**DATA EXPLORATION Project Part1**

**Submitted by**

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1. **Introduction**

The data set of interest is the Scimago journal ranking for the year 2022 which was sourced from [here](https://www.scimagojr.com/journalrank.php).

Curated from Scopus database, It captures data about journal distribution across countries and different fields of science including various metrics, such as H-Index, Scimago Journal Rank, References per document etc. These insights aid ranking of every journal over a period of time.

The CSV file has a total of 27, 995 observations with 21 variables with details provided in the table (data dictionary) below. A full description of the data dictionary is provided in the attached excel spreadsheet.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Variable** | **Description** | **Type** | **Dependency** |
| 1 | **Rank** | This variable represents the hierarchy of the journal relative to other journals in the observation depending on the SJR Value | Categorical, Ordinal. | Dependent Variable |
| 2 | **Sourceid** | This is a unique ID for identifying every entry in the dataset provided by Scimago | Numerical, Discrete | Independent Variable |
| 3 | **Title** | This is practically the unique name of the journal provided by the publisher. In many cases, the journal title lends a clear hint regarding the field and category of a journal | Categorical, Nominal. | Independent Variable |
| 4 | **Type** | The kind of publication accepted by the publisher. It could be a journal, conference proceedings or book series. | Categorical, Nominal. | Dependent Variable |
| 5 | **ISSN** | This is a unique value globally recognized as the standard means for identifying books, journals, magazines etc. around the world. It stands for International Standard serial Number | Categorical, Nominal. | Independent Variable |
| 6 | **SJR** | A measure of the scientific influence of scholarly journals based on the number of citations received by articles in the journal within a period of time. | Numerical, Continuous | Dependent Variable |
| 7 | **SJR\_Best\_Quartile** | This variable measures the grade, also known as quartile ranking, of every journal in the database. The quartile values ranges between Q1, Q2, Q3 & Q4 where Q1 is the highest and Q4 Is the lowest quartile. | Categorical, Nominal. | Dependent Variable |
| 8 | **H\_index** | This variable measures the number of published work relative to the highest citation count of each publication of a scholar. | Numerical, Discrete | Dependent Variable |
| 9 | **Total\_Docs\_2022** | This is the total number of documents published as at 2022 | Numerical, Discrete | Dependent Variable |
| 10 | **Total\_Docs\_3years** | This is the total number of documents published in the last 3 years | Numerical, Discrete | Dependent Variable |
| 11 | **Total\_Refs** | This is the total number of references included in the journal's publications as at 2022 | Numerical, Discrete | Dependent Variable |
| 12 | **Total\_Cites\_3years** | This variable measures the total number of citations in the past 3 years. i.e. citations in 2022 received by all published articles in 2019, 2020 & 2021 | Numerical, Discrete | Dependent Variable |
| 13 | **Citable\_Docs\_3years** | This is the total number of the journal's citable documents in the last 3 years i.e. 2019, 2020 & 2021. | Numerical, Discrete | Dependent Variable |
| 14 | **Cites\_per\_Doc\_2years** | This metric measures the average citation per document in a 2 year period. | Numerical, Continuous | Dependent Variable |
| 15 | **Ref\_per\_Doc** | Average number of references for each document published by the journal in 2022 | Numerical, Continuous | Dependent Variable |
| 16 | **Country** | Location where journal is based | Categorical, Nominal. | Independent Variable |
| 17 | **Region** | Region where the country falls | Categorical, Nominal. | Independent Variable |
| 18 | **Publisher** | The organization or company responsible for publishing the journal. | Categorical, Nominal. | Independent Variable |
| 19 | **Coverage** | A range of years the journal has been active | Date/Time | Dependent Variable |
| 20 | **Categories** | Field of Science the journal specializes in. | Categorical, Nominal. | Independent Variable |
| 21 | **Areas** | Classification of the journal into specific subject by category | Categorical, Nominal. | Dependent Variable |

1. **Dataset Properties**

* **Number of Variables**: 21
* **Source**: Scimago journal & country rank: <https://www.scimagojr.com/journalrank.php>
* **Assumptions about dataset:** This dataset is believed to be authoritative as it includes current scientific journals developed from the information contained in the Scopus database managed by Elsevier Publishing company. However, a critical number of scholars are of the opinion that the distribution of high impact journals visa viz mechanism of inclusion into this database is highly biased and money -driven. Hence, the observations are technically considered to be a sample of a larger unregistered population of high-quality journals.

By no means is this dataset exhaustive but it covers regions and countries interesting enough to derive insights and information about how research and developments is documented around the world and the consequences of poor research effort and documentation.

1. **Motivation:**

* **Summary:** My interest is driven by the need to ascertain if the classification of journals into certain categories is solely based on merit and contribution to the body of knowledge or largely money driven. Furthermore, to understand the extent of influence of research outputs in improving the quality of service in the respective research areas of each country.
* **Backstory:** During my postgraduate studies in Malaysia, there was immense pressure on all research students to meet a quota in publications to certain publishing houses like Elsevier, Springer, ACM etc. The pressure was so intense lots of student had to quit while many of those who stayed**,** though succeeded in publishing few articles in requisite journals, were inundated with different medical and psychological issues.

The cost of publishing wasn’t cheap either. If students wanted timely release of their articles in open access journals, they had to bear the cost which in many cases get cascaded to the supervisor. As for closed journals, access to their repositories were secured behind pay walls for which universities had to subscribe and budget huge amounts for.

This wasn’t sustainable as the government began to cut funding for research given low return on investments, fewer patents, poor translation of research finding to service offerings & tight competition for meagre grants. As these events unfolded, scholars in Malysia and Europe began to expose the fraudulent extortion of researchers by publishing houses in return for recognition and access to their intellectual property. A direct response was the emergence of ResearchGate and Sci-Hub.

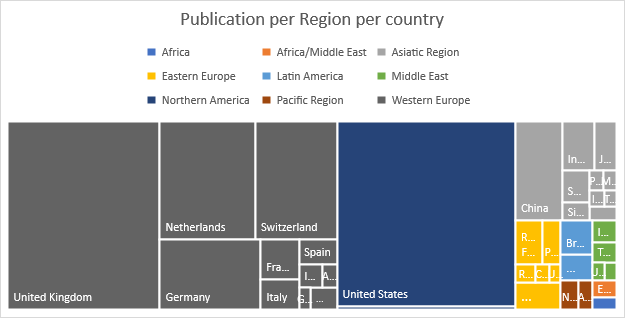
1. **Research Questions (FINER)**
   1. How does the distribution of research output vary across different scientific disciplines and areas by country or region within the Scimago database affect participation in research and development
   2. Does the distribution of publishing houses across regions support or inhibit participation in high quality research and development by countries with low ranking?
   3. To what degree does a country's investment in research and development (R&D), research output influence what gets published where and when, if any?
   4. Can metrics such as citation per doc, reference per doc, total cites or a combination or these metrics influence investment in certain research areas or categories in any country or region.
   5. Can metrics such as citation per doc, reference per doc, total cites or a combination or these metrics indicate potential journals across lower ranking countries for inclusion or upgrade to higher quality ranking in the Scimago database.
2. **Additional Data Requirement**

The available data is presumed sufficient for the stated research questions. As the exploration continues, need for more data might ensue but this is not anticipated.

1. **Tracking Analysis.**

**Making sense of journal distribution across the world**

A slicer named region and country is provided on this pivot chart to understand the participation of each country in research & Development effort via journal publication. Kindly refer to Tracking and analysis 1 for details.



**Research contribution per region and country in a 3 year-window**

**Ranking of countries by highest number of publications in 3 years**

In total, there are five tracking and analysis sheets provided in the attached spread sheet. Kindly refer to the spreadsheet for detailed analysis.