Conflict of Interest: A data driven approach to categorisation of COI statements.

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DIGITAL science

OBJECTIVE

Properly declaring conflicts of Interest (COI) is essential to assessing potential bias in scholarly articles. Authors have an ethical obligation to transparently disclose their involvement in research to avoid misleading COI statements. This study presents a comprehensive analysis to identify and categorise how authors declare their conflicts of interest in academic articles.

METHOD

1 COI statements from 2,966 papers pulled from Dimensions'[1] DB.

2 NLP tools and manual review helped identify COI categories.

3 Manually annotated 10% of the COI statements to create a gold standard for automatic recognition and classification.

4 Automatically categorised 33,812 COI statements using keywords from the gold standard.

FINDINGS

Initially, recognition of COI statements was done through a binary model. It's either present or absent. By identifying the different categories, the team was able to sift the statement through the categories and recognise the nature of the COI statements.

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None Declared	Authors declare no conflict of interest amongst them.
Membership or Employment	One or more of the authors of the paper is/are/was/were employed/member(s) of organisation(s) involved in the research.
Funds Received	The research received funds through grants, stipends etc.
Personal Relationship	If one or more of the authors is/are related to each other or the funders of the research.
Shareholder or Stakeholder or Ownership	If one or more of the authors is/are shareholder of the organisation(s) involved in the research or funding. Can include board members in the funding organisation.
Donation	When materials or equipments used to carry out the research was donated by one or more of the authors or a third party.
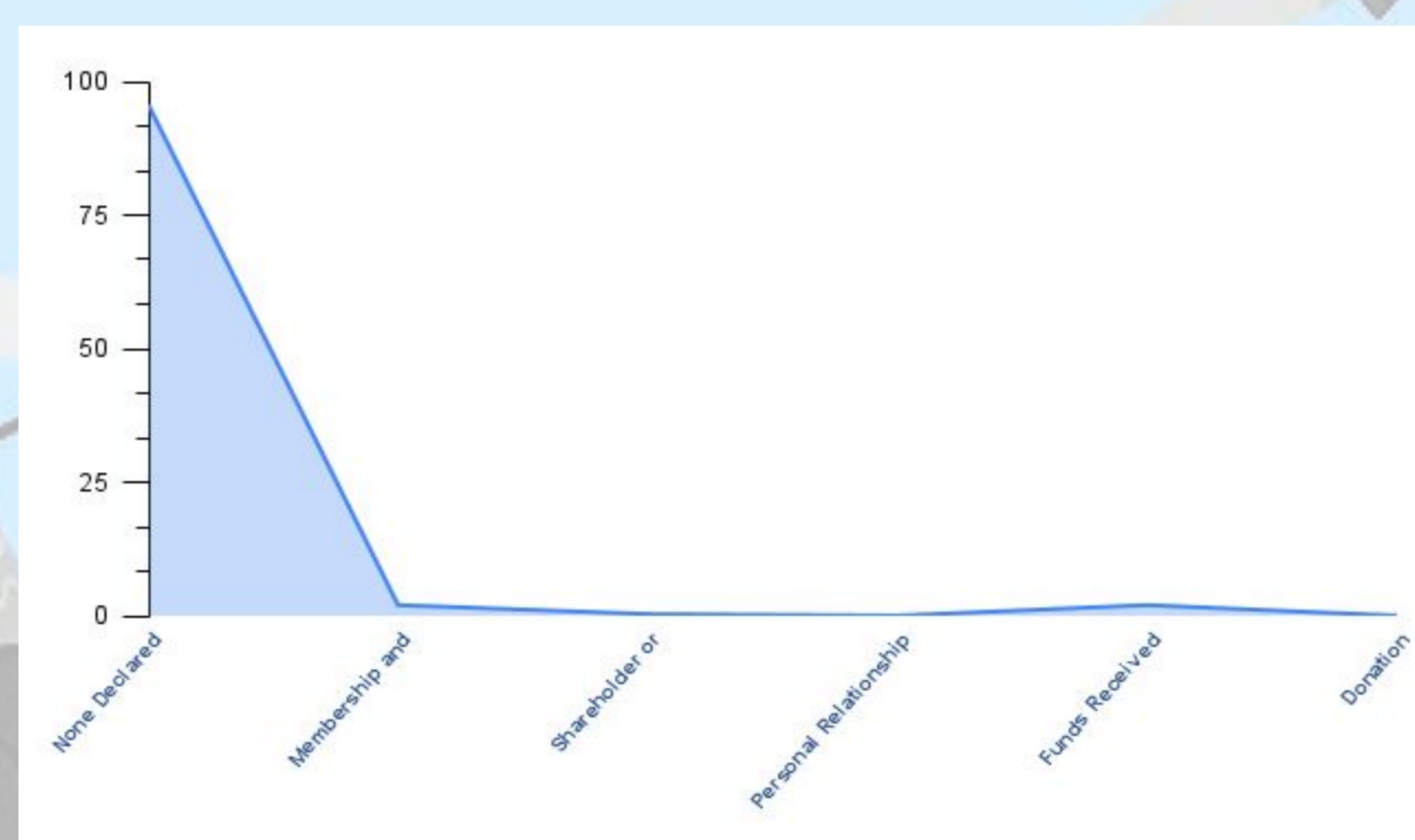
Figure 1: Difference amongst the reported COI categories.

RETRACTION WATCH

The newly adopted open access nature of the Retraction Watch[2] database allowed us to nudge our research further. As the primary focus of our research was Conflict of Interest, the Retraction Watch[2] data was able to give us further insight into papers that were retracted for the same reason. One of the recognised reasons for a paper to be retracted is Conflict of Integrity – an integrity issue. The Retraction Watch[2] data was used in tandem with the Dimensions'[1] data to probe into the mystery of massive counts of the "None Declared" category and the integrity of it.

COI & INTEGRITY ISSUE

Digital Science and by extension, Dimensions[1] maintains 33 million papers, conference abstracts etc.

Inevitably, an overlap between the Retraction Watch[2] database and Dimensions'[1] GBQ exist. The Conflict of Interest Statement model - a binary model that recognises the presence or absence of a COI statement in a paper - and the Conflict of Interest Types model, that are developed and relevant to this data driven approach of categorisation was deployed on the overlapping papers to obtain the following results.
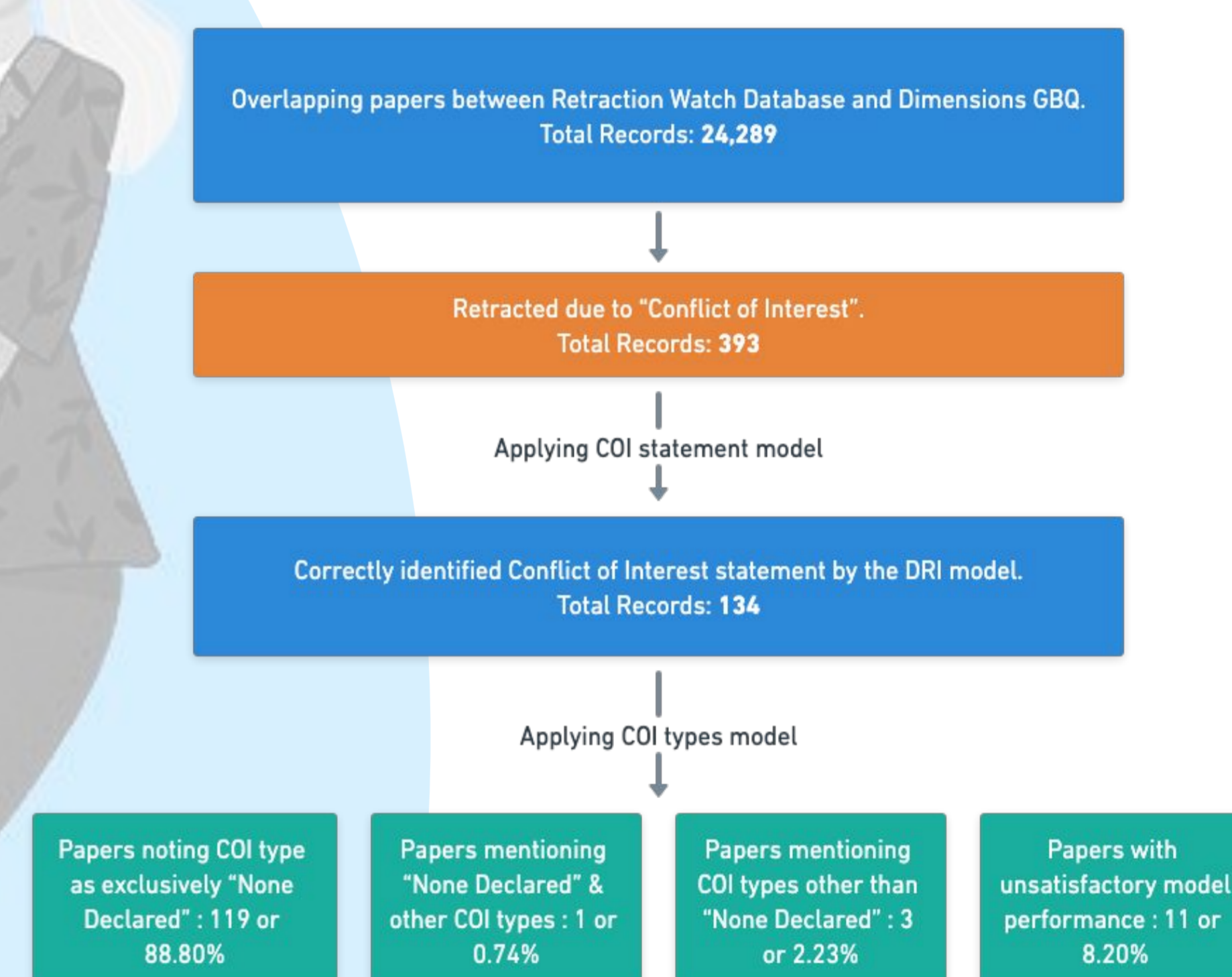

Figure 2: Methodology to find correlation between reported COI and integrity issue amongst retracted papers.

Furthermore, out of the 134 papers, 69 papers mentioned to have funders that are present in Dimensions'[1] database. Amongst those 69 papers, 44 mentioned a Government entity to be the funder whereas, 19 and 6 mentioned a non-profit organization or a commercial company to have funded the research, respectively.

CONCLUSION & FUTURE WORK

To recapitulate, authors often inadvertently do not report Conflict of Interest even when it exists. Indicating an integrity issue and an ethical flaw. Hence, our focus now would shift towards identifying papers that have a government, non-profit or commercial funder or affliction but declare no Conflict of Interest.

References:
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