For the fourth consecutive year, the French Ministry of Higher Education and Research records an increase in the sharing ratio of French research publications. As of December 2022, 67% of the 160,000 scientific publications published in France in 2021 are open. It shows an evolution of researchers’ publication practices and demonstrates the impact of public policies promoting open science.

**French Open Science Monitor 2022 Results**

Publications: **67% in open access**

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<table>
<thead>
<tr>
<th>Year</th>
<th>Open access rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>67%</td>
</tr>
<tr>
<td>2021</td>
<td>62%</td>
</tr>
<tr>
<td>2020</td>
<td>52%</td>
</tr>
<tr>
<td>2019</td>
<td>46%</td>
</tr>
<tr>
<td>2018</td>
<td>38%</td>
</tr>
</tbody>
</table>

Growth (all fields) 2018-2022: **+29 points**

**Rate of open access publications in France, for each discipline between 2018 and 2022**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>2018</th>
<th>2022</th>
<th>Growth 2018-2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
<td>+22 pts</td>
</tr>
<tr>
<td>Fundamental biology</td>
<td></td>
<td></td>
<td>+29 pts</td>
</tr>
<tr>
<td>Physical sciences and astronomy</td>
<td></td>
<td></td>
<td>+20 pts</td>
</tr>
<tr>
<td>Earth, ecology, energy and applied biology</td>
<td></td>
<td></td>
<td>+30 pts</td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
<td></td>
<td>+41 pts</td>
</tr>
<tr>
<td>Computer and information sciences</td>
<td></td>
<td></td>
<td>+27 pts</td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
<td>+34 pts</td>
</tr>
<tr>
<td>Medical research</td>
<td></td>
<td></td>
<td>+33 pts</td>
</tr>
<tr>
<td>Humanities</td>
<td></td>
<td></td>
<td>+37 pts</td>
</tr>
<tr>
<td>Social Sciences</td>
<td></td>
<td></td>
<td>+32 pts</td>
</tr>
</tbody>
</table>

**Open access rate of scientific publications in France, with a Crossref DOI, published during the previous year, by observation year**

**Evolution 2018-2022**

- Mathematics: +22 pts (80%)
- Fundamental biology: +29 pts (76%)
- Physical sciences and astronomy: +20 pts (75%)
- Earth, ecology, energy and applied biology: +30 pts (73%)
- Chemistry: +41 pts (71%)
- Computer and information sciences: +27 pts (66%)
- Engineering: +34 pts (64%)
- Medical research: +33 pts (62%)
- Humanities: +37 pts (55%)
- Social Sciences: +32 pts (55%)

Visit the website [frenchopensciencemonitor.esr.gouv.fr](http://frenchopensciencemonitor.esr.gouv.fr) for more information.
**Clinical trials: 57% share their results**

Openness of results of clinical trials has not moved since the later edition, with a sharing ratio of 57%. The registration of clinical trials and their results in public databases allows a rapid circulation of results, even when these have been unsuccessful and do not lead to a scientific publication. The significant variation between industrial and academic sponsors should be noticed.

<table>
<thead>
<tr>
<th>Lead sponsor</th>
<th>Share</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>All types of lead sponsor*</td>
<td>57%</td>
<td></td>
</tr>
<tr>
<td>Industrial lead sponsor</td>
<td>77%</td>
<td></td>
</tr>
<tr>
<td>Academic lead sponsor</td>
<td>31%</td>
<td></td>
</tr>
</tbody>
</table>

*Individual or legal entity in charge of research conducted on human beings who initiates, finances and supervises the conduct of the clinical trial.

**PhD theses**

The Monitor now also measures sharing of PhD theses, using data from theses.fr (managed by Abes) and HAL. 74% of PhD thesis defended in 2020 are open (stable ratio since 2017). As with publications, the rate of opening theses varies significantly between fields. For instance, more than 95% of theses published in Mathematics or Astronomy are open, compared with a 45% ratio in Law or Literature.

**Research data and software**

Opening up publicly funded research data is made compulsory by the 2016 Law for a Digital Republic. For the first time, the Monitor includes a tracking of these data as well as code and software, using machine learning systems that are constantly being improved. Amongst publications published in France in 2021 mentioning the production of data, 22% are referring to sharing a dataset. The sharing ratio for software and code is 20% in 2021.

**New indicators 2022**

**Research data and software (beta)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Dataset share (%)</th>
<th>Code or software share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>2017</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>2021</td>
<td>22</td>
<td>20</td>
</tr>
</tbody>
</table>

**Monitors are sprouting in research institutions**

More than 70 research performing organisations, universities, grandes écoles and research centres have their own tailored monitor. The community of users is also dynamic, with more than 170 subscribers exchanging tips and supporting one another via a dedicated newsletter.