

Mapping the Pediatric Literature: Co-citation and Subject Term Bibliometrics

Jonathan Young

LIS678 Personalized Information Delivery

University of Hawaii at Manoa, CIS Program

Professor Luz Quiroga



Introduction

- Motivation: How do you know that you have good coverage in a field?
- What are the topics of most importance?
- For medicine: secondary sources are becoming highly important; how do we evaluate them?

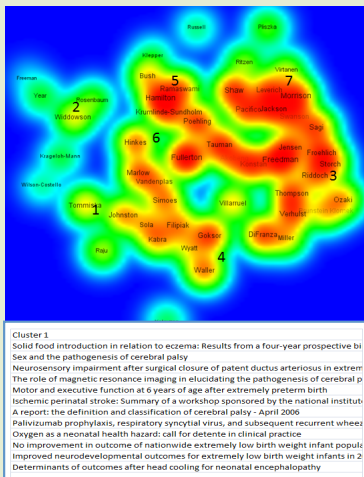
Core Pediatric Journals

Journal	Cited Referen	Pediatric Impact
PEDIATRICS	2788	4.186186
NEW ENGLAND JOURNAL OF MEDICINE	681	1.985423
JAMA—JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION	635	2.772926
JOURNAL OF PEDIATRICS	582	2.476596
LANCET	393	1.268525
ARCHIVES OF DISEASE IN CHILDHOOD	382	1.591667
ARCHIVES OF PEDIATRICS & ADOLESCENT MEDICINE	375	2.819549
BRITISH MEDICAL JOURNAL	286	1.361905
PEDIATRIC INFECTIOUS DISEASE JOURNAL	247	0.976285
AMERICAN JOURNAL OF PUBLIC HEALTH	198	1.076087
PEDIATRIC RESEARCH	171	0.640449
ACTA PAEDIATRICA	160	0.424403
JOURNAL OF INFECTIOUS DISEASES	148	0.294821
JOURNAL OF THE AMERICAN ACADEMY OF CHILD AND ADOLESCENT PSYCHIATRY	145	0.941558
AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE	142	0.474916
DEVELOPMENTAL MEDICINE AND CHILD NEUROLOGY	138	0.811765
CIRCULATION	128	0.191043
AMERICAN JOURNAL OF EPIDEMIOLOGY	126	0.39375
CLINICAL INFECTIOUS DISEASES	117	0.275294
JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM	115	0.1622
JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY	114	0.325714

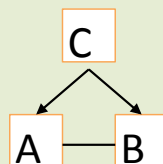
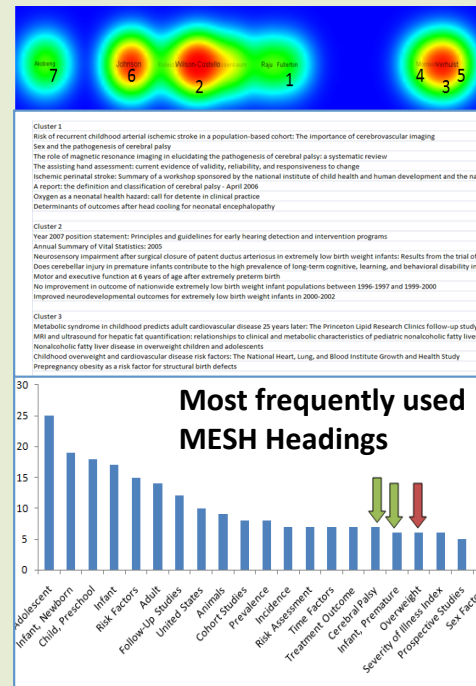
Methods

- Determine core pediatric journals by analyzing all cited references in the 2007 year of *Pediatrics*
- Take the top 1% of cited articles in these core journals and do co-occurrence analysis to map their relationships using three different methods: co-citation, MESH co-occurrence, and expert card sorting.

MESH Mapping



Co-citation Mapping



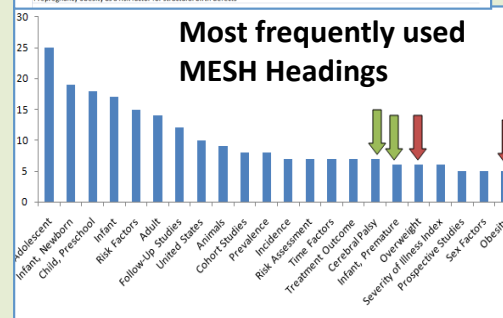
Co-occurrence analysis

- A and B are called **cited article**.
- C is called a **citing article/term**.
- For each citing article/term in common, A and B are linked with strength 1.
- Mapping shows the best solution to making strength of co-occurrence inversely proportional to Euclidean distance in 2 dimensions.

Comparison to expert

- Both MESH and co-citation clusters were ~30% similar to expert clusters
- Best match was MESH cluster 1, which had 84% similarity to the neonatology cluster
- Second best match was co-citation cluster 5, which had 40% similarity to adolescent child psychology cluster

Most frequently used MESH Headings



Conclusions

- Bibliometric methods can provide an overview of a field of literature
- Care must be taken using these techniques: comprehensive searches are necessary
- MESH and co-citations are complementary, with different strengths

Pediatric Cited References By Year

