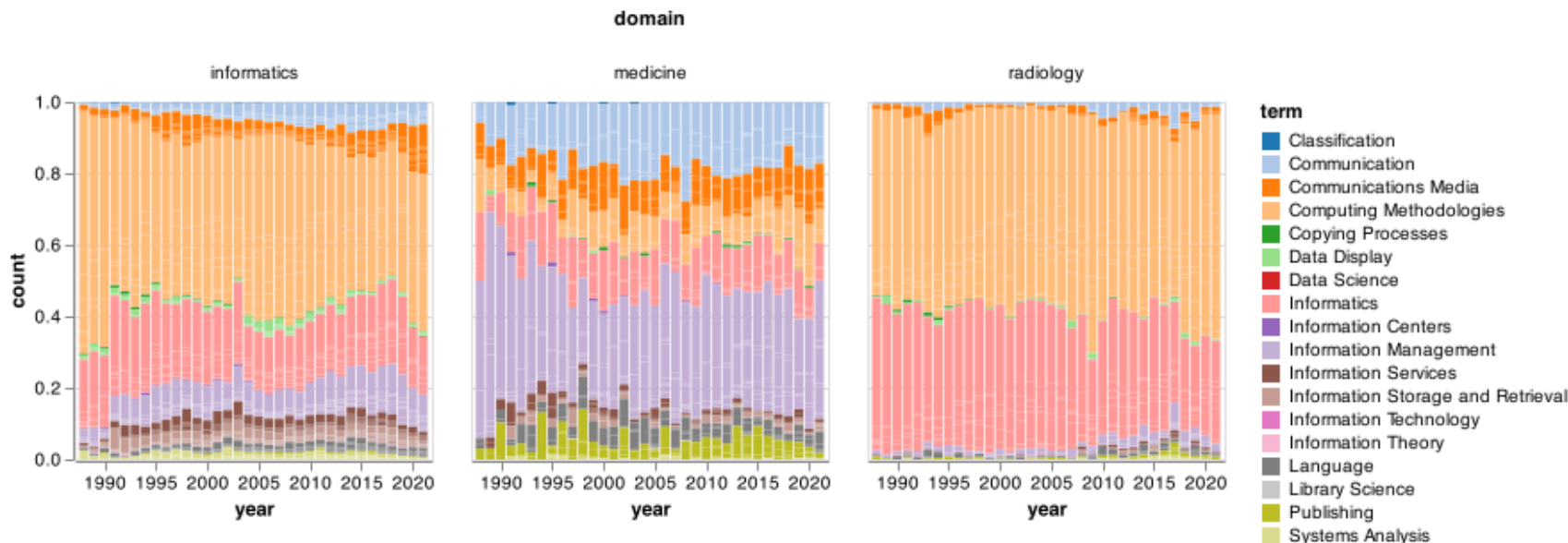
Counts normalized by country population

38 pre-epub MeSH terms
22 post-epub MeSH terms





MeSH Information Science Terms by Discipline





Conclusions

- Informatics research is becoming geographically more homogenous
- E-publication is increasing the speed at which informatics concepts diffuse across countries.
- With few exceptions, such as “Machine Learning” in radiology, medical informatics impact on mainstream medical publications remains limited