

“Journal’s relative rank in the WoS category where it ranks best”

or: how to provide a qualitative element complementary to the impact factor, allowing a journal to be positioned in its category independently of the scientific field

➤ Background

The Journal Citation Reports classifies journals into disciplinary categories. Each journal can belong to one or more categories where it is assigned a rank, which is defined by its journal impact factor.

The maximum value of the impact factor strongly depends on the scientific field and thus on the category. Here is an illustration for year 2016, for a few categories interesting for IEMN.

maximum value of the 2016 journal impact factor (JIF _{max}) in a few categories		
Source : Journal Citation Reports @2017 Clarivate Analytics		
WoS Category	Journal	JIF _{max}
ACOUSTICS	<i>Ultrasound in Obstetrics & Gynecology</i>	4.710
CHEMISTRY, MULTIDISCIPLINARY	<i>Chemical Reviews</i>	47.928
● CONSTRUCTION & BUILDING TECHNOLOGY ● TRANSPORTATION SCIENCE & TECHNOLOGY	<i>Computer-Aided Civil and Infrastructure Engineering</i>	5.786
ENERGY & FUELS	<i>Energy & Environmental Science</i>	29.518
ENGINEERING, ELECTRICAL & ELECTRONIC	<i>Progress in Quantum Electronics</i>	11.000
FOOD SCIENCE & TECHNOLOGY	<i>Annual Review of Food Science and Technology</i>	7.310
INSTRUMENTS & INSTRUMENTATION	<i>IEEE Transactions on Industrial Electronics</i>	7.168
● MATERIALS SCIENCE, MULTIDISCIPLINARY ● PHYSICS, APPLIED ● PHYSICS, CONDENSED MATTER	<i>Nature Materials</i>	39.737
MATERIALS SCIENCE, COATINGS & FILMS	<i>Applied Surface Science</i>	3.387
METALLURGY & METALLURGICAL ENGINEERING	<i>Acta Materiala</i>	5.301
MULTIDISCIPLINARY SCIENCES	<i>Nature</i>	40.137
NANOSCIENCE & NANOTECHNOLOGY	<i>Nature Nanotechnology</i>	38.986
OPTICS	<i>Nature Photonics</i>	37.852
PHYSICS, MULTIDISCIPLINARY	<i>Reviews of Modern Physics</i>	36.917
TELECOMMUNICATIONS	<i>IEEE Communications Surveys and Tutorials</i>	17.188

For information, the maximum journal impact factor assigned in 2016, all categories combined, was 187.040, it was obtained by *CA-A Cancer Journal for Clinicians* (ONCOLOGY).

It seems obvious that it is not relevant to compare the quality of two journals belonging to different scientific fields on the sole basis of the absolute value of their impact factor. Thus we prefer to use a relative indicator, more representative of the journal ranking in the category.

➤ **Our method**

We name this relative indicator¹ “*journal’s relative rank in the WoS category where it ranks best*”. Indeed, when a journal is classified in several categories we retain the category where it is best ranked as the best targeted category.

We illustrate below how this relative indicator is obtained.

Example 1 : Cement and Concrete Research ; 2016 ; JIF = 4.762

WoS Category <i>Journal Citation Reports @2017 Clarivate Analytics</i>	Rank in category : R	Total in category : N	Relative rank : R/N*100
CONSTRUCTION & BUILDING TECHNOLOGY	2	61	3.3 %
MATERIALS SCIENCE, MULTIDISCIPLINARY	42	275	15.3 %

For this journal we retain the value 3.3 (best rank)

Example 2 : Physical Review Letters ; 2016 ; JIF = 8.462

In this particular case the journal is ranked in only one category. The retained value is 7.6

WoS Category S <i>Journal Citation Reports @2017 Clarivate Analytics</i>	Rank in category : R	Total in category : N	Relative rank : R/N*100
PHYSICS, MULTIDISCIPLINARY	6	79	7.6 %

The “*journal’s relative rank in the WoS category where it ranks best*” allows us to show that the journal *Cement and Concrete Research* is very well ranked in its category, although having an impact factor almost half as low as *Physical Review Letters*, in a completely different scientific field.

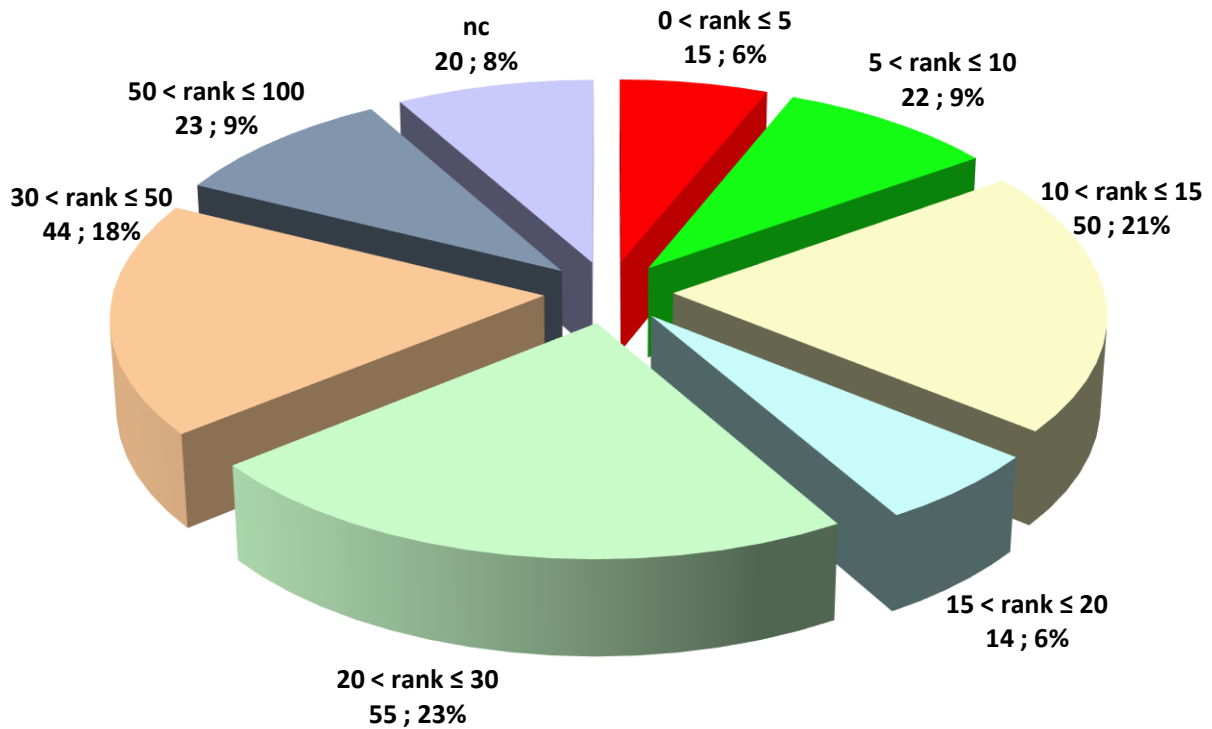
The lower the value of this parameter, the better the ranking of the journal

¹ We have introduced this parameter in our database in 2010, because at that time the *Journal Citation Reports* classified journals only in « quartiles », which seemed insufficient to us. Since that time the JCR also refined the position of each journal within the category, and now proposes an additional parameter (“*JIF percentile*”) which, although calculated in a slightly more sophisticated way than ours, remains nonetheless equivalent in principle. However, we preferred to continue using our definition, given the large amount of data that would have been required to collect in order to “go back”. Unlike our indicator, the higher the “JIF percentile” the better the journal ranking.

➤ **Example of use: distribution of journals in which IEMN articles are published**

The “*journal’s relative rank in the WoS category where it ranks best*” allows us to provide additional information to support attempts to estimate the quality of the laboratory’s scientific production. This is only one qualitative element among others, which can be illustrated as below for instance.

IEMN - 2013 - 243 articles
article distribution according to journal's relative rank (%)
in the category where it ranks best @IEMN
Source : Journal Citation Reports @2017 Clarivate Analytics



0 < rank ≤ 5 : the journal in the top 5% of the ranking

and so on...

nc : journal not indexed in JCR for the publication year

- Where we can observe that the journal's relative rank is not only a simple reflection of its impact factor

It is interesting to note that this relative parameter allows us to strongly qualify the “quantitative” aspect linked to the absolute character of the impact factor alone. An example is given below with the *Physical Review B* journal. We can see that its best relative rank in WoS category continuously gets worse on the [2004-2016] time span, although its impact factor is increasing in the same time.

