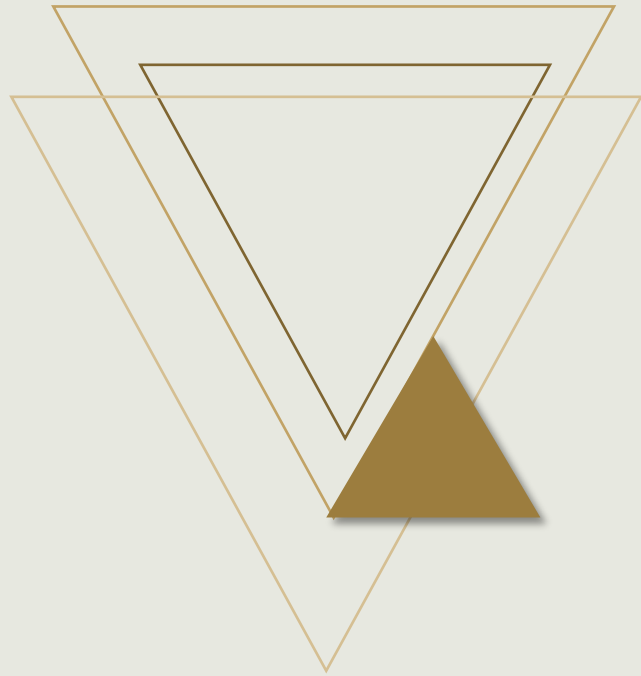




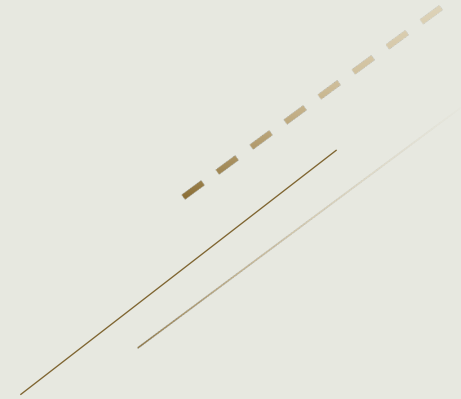
Last Shorter But Impact Stronger

- Data Science Works In The Last 20 Years

Chuanlu Chen chenchuanlu@gmail.com



1

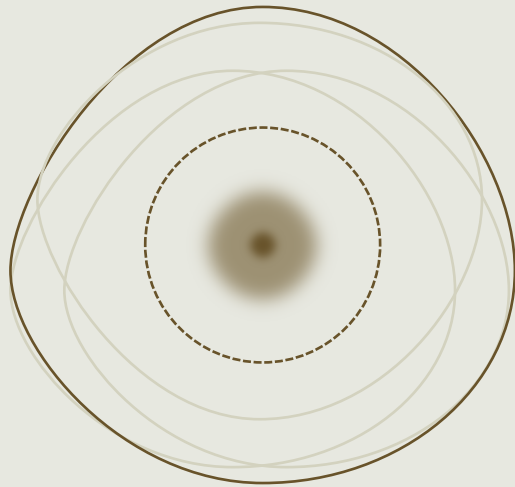


Research Question



Research Question

- Look at research impact in details
 - How long does the impact last?
 - How about the quality of the impact?
 - Where does it go?
- Hidden patterns of the research impact
- Research Scope: Data Science



2



Visualization Summary

Life Span of 15 Most-cited Works



Last Shorter
But Impact Stronger

- Data Science Works in the last 20 years

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<https://public.tableau.com/profile/chuanlu.chen#!/vizhome/researchinDataScience/Dashboard2>

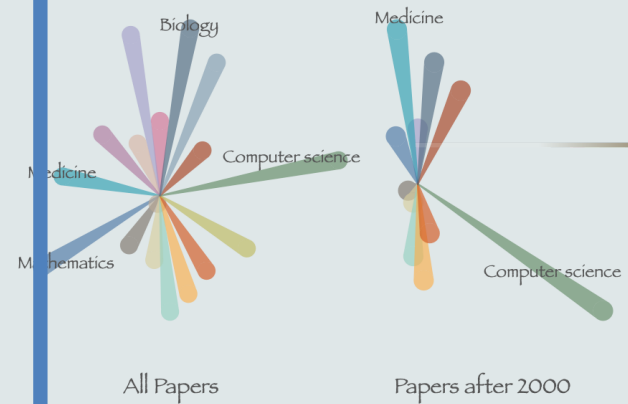


1980 1985 1990 1995 2000 2005 2010 2015 2020

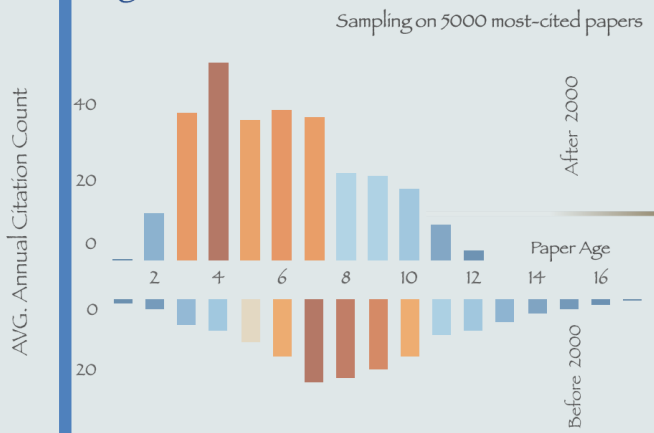
Network-based PageRank



Top Citing Areas



Change of Citation Trend Before vs. After 2000



Main Figure: Case
→ how long does it last?

Sub-figure 1: Statistics
→ how deep the impact is?

Sub-figure 2: Statistics
→ Where does the it go?

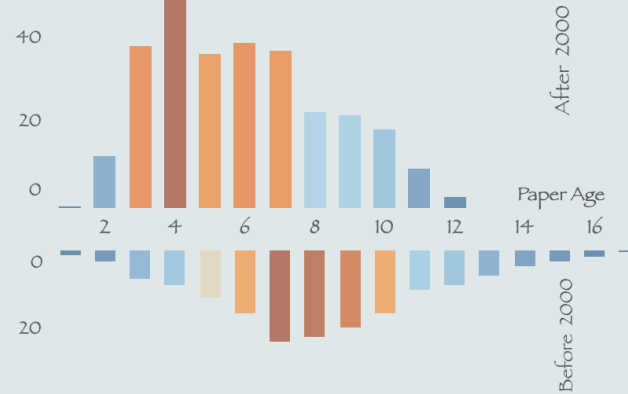
Sub-figure 3: Illustration of the major metric

Roles of Panels ▲



Change of Citation Trend Before vs. After 2000

Sampling on 5000 most-cited papers



Network-based PageRank

0.01428 0.06787

Efron, Tibshirani, 1993

Han, Kamber, Fei, 2000

Frank, Witten, Hall, 1999

Bolger, Lohse, Usadel, 2014

Russakovsky et al., 2015

Venables, Ripley, 2000

Excoffier, Laval, Schneider, 200

Harris et al., 2009

McKenna et al., 2010

Cooper, Schindler, 1980

Kohonen, 1995

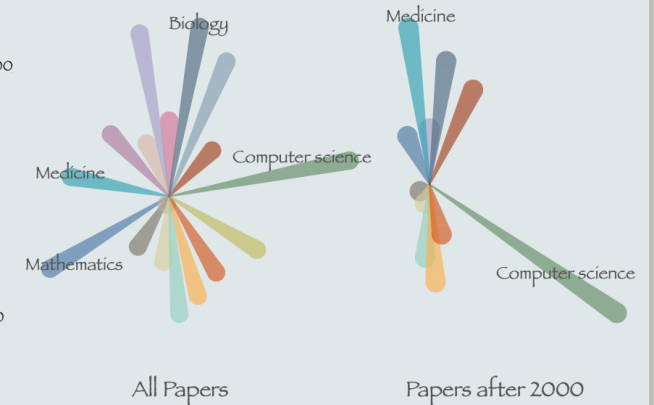
Tukey, 1977

Cristianini, Shawe-Taylor, 2000

Girvan, Newman, 2002

Press et al., 1994

Top Citing Areas



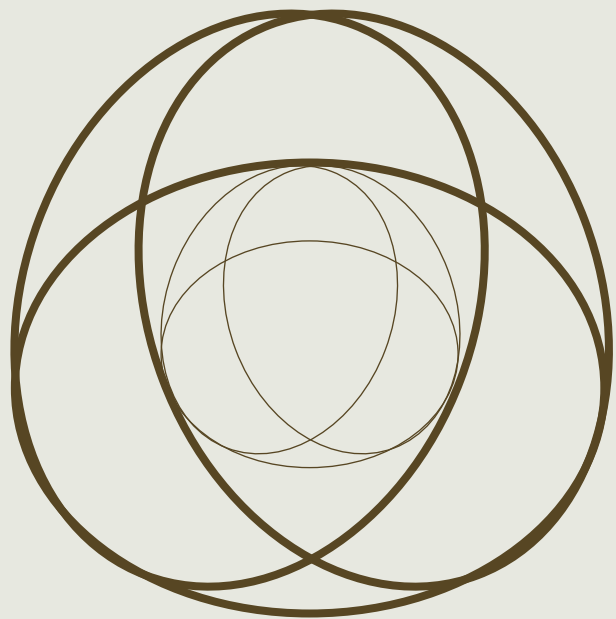
Two distinct patterns of life span

- Long-lived, and gently growing
- Short-last, and fast-growing

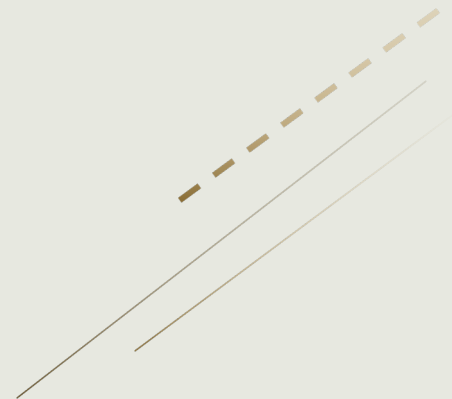
On average, papers after 2000 have a shorter life span, stronger impact and reach a peak rapidly

longer life span \neq high-quality impact
Papers after 2000 contribute more to its own area

Last shorter, but impact stronger



3



Closing Thoughts

Discussion



Significance

- Explore research impact in details
- Special patterns in Data Science

