Politechnika Wrocławska

Preparation and writing of scientific articles - part 1

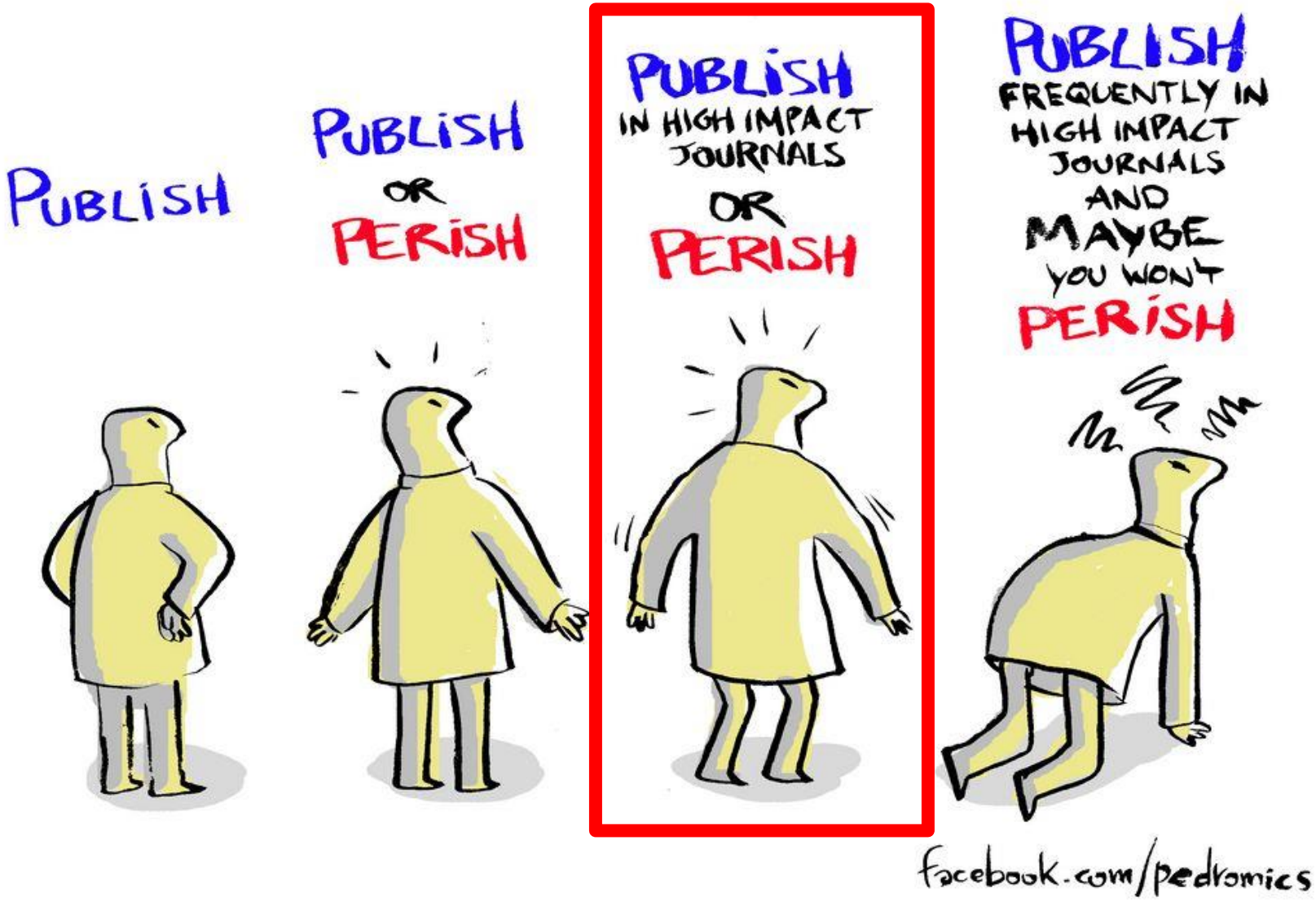
Łukasz Sadowski
lukasz.sadowski@pwr.edu.pl

Wroclaw University of Science and Technology
Faculty of Civil Engineering
Department of Materials Engineering and Construction Processes

Bibliography

- IEEE tutorials on writing scientific papers „ Writing For Success - An Engineer's Guide "
- R. Berger " A Scientific Approach to Writing for Engineers and Scientists "
- http://www.cs.jhu.edu/~jason/advice/how-to-write-a-thesis.html?_.content=buffercf4a2
- https://writing.wisc.edu/Handbook/
- http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html

Evolution of the approach to publishing



Structure of a scientific article

The classic structure of a scientific text is the IMRAD structure, named after the first letters of the parts of the article :

- **Introduction**,
- **Materials and methods**,
- **Results**,
- **Discussion**.

Structure of a scientific article

Part of a scientific article	Part of the article
How to name the article? What is it about?	Title
What have I done and achieved in the article?	Abstract
What essential words describe the article?	Keywords
Why is the undertaken research problem important?	Introduction
Who has dealt with this before?	Literature review
What materials and methods were used in the article ?	Materials and methods
What is the result of the conducted research?	The results
What are the results of the obtained results?	Discussion
Who helped me and funded the research?	Acknowledgments
Who am I referring to? Whom am I quoting?	Bibliography

The shortest scientific article

COUNTEREXAMPLE TO EULER'S CONJECTURE ON SUMS OF LIKE POWERS

BY L. J. LANDER AND T. R. PARKIN

Communicated by J. D. Swift, June 27, 1966

Over 100 citations

A direct search on the CDC 6600 yielded

$$27^5 + 84^5 + 110^5 + 133^5 = 144^5$$

as the smallest instance in which four fifth powers sum to a fifth power. This is a counterexample to a conjecture by Euler [1] that at least n nth powers are required to sum to an nth power, $n > 2$.

REFERENCE

1. L. E. Dickson, *History of the theory of numbers*, Vol. 2, Chelsea, New York, 1952, p. 648.

https://marktomforde.com/academic/miscellaneous/images/ShortestPaper.pdf

Title

The title of the article should:

- summarize the research idea,
- provide the content of the article,
- contain exactly enough words to adequately describe the content and purpose of the article,
- encourage you to read the article,
- disciplines should be encouraged to read the article.

Title

Basic tips :

- should contain up to 12 words (or up to 60 characters),
- should contain as much information as possible,
- should be specific,
- n't be a question
- should be clear and understandable.

The title should not be a question as the likely answer will be "NO" (*Betteridge 's law*)

Title

Basic tips :

- should contain as many keywords as possible,
- place the subject of the article at the beginning of the title ("WHAT: HOW " method),
- simple conclusions should be included in the title ,
- avoid wording which adds nothing to the title (e. g. Investigation into , Studies on, Observation of),
- avoid abbreviations (eg RC, ANN).

Title

Example:

MDPI

Review

Multi-Scale Evaluation of the Interphase Zone between the Overlay and Concrete Substrate: Methods and Descriptors

Łukasz Sadowski

Faculty of Civil Engineering, Wroclaw University of Science and Technology, Wybrzeże Wyspianskiego 27, 50-370 Wroclaw, Poland; lukasz.sadowski@pwr.edu.pl; Tel.: +48-71-320-3742

Academic Editor: Jorge de Brito
Received: 9 August 2017; Accepted: 28 August 2017; Published: 1 September 2017

Source: https://www.mdpi.com/2076-3417/7/9/893

Abstract

The abstract should contain the maximum amount of information in the fewest number of words (often 100-300 words). The abstract should answer the following questions:

- why did we write the article?
- how did we conduct the research and analysis?
- what have we been researching?
- how did we come to conclusions ?

Abstract

Three rules for a good abstract:

- abstract should not repeat the information contained in it in the title (and certainly not with the same words),
- it is enough to read the abstract to know what the article is about - it must be independent, to some extent "self-sufficient",
- should not be referenced in the abstract. There is enough space for them in the following parts of the article.

Abstract

Example:

Abstract: This article presents the problem of examining the interphase zone between the overlay and concrete substrate at different levels of observation. The possibility of applying available modern research methods in order to examine the interphase zone with regard to the level of observation is presented. These levels were defined in the paper. Examples of tests that show a possible approach to the examination of the interphase zone are also presented.

Keywords: civil engineering; repair; non-destructive testing; concrete; interfaces; interphases

Source: https://www.mdpi.com/2076-3417/7/9/893

Keywords

Basic tips:

- most journals require 5 to 12 keywords,
- sometimes you have to select keywords from the journal's list,
- a keyword can consist of many words,
- keywords should contain all relevant terms from the title and abstract,
- best keywords are 1-3 words long.

Introduction

Basic tips:

- presenting the goals of the work,
- presenting research hypotheses and the subject of research,
- describing the research approach and perspective,
- motivating what the results will bring to learning,
- answers to the questions: What did we research? Why is the undertaken research problem important? What did we know about this problem before we undertook the research? How did our research broaden our understanding of the problem ?

Literature review

Basic tips:

- presentation of the theoretical background,
- recalling the most important similar works,
- n should focus on texts published in the best magazines,
- n should refer to "primary literature" (original research papers + review articles) and not to textbooks .

Literature review

Examples:

materials, a thin layer or border in the form of an "interface" is created. However, according to [7], unlike the "interface" that is created after the application of the overlay onto an existing concrete substrate, it should be referred to as an "interphase" due to the maturation of overlay concrete.

The durability of layered concrete elements, both newly executed elements and also surface corroded elements that were repaired by the application of repair concrete, is strongly dependent on an appropriate adhesion between layers [1–4]. This appropriate adhesion is defined in standard as the desired minimum value of interlayer adhesion [5].

In turn, micro-level studies were performed using a scanning electron microscopy [36,47,57,76–78] and mercury intrusion porosimetry [57]. In recent years, it has been observed that X-ray micro-computed tomography [79,80] and nanoindentation [81] are increasingly used to evaluate the interphase zone at micro and nano levels of observation. Czarnecki and Garbacz [82] and Pietrie [83] pointed out that the adhesion between concrete layers, as a multi-scale problem, should be investigated at different levels of observation.

Source: https://www.mdpi.com/2076-3417/7/9/893

Literature review

Examples:

SOCIAL SELECTION *Popular articles on social media*

Unusual reference attracts notoriety

An editorial oversight has turned a report on fish pigmentation into one of the year's most talked-about papers. The study of poeciliid fishes, first published online in July by the journal *Ethology*, received scant attention until ecologist David Harris at the University of California, Davis, tweeted a screenshot of one of its pages, highlighting this phrase in parentheses: "Should we cite the crappy Gabor paper here?" Harris added his own comment on Twitter: "Not sure how this made it through proofreading, peer review and copy editing." In one of dozens of responses, Tim Elfenbein, managing editor of the journal *Cultural Anthropology*, tweeted: "Note to authors: you are ultimately responsible for the work that bears your name, no matter the level of editing."

Ethology 120, **1090–1100 (2014)**

Dave Harris
@davidjayharris

Follow

Not sure how this made it through proofreading, peer review, and copyediting. Via onlinelibrary.wiley.com/doi/10.1111/et … #addedvalue

Although association preferences documented in our study theoretically could be a consequence of either mating or shoaling preferences in the different female groups investigated (should we cite the crappy Gabor paper here?), shoaling preferences are unlikely drivers of the documented patterns both because of evidence from previous research and inconsistencies with *a priori* predictions. Our methods closely followed those of published mate choice experiments in this system (Tobler et al. 2009a,b; Plath et al. 2013),

Source: https://www.nature.com/news/unusual-reference-attracts-notoriety-1.16364

Materials and methods

Basic tips:

- detailed description of the materials used,
- a detailed description of the methods used,
- description of procedures enabling other researchers to repeat research (experimental , survey, etc.)
- description of the material collection procedure,
- description of the search criteria ,
- description of reagents,
- o writing of the control group (groups of people, etc.)

Materials and methods

Example:

2. Materials and Methods

2.1. Materials Used in the Research

Concrete of class C25/30 with a fixed composition was subjected to research. The tested series differed only in the content and type of fibers. In the research, CEM III 42.5 N cement (320 kg/m^3, Buzzi Unicem, Hranice, Czech Republic) and potable water (w/c = 0.5 (-), which was added to the concrete mixes, were used. Figure 1 shows the screening curve of the aggregate that was used in the tests (sand 0–2 mm 700 kg/m^3, gravel 2–8 mm 443 kg/m^3, gravel 8–16 mm 700 kg/m^3—all the aggregates came from Kopalnia Byczeń, Byczeń, Poland). Two different types of fibers were added to the concrete mix: type 1—steel fibers with both ends hooked (Bautech, Piaseczno, Poland, length: 50 mm, diameter: 1.0 mm, tensile strength: 1100 MPa, Young's modulus: 180 GPa, density: 7650 kg/m^3); type 2—continuous polypropylene fibers (Ha-Be, Łozina, Poland, length: 48 mm, diameter: 0.6 mm,

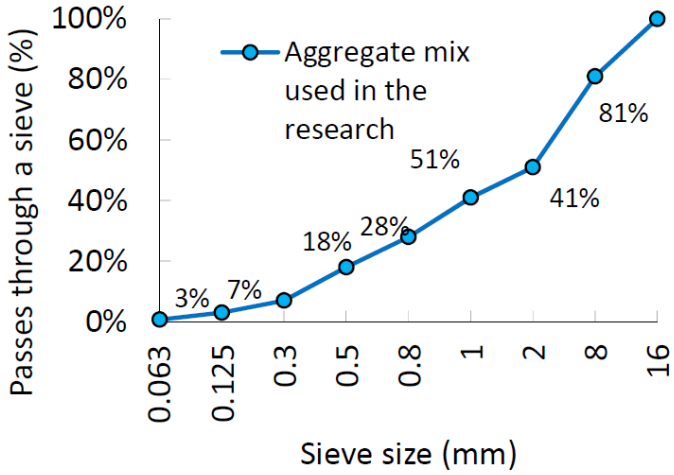


Figure 1. The screening curve of the aggregates used in the tests.

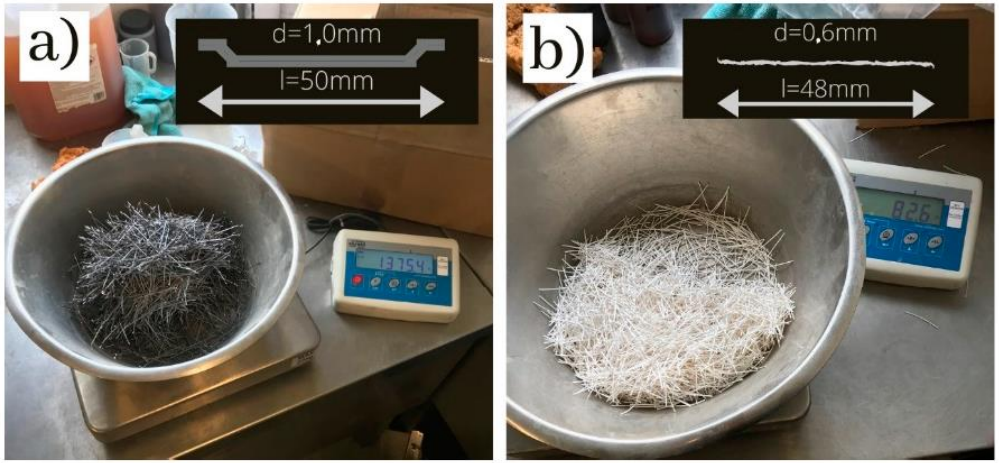


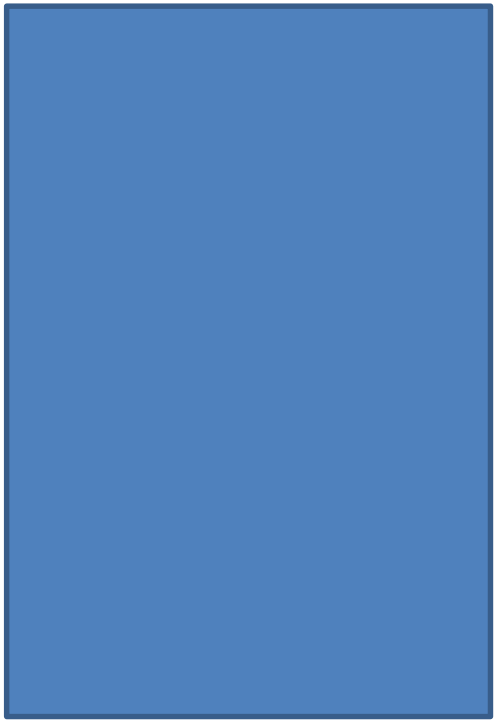
Figure 2. Fibers used in the research (**a**) steel fibers, (**b**) polypropylene fibers.

Source: https://www.mdpi.com/2076-3417/7/9/893

Materials and methods

Example:

After legal threats from Herbalife, Elsevier journal retracts — and then removes — a paper



Bowing to legal pressure from the supplement maker Herbalife, Elsevier earlier this year retracted — and then removed — a paper which claimed that a young woman in India died of liver failure after using the company's products. The move has led to more legal threats.

In August 2018, a group of researchers in India published a report in the *Journal of Clinical and Experimental Hepatology* about the death, involving a 24-year-old woman who had taken a variety of supplements produced by Herbalife, a massive, and massively controversial, maker of nonprescription diet aids.

The results

Basic tips:

- objectively showing - as far as possible - the key results, but without interpreting them,
- showing what results have been achieved,
- The obtained results should be divided according to the data sets (e.g. if we analyzed interviews and surveys, we must discuss them separately).

The results

Example:

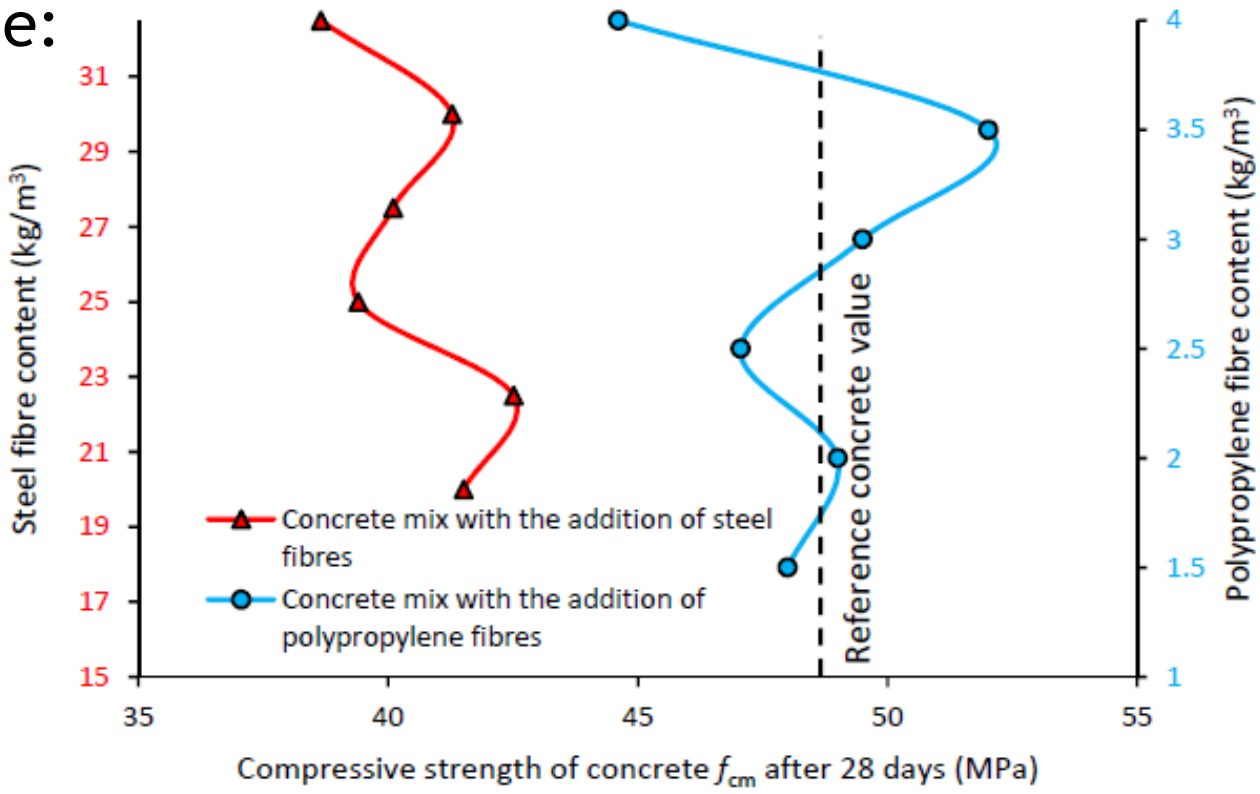


Figure 6. Compressive strength of the concrete modified with the addition of fibers.

Figure 6 shows the compressive strength f_{cm} of the concrete with different types and contents of fibers. The compressive strength of the concrete modified with the addition of fibers is lower than the strength of the reference concrete (even by 10%). Moreover, the compressive strength of the

Source: https://www.mdpi.com/2076-3417/7/9/893

Discussion

Basic tips:

- you can present rules, dependencies, generalizations,
- highlight exceptions to the rule and unexplored areas,
- show what the obtained results mean and why they are important,
- what has been found new in the research?
- What did others know and what do we know?

Discussion

Basic tips:

- What are the similarities and differences in the obtained results?
- what conclusions can be drawn from this?
- what are our further research plans?
- Did the obtained results confirm the hypothesis from the introduction?

Discussion

Examples:

5. Conclusions

The performed research and analyses allow the following conclusions to be drawn:

- The consistency of the fresh concrete mixes modified with the addition of polypropylene fibers is denser when compared to both the mixes modified with the addition of steel fibers and the reference mix,
- The addition of fibers to the concrete mix leads to an increase in the content of air-voids in the mix when compared to the reference mix. In the case of the analyzed changes in the dosage of fibers, the concrete mixes with the addition of steel fibers have a higher content of air-voids when compared to the concrete mixes with polypropylene fibers,
- The addition of fibers to the concrete mix does not cause significant changes in its bulk density,
- The compressive strength of the concrete modified with fibers is on a similar level or even lower when compared to the strength value of the reference mix. In the case of the analyzed changes in the dosage of fibers, the addition of the polypropylene fibers to the concrete mix leads to nonsignificant changes in the value of compressive strength, whereas the addition of steel fibers to the concrete mix leads to a decrease in compressive strength when compared to the reference concrete,

Source: https://www.mdpi.com/2076-3417/7/9/893

Discussion

Example:

Dishonesty is more affected by BMI status than by short-term changes in glucose

Scientific Reports (2020) - 5 Comments
doi: 10.1038/s41598-020-68291-w issn: 2045-2322 pubmed: 32699212

Eugenia Polizzi Di Sorrentino, Benedikt Herrmann, Marie Claire Villeval

#1 **Elisabeth M Bik** commented 5 months ago

This study claims that BMI is associated with dishonesty. Any study that calls a particular group of people more honest than others deserves some scrutiny, so here we go.

More than five months after outraged readers demanded that a Springer Nature journal retract a paper linking body mass index to honesty, the publication has been pulled.

The journal now says that a post-publication review of the article found that the data don't support the authors' conclusions — which is another way of saying that the pre-publication peer review missed that fact.

Source: https://www.mdpi.com/2076-3417/7/9/893

Acknowledgments

Basic tips :

- A "thank you" is a formal statement in which we thank but - most of all - acknowledge someone's "contribution",
- You should not be thanking for things not directly related to research,
- Includes simple thanks, and not paying homage or dedicating your work to "mom, dad, wife and brother ",
- Thank you by indicating only the name and surname, without specifying the titles and positions.

Acknowledgments

Who do we thank:

- people who gave us scientific guidance, led us in our arguments,
- at discussion participants,
- people who commented on the draft versions of our text,
- people who provided the samples,
- students and assistants who assisted in research,
- technical staff ,
- and grant institutions. We provide: the name of the financing institution, the name of the grant, and the contract number .

Acknowledgments

Example:

Acknowledgments: This work was supported by the National Centre of Science, Poland under Grant number 2014/15/D/ST8/00550 ["Evaluation of the interlayer bond of variably thick concrete layers based on nondestructive tests using artificial intelligence"].

Conflicts of Interest: The author declares no conflict of interest. The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results.

Source: https : //www.sciencedirect.com/science/article/pii/S0958946504000459

Preparation of the publication for sending

- It is worth carrying out automatic corrections in text editors,
- Always work in a team in which each of the authors reads the work in turn linguistically,
- Language courses for PhD students,
- Learning by example, i.e. by reading other works,
- Professional correction (paid):
  - Dedicated foreign companies, incl. recommended by publishing houses,
  - Polish companies dealing with linguistic proofreading,
  - Freelancers (abroad, Poland) recommended by people from the industry.

Final tips

- It is essential to ensure an attractive title that matches the content of the work,
- Precise abstract,
- In the introduction, a detailed description of what is the main achievement of the work, eg "*The main contribution of this paper is*",
- Detailed description of what is the main novelty of the work in relation to previous work on a given topic , e.g. "*The main novelty of this paper is*",
- An interesting and coherent "story" presented in the work,
- The content of the work, appropriate division into chapters,
- Linguistic quality,
- Good quality drawings illustrating the most important elements,
- Clear conclusions resulting from the presented results.

Tasks to be performed for the next class

1. Present **the best scientific article** you have read so far and justify why this article is the best.
2. Present **the worst scientific article** you have read so far and argue why this article is the worst.

Politechnika Wrocławska

Preparation and writing of scientific articles - part 2

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lukasz.sadowski@pwr.edu.pl

Wroclaw University of Science and Technology
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MEiN list of scientific articles

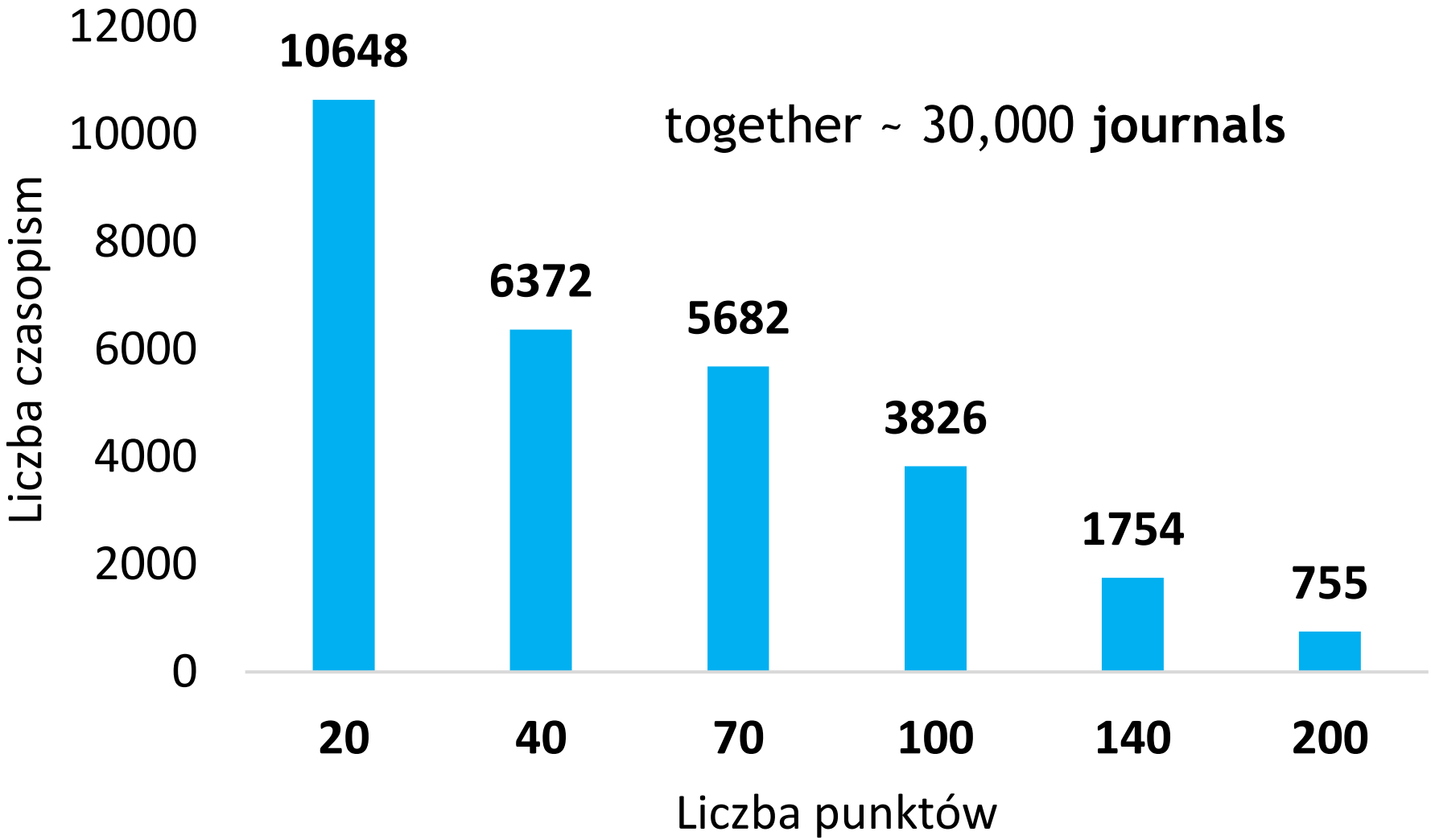
KOMUNIKAT
MINISTRA EDUKACJI I NAUKI[1)]
z dnia 9 lutego 2021 r.

w sprawie wykazu czasopism naukowych i recenzowanych materiałów z konferencji międzynarodowych

Na podstawie art. 267 ust. 3 ustawy z dnia 20 lipca 2018 r. – Prawo o szkolnictwie wyższym i nauce (Dz. U. z 2020 r. poz. 85, 374, 695, 875 i 1086 oraz z 2021 r. poz. 159) ogłasza się wykaz czasopism naukowych i recenzowanych materiałów z konferencji międzynarodowych, stanowiący załącznik do komunikatu.

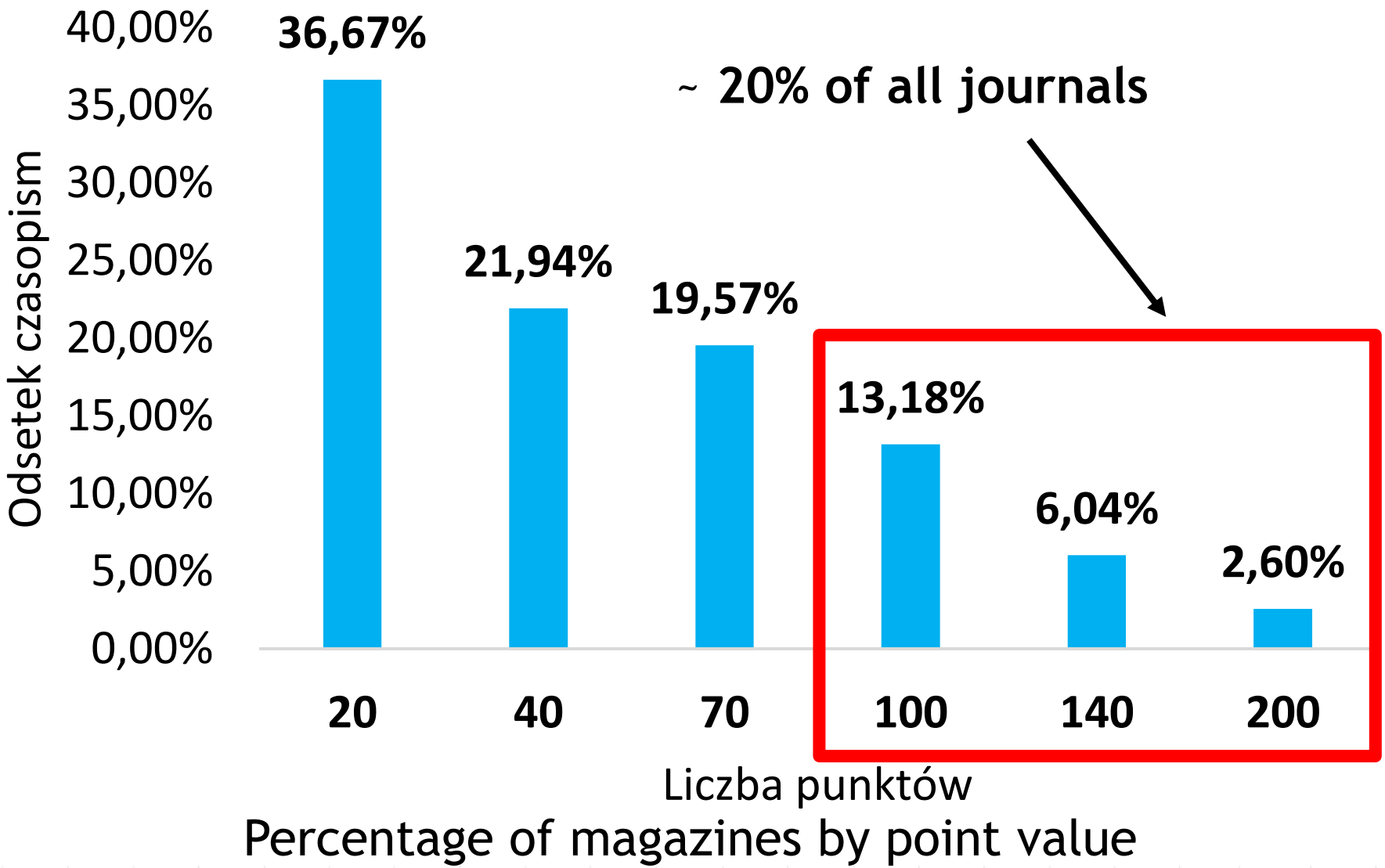
https://www.gov.pl/web/edukacja-i-nauka/nowy-rozszerzone-wykaz-czasopism-naukowych-i-recenzowane-materialow-z-konferencji-miedzynarodowych?fbclid=IwAR3b33CzC9TJMn5xUwktpGWzH9iiBRLHEzFKsQUlsvey-lBRLHEzFKs

MEiN list of scientific articles



Number of journals depending on the point value

MEiN list of scientific articles



Review process in a scientific journal

Initial evaluation by the Editor

- Editor rejects ~ 50%

Editor's first decision

- Review process (usually 2-4 reviews),
- *Possible* Editor

Editor's final decision

- Editor rejects ~ 50%

Speed of the review process

- Have works similar to our scientific article appeared in the selected journal in recent years?
- What was the waiting time for the publication of a scientific article in the journal of our choice?

ELSEVIER

Available online at www.sciencedirect.com

Linear Algebra and its Applications 430 (2009) 1–6

LINEAR ALGEBRA AND ITS APPLICATIONS

www.elsevier.com/locate/laa

Generators of matrix algebras in dimension 2 and 3

Helmer Aslaksen [a,*], Arne B. Sletsjøe [b]

[a] *Department of Mathematics, National University of Singapore, Singapore 117543, Singapore*
[b] *Department of Mathematics, University of Oslo, P.O. Box 1053, Blindern, 0316 Oslo, Norway*

Received 14 June 1995; accepted 8 May 2006
Available online 8 October 2008
Submitted by T.J. Laffey

Source: https://www.sciencedirect.com/science/article/pii/S0024379508002450

Typical review form

- Final recommendation (recommendation to the editor):
  - Accept without revision
  - Accept after minor revision
  - Major revisions neccesary
  - Reject
- Descriptive evaluation
- Review form

Please rate the manuscript with respect to the following items:

(Place an X on the line in front of your rating .)

1. TECHNICAL CORRECTNESS

__ Excellent __ Good __ Acceptable __ Fair __ Very Poor

2. NOVELTY / ORIGINALITY

__ Excellent __ Good __ Acceptable __ Fair __ Very Poor

3. REFERENCE TO PRIOR WORK

__ Excellent __ Good __ Acceptable __ Fair __ Very Poor

Typical review form

4 . QUALITY OF ART

__ Excellent __ Good __ Acceptable __ Fair __ Very Poor

5. QUALITY OF EXPERIMENTAL RESULTS

__ Excellent __ Good __ Acceptable __ Fair __ Very Poor

6. APPROPRIATENESS TO JOURNAL

__ Excellent __ Good __ Acceptable __ Fair __ Very Poor

7. IMPORTANCE TO THE FIELD

__ Excellent __ Good __ Acceptable __ Fair __ Very Poor

8. ORGANIZATION AND CLARITY

__ Excellent __ Good __ Acceptable __ Fair __ Very Poor

9. LENGTH

__ Excellent __ Good __ Acceptable __ Fair __ Very Poor

Please note that your recommendation and reviewer report are expected to cover the Highlights and Graphical Abstract if submitted with the manuscript .

10. ADDITIONAL CONFIDENTIAL COMMENTS TO THE EDITOR:

(Please use this space for any confidential comments that should NOT be forwarded to the author.)

Responses to reviews

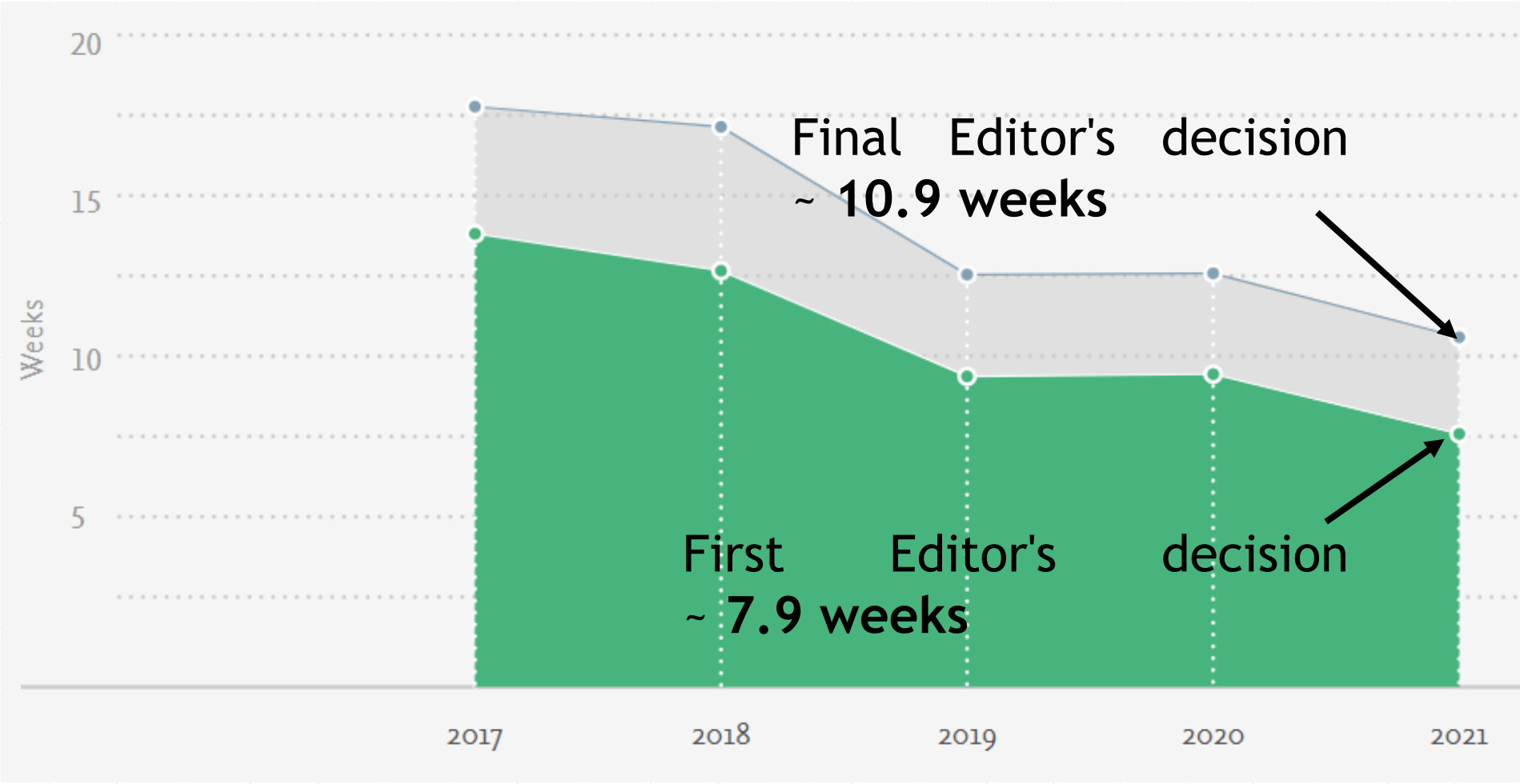
- The reviewer is always right,
- Thoroughly analyze the comments from the reviews,
- Include as many comments as possible in the revised version of the work,
- In the corrected work, mark the changed and new fragments with a color,
- In response to the reviews, refer to each critical remark contained in the review:
  - Describe implemented changes in work,
  - If the comment was not taken into account (we do not agree with it), justify why we do not agree, including by citing other works.

Sample responses to reviews

- " We sincerely appreciate the reviewers for their time and valuable comments. Their comments and remarks have been considered carefully while revising our submission. We have addressed each of the reviewers' comments and concerns individually in the following text, and have been as detailed as possible in each response ”,
- " We agree with this remark "
- "We are very grateful for the reviewer for the suggestion ",
- “ This is a very interesting issue and we thank the reviewer for the comment ",
- “ After much deliberation, we agree completely, and we would like to thank again the reviewer for this recommendation ",
- " We thank the Reviewer for raising this point ."

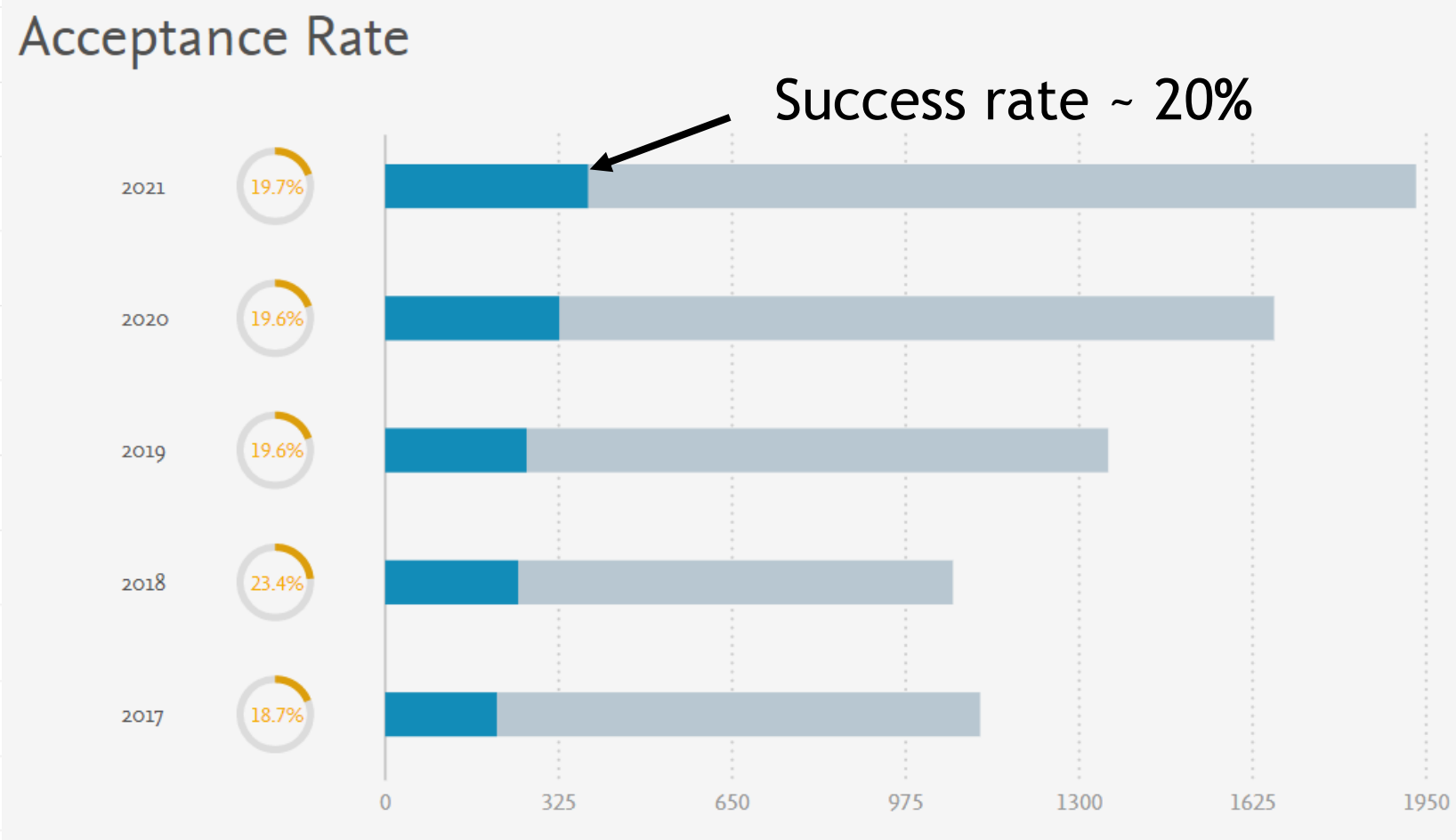
Speed of the review process

Cement and Concrete Composites (Elsevier) – 200 MEiN points:



Success rate

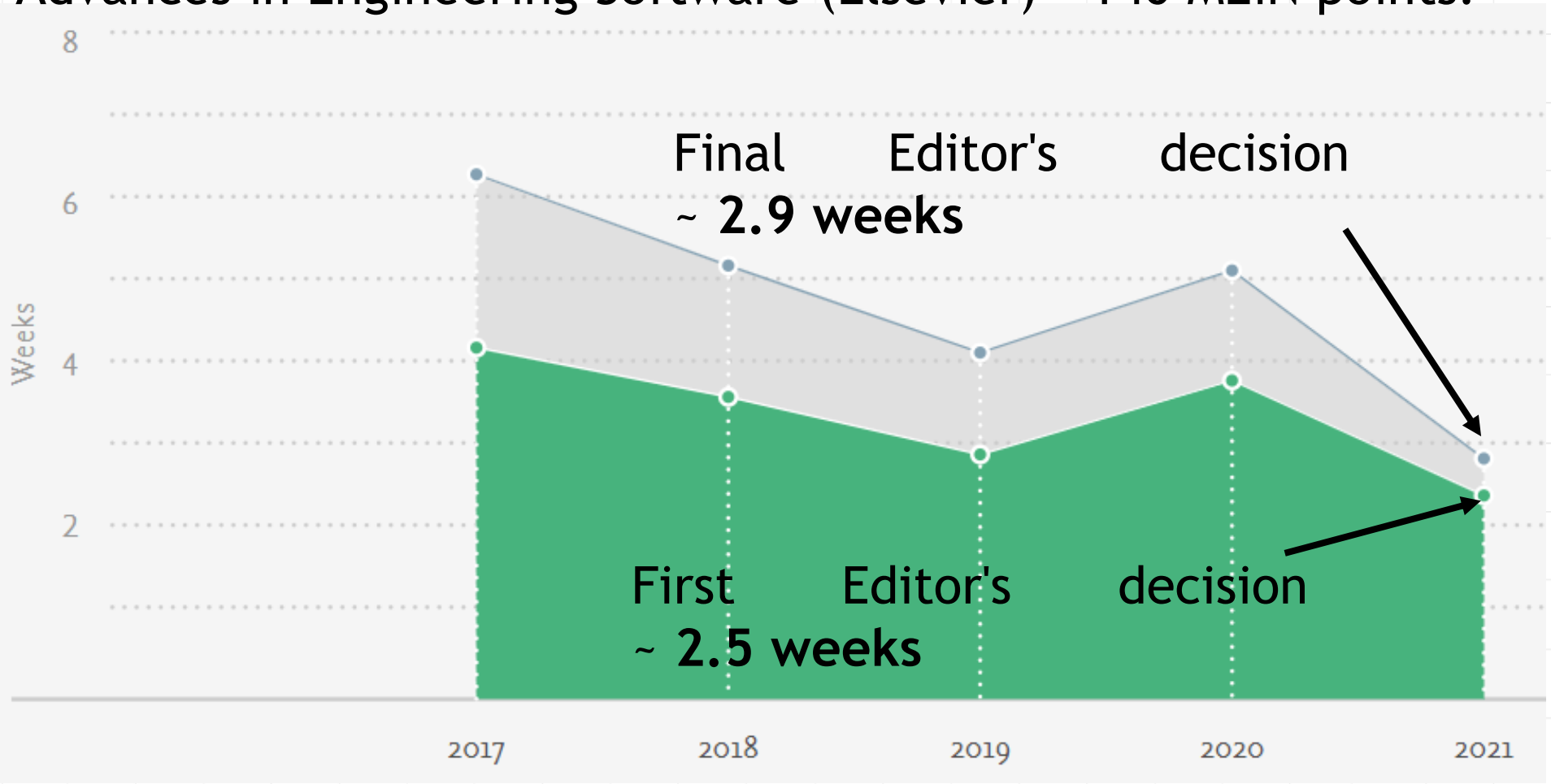
Cement and Concrete Composites (Elsevier) – 200 MEiN points:



~ 380 articles published in 2021, Impact Factor = 9.93

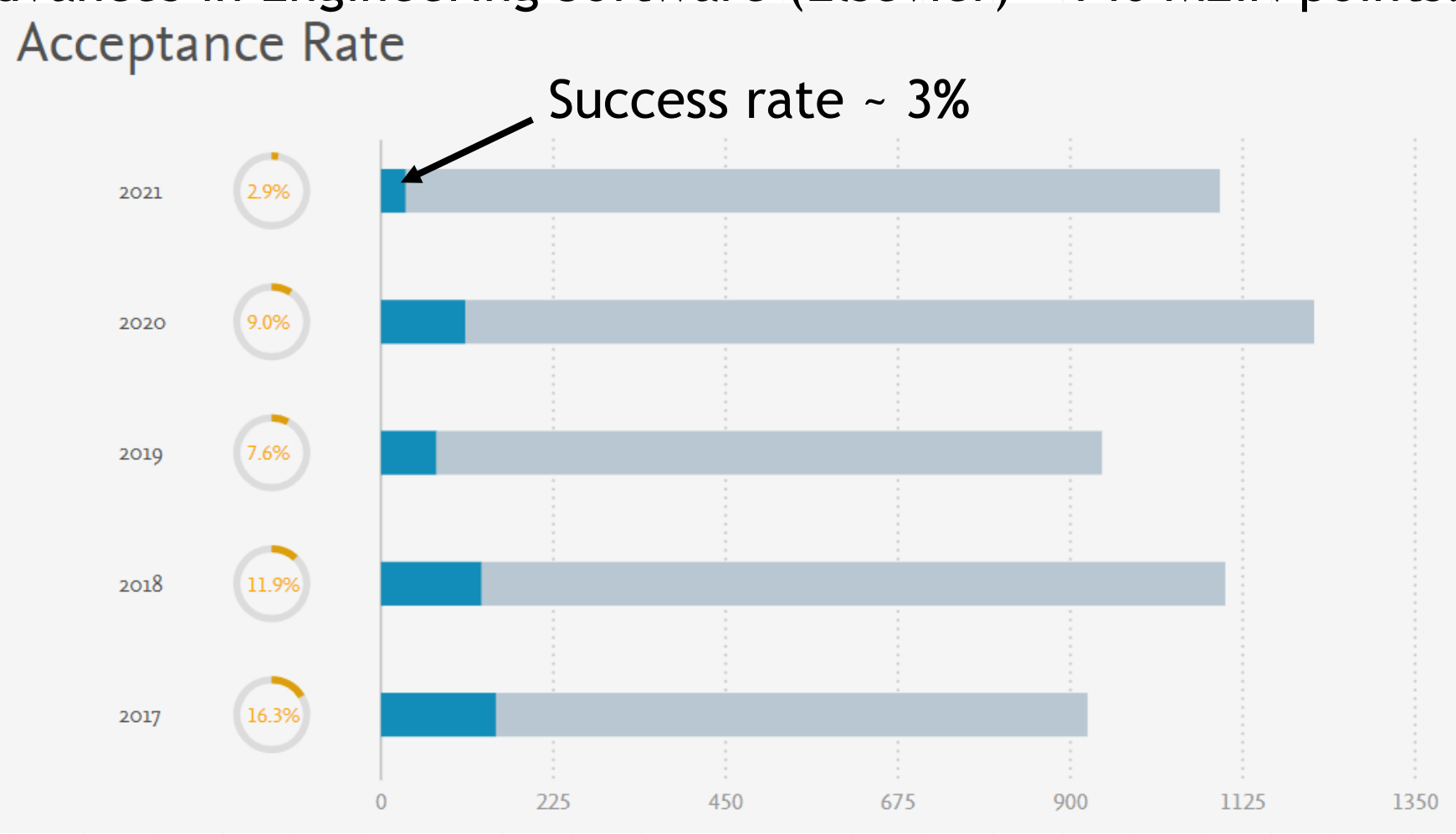
Speed of the review process

Advances in Engineering Software (Elsevier) – 140 MEiN points:



Success rate

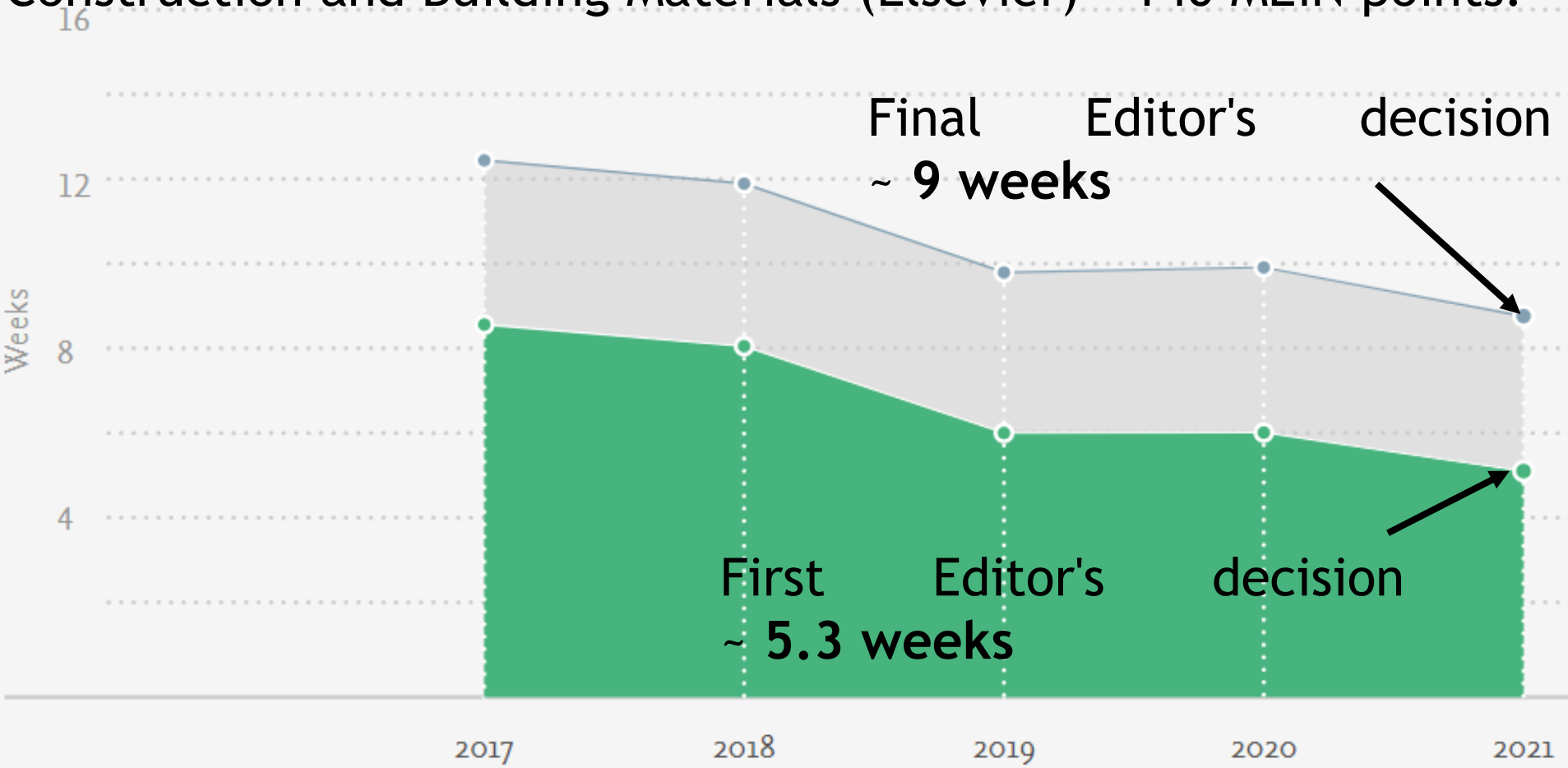
Advances in Engineering Software (Elsevier) - 140 MEiN points:



~ 32 articles published in 2021, Impact Factor = 4.25

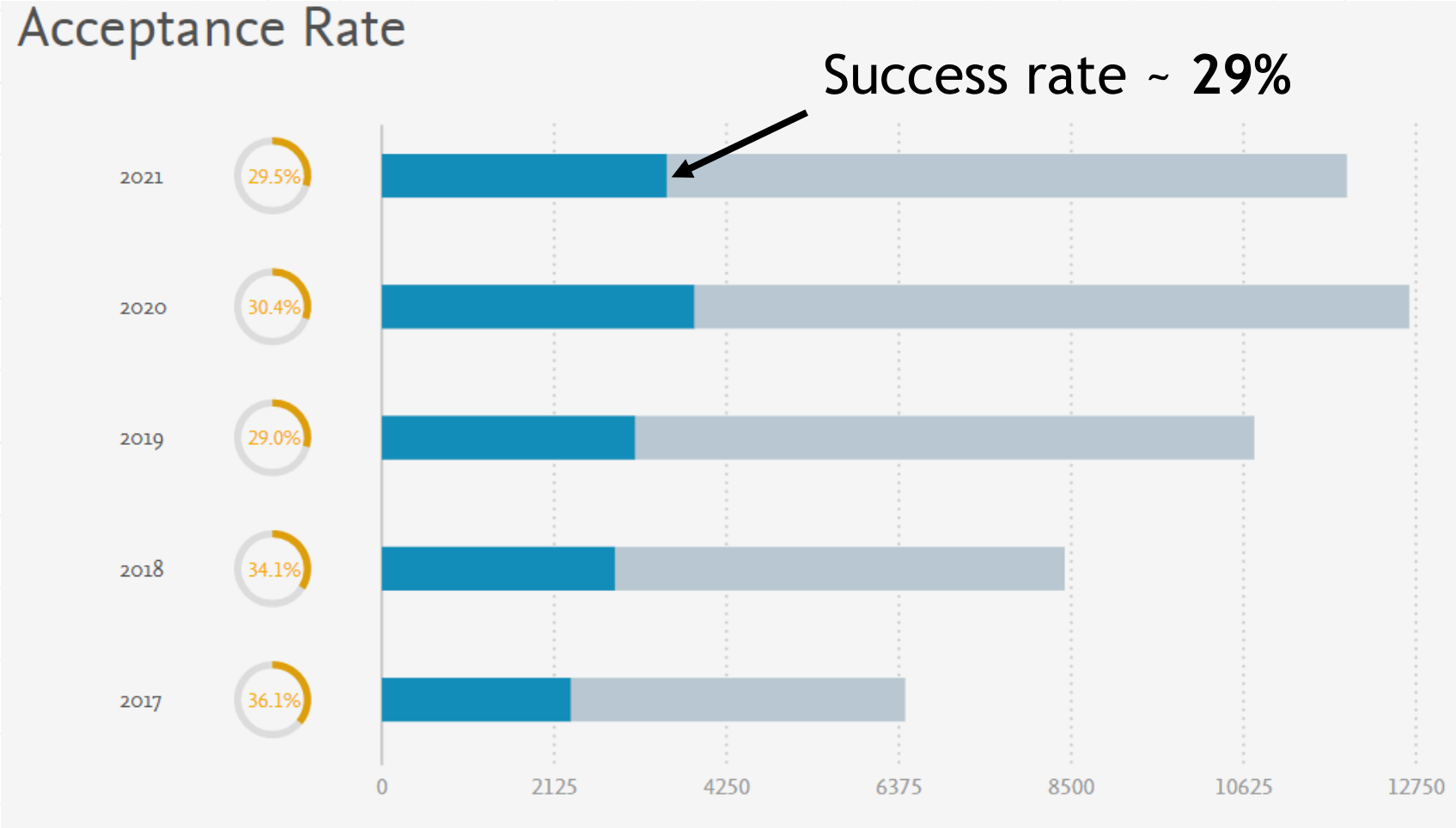
Speed of the review process

Construction and Building Materials (Elsevier) - 140 MEiN points:



Success rate

Construction and Building Materials (Elsevier) - 140 MEiN points:



~ 3,512 published articles in 2021, Impact Factor = 7.69

Tasks to be performed for the next class

1. Analyze the speed of the review process and the position on the list of the Ministry of Higher Education in selected **10 scientific journals** in your field.
2. Select **3 scientific journals** in your field with the fastest review process and the highest number of points from the Ministry of Higher Education.

Additional tasks for a higher grade:

Send your article to **1 of 3 selected scientific journals**. Discuss the review process and your experiences.