Diffusion: Measuring the Impact of Scientific Research Within and Outside a Field

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Integration: A Prelude to Diffusion

• Integration Defined:

\[ I = 1 - \left[ \frac{\sum (f_i \times f_j \times \cos (SC_i - SC_j))}{\sum (f_i \times f_j)} \right] \]

where \( l \) = row, \( j \) = column, \( f \) = frequency

• Integration Range

• Integration Examples
Changes in Average Integration Scores over Time

Taking a Look at the Research of Dr. Robert Nerem

- Institute Professor Emeritus and Director, Georgia Tech/Emory Center for Regenerative Medicine
- 240 Web of Science (WOS) publications, in
- 76 Journals, over
- 47 Years, and more than
- 8,000 Citations
Integration Scores v. Cited Reference Counts for Dr. Nerem’s Research
Cited Reference Counts v. Publication Age for Dr. Nerem’s Research
Integration Scores v. Publication Age for Dr. Nerem’s Research
For more on Integration see:


Diffusion Scoring

- Diffusion Defined
- Diffusion Range
- Chen: papers which are cited quickly and diffusely are more likely to be hits

Citation: Chen, Chaomei, and Diana Hicks. "Tracing knowledge diffusion." *Scientometrics*. 59.2 (2004): 199-211.
• In the example above Paper 2 will have a higher diffusion score than Paper 1 because there is greater heterogeneity among its citing subject categories.

• Chen: because Paper 2 diffuses more broadly it is more likely to be a hit.
Diffusion Scores v. # Citing Articles for Dr. Nerem’s Research
# Citing Articles v. Publication Age for Dr. Nerem’s Research
Diffusion Scores v. Publication Age for Dr. Nerem’s Research
For more on Diffusion see:


Thank you