Estimation of Journal Impact Factor

Journal Impact Factor was devised as a metric to quantify the impact of individual research journals. It is currently used/misused for many different purposes! This is an assignment to better understand caveats associated with this metric by actually estimating the impact factor for a given journal.

For a specific year, Journal Impact Factor (https://en.wikipedia.org/wiki/Impact_factor) for a particular journal is calculated as the **mean number of citations received in that year by articles published in that journal during the last two years**.

For eg. for the a particular journal,

$$\text{JIF (2019)} = \frac{\text{Number of citations received in 2019 by all citable articles published in 2017 and 2018}}{\text{Total number of citable articles published in 2017 and 2018}}$$

While this is typically done for all of the citable articles by Clarivate, I want you to use your knowledge of random sampling and statistics to obtain an estimate for JIF by choosing 26 articles (13 each from the two years under consideration). Consider any form of research articles (depending on the journal it can be called a "Report" or "Research Article") and reviews as "citable" articles and use Google Scholar to calculate the number of citations received in a particular year. Please see Table below that provides details of journal and year to be used by each student.

Please provide all details, raw data and any code used for this. Ensure that you answer all of the questions listed below.

1. What is the sampling method that you will use to choose the 26 articles? **(6 marks)**
   (a) Describe the method
   (b) Provide a table with details of the articles chosen (name of article, type of article and year) and how many citations they got in the year being considered (use Google Scholar to find out the number of citations in the particular year)

2. Plot histograms to show the distribution of number of citations for the 26 articles. **(5 marks)**
   (a) Year of publication and type of article (review or research article) should also be highlighted in the plot
   (b) Ensure that the plots follow good data plotting practices

3. Calculate the mean and median for the number of citations. Are these two the same? If not, comment on why they are different. **(5 marks)**
   (a) Assuming I have a paper in this journal in 2020, how many citations would I expect to get in 2021? Which measure should I consider from above as a measure of central tendency and why?

4. Do reviews and research articles get significantly different number of citations? Explain using the data and an appropriate statistical test. (If you do not have sufficient review articles in your sample, then explain what test you would use and how you would assess significance.) **(3 marks)**

5. List two ways (no need to explain) in which you can calculate 95% Confidence Intervals (CIs) for the mean JIF from #3 (above). Using any one of the methods, calculate the 95% CIs for mean JIF. **(4 marks)**
   (a) Now can you give me another answer for #3a (above)?

6. As mentioned at the top, real JIFs for each journal are calculated by Clarivate. Can you use one of the methods listed in #5 to calculate 95% CIs for these JIFs? **(2 marks)**

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			Journal Name	Year
1	20161058	Patil Jatin Suresh	Nature	2020
2	20161114	Rubna. P. R	Science	2020
3	20161170	Rajdip Sarkar	Cell	2020
4	20171008	Sahana N	Current Biology	2020
5	20171012	Rahul Kumar	Journal of Experimental Biology	2020
6	20171027	Malavika Biju	Neuron	2020
7	20171029	Ahammed Suhail Odungat	Journal of Neuroscience	2020
8	20171038	Supratim Das	Journal of Cell Biology	2020
9	20171047	Lakshmi Sriram	Development	2020
10	20171049	Aiswarya Ajith .B	PNAS (Proceedings of the National Academy of Sciences)	2020
11	20171050	Soubhadra Maiti	Journal of Neurophysiology	2020
12	20171056	Wanjari Rishabh Umesh	Nature	2019
13	20171057	Guneet Singh Tarang	Science	2019
14	20171058	Tarun Yadav	Cell	2019
15	20171060	Ananya Dodamani	Current Biology	2019
16	20171076	Prerana Bose	Journal of Experimental Biology	2019
17	20171077	Nandhini R	Neuron	2019
18	20171080	S Pavithirah	Journal of Neuroscience	2019
19	20171082	Shruthi Ravindra Bharadwaj	Journal of Cell Biology	2019
20	20171091	Vimal Das . E. S	Development	2019
21	20171092	B Niranjan	PNAS (Proceedings of the National Academy of Sciences)	2019
22	20171093	Pratyush M R	Journal of Neurophysiology	2019
23	20171094	Rohit Sahasrabuddhe	Nature	2018
24	20171095	Samarendra Pani	Science	2018
25	20171098	Shefali Dharmakirti Sonarkar	Cell	2018
26	20171101	Rashmita N	Current Biology	2018
27	20171102	Shawn David	Journal of Experimental Biology	2018
28	20171108	M Abinaya	Neuron	2018
29	20171111	Nafisa Andrea Pathaw	Journal of Neuroscience	2018
30	20171112	Anisha Ajay Karnail	Journal of Cell Biology	2018
46	20171113	Monali Vasant Patre	Development	2018
31	20171116	Satavisha De	PNAS (Proceedings of the National Academy of Sciences)	2018
32	20171117	Chadalavada Madhu Priya	Journal of Neurophysiology	2018
33	20171121	Gaikwad Vibhor Vijay	Nature	2017
34	20171135	Varsha Jaisimha	Science	2017
35	20171142	Saismit H Naik	Cell	2017
36	20171145	K Sai Vignaish	Current Biology	2017
37	20171149	Bihan Chatterjee	Journal of Experimental Biology	2017
38	20171151	Chirag Gupta	Neuron	2017
39	20171153	Shrivastava Prachi Dhanendra	Journal of Neuroscience	2017
40	20171156	Muhammed Jibin P	Journal of Cell Biology	2017
41	20171161	Prajakta Umbarkar	Development	2017
42	20171186	Samudra Prasanna Girish	PNAS (Proceedings of the National Academy of Sciences)	2017
43	20171193	Vasudha Kishor Aher	Journal of Neurophysiology	2017
44	20171198	Patil Harshal Rajendra	Nature	2016

47	20171204	Ayush Kulhari	Science	2016
45	20171211	Kawale Jagdeep Girajappa	Cell	2016
48	20181008	Saillesh Aravindhan Chinnaraj	Current Biology	2016
49	20181010	Sultan Ahmed Nazir	Journal of Experimental Biology	2016
50	20181013	Swarag .T	Neuron	2016
51	20181014	Swastik Sobhan Padhy	Journal of Neuroscience	2016
52	20181015	Akshay Kumar	Journal of Cell Biology	2016
53	20181019	Akhilesh Uthaman	Development	2016
54	20181024	Ananda Shikhara Bhat	PNAS (Proceedings of the National Academy of Sciences)	2016
55	20181030	Yadhusankar S	Journal of Neurophysiology	2016
56	20181031	Desai Milie Mitesh	Nature	2015
57	20181032	Harshit Pateria	Science	2015
58	20181033	J G Harini Sudha	Cell	2015
59	20181034	Arsh Shrikant Chavan	Current Biology	2015
60	20181038	M Sarath	Journal of Experimental Biology	2015
61	20181047	Adish Assain Illikkal	Neuron	2015
62	20181050	Kunjal Parnami	Journal of Neuroscience	2015
63	20181056	Petkar Riddhi Sandeep	Journal of Cell Biology	2015
64	20181059	Khushboo Jain	Development	2015
65	20181060	Samyuktha Ramadurai	PNAS (Proceedings of the National Academy of Sciences)	2015
66	20181064	Lubdhak Mondal	Journal of Neurophysiology	2015
67	20181066	Mihir Shridhar Dingankar	Nature	2014
68	20181069	K T Abdul Rishad	Science	2014
69	20181073	Suryadeepto Nag	Cell	2014
70	20181076	Vidyanshu Shekhar	Current Biology	2014
71	20181078	Richa Agarwal	Journal of Experimental Biology	2014
72	20181079	Goirik Chakarabarty	Neuron	2014
73	20181082	Wadhwa Omika Sanjay	Journal of Neuroscience	2014
74	20181083	Antony Kiran K.David	Journal of Cell Biology	2014
75	20181084	Varun G Mallya	Development	2014
76	20181093	Shahare Aishwarya Vinod	PNAS (Proceedings of the National Academy of Sciences)	2014
77	20181100	Prantik Pramanick	Journal of Neurophysiology	2014
78	20181106	Sreedev .M	Nature	2013
79	20181107	Ganesh Ashish Nair	Science	2013
80	20181116	Merrin Vincent	Cell	2013
81	20181117	Nila P B	Current Biology	2013
82	20181126	Kanikar Shrihar Atul	Journal of Experimental Biology	2013
83	20181134	Sattaru Krishna Chaitanya	Neuron	2013
84	20181136	Ghodke Shruti Prakash	Journal of Neuroscience	2013
85	20181144	Madheshvaran S	Journal of Cell Biology	2013
86	20181145	Manas Mahaveer	Development	2013
87	20181148	Dipayan Pal	PNAS (Proceedings of the National Academy of Sciences)	2013
88	20181149	Jadhav Avadhoot Sandeep	Journal of Neurophysiology	2013
89	20181150	Chapke Rashmi Sanjayrao	Nature	2012
90	20181151	Jatin Bedi	Science	2012
91	20181153	Shrutika Lokapure	Cell	2012

92	20181154	Hutke Shantanu Prashant	Current Biology	2012
93	20181155	Batra Pavitra Shailendra	Journal of Experimental Biology	2012
94	20181159	John Thampi	Neuron	2012
95	20181162	Saanchi Naresh Thawani	Journal of Neuroscience	2012
96	20181164	Animesh Anand	Journal of Cell Biology	2012
97	20181168	Ohal Bhavesh Anil	Development	2012
98	20181174	Chandak Kapil Girish	PNAS (Proceedings of the National Academy of Sciences)	2012
99	20181175	Ghadage Kalyan Pradip	Journal of Neurophysiology	2012
100	20181184	Pazare Mrunal Ashok	Nature	2011
101	20181185	Misaal Bedi	Science	2011
102	20181194	Vaishnavi V	Cell	2011
103	20181199	Deshpande Shivani Nachiket	Current Biology	2011
104	20181200	Sakshi Jayvant Pagrut	Journal of Experimental Biology	2011
105	20181201	Akanksha Ingale	Neuron	2011
106	20181204	Aishwarya Juneja	Journal of Neuroscience	2011
107	20181205	Patil Gunwant Dnyaneshwar	Journal of Cell Biology	2011
108	20181207	Sabareesh S S	Development	2011
109	20181209	Shruti Pawar	PNAS (Proceedings of the National Academy of Sciences)	2011
110	20181214	Sankhe Suyog Rajendra	Journal of Neurophysiology	2011
111	20181218	Trimbake Pradeep Kumar Hanumant	Nature	2010
112	20181222	Devarsh P Patel	Science	2010
113	20181224	Wadate Adesh Rajaram	Cell	2010
114	20181227	Reshmi Suresh	Current Biology	2010
115	20192003	Sayantan Banerjee	Journal of Experimental Biology	2010
116	20192004	Susobhan Das	Neuron	2010
117	20192009	Mantri Mohit Purushottam	Journal of Neuroscience	2010
118	20192010	Harsh Mittal	Journal of Cell Biology	2010
119	20192012	Dhrubojyoti Patra	Development	2010
120	20192016	Shetty Kshitija Mahadeva	PNAS (Proceedings of the National Academy of Sciences)	2010