The Share of Papers with Free Full Text Rose from 0.118 for 1990 Publications to 0.643 for 2025 Publications — Its Composition Changed: in 1996–2006 Records Free Outside PMC (0.124 in 2004) Outnumbered Records in PMC (0.088), and from 2007 Records in PMC Were the Majority (0.552 vs 0.092 in 2025). Of the 2,402 Pancreatic Cancer Papers Published in 2008, 0.261 Can Now Be Read Free in Full Text [M112]

Free full text = in PMC + free outside PMC ── What separates them is whether a record is in PMC or free outside PMC

Yuuki YAMAGISHI (山岸 勇輝) ／ Independent Researcher
ORCID 0009-0006-8587-3450
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Abstract

Using counts from PubMed (U.S. National Library of Medicine) retrieved through E-utilities (27 September 2026, 344 queries), this paper lined up the share of papers whose full text can be read for free by publication year and month. PubMed's "free full text" filter includes full text in PubMed Central (PMC) and free full text outside PMC, such as on publishers' websites. This paper separated the two. No new mathematical theorem and no new law are claimed.

First, **the share of records with free full text rose from 0.118 for 1990 publications to 0.643 for 2025 publications. The share of records in PMC rose from 0.069 to 0.552** (Section 4).

Second, this is the core of the paper. **Records free outside PMC outnumbered records in PMC only in the 11 years 1996–2006, and the share outside PMC peaked at 0.124 in 2004 (PMC 0.088 that year). In 1990–1995 and 2007–2025, records in PMC were more numerous; in 2025, 0.552 were in**

PMC and 0.092 were free outside PMC. The composition of freely readable records switched along the way (Section 4).

Third, **records in PMC that the free full text filter does not include numbered at most 162 per year (2025, 0.0001 of all records) and no more than 0.0005 of all records in any month.** Records in PMC lie almost entirely inside free full text (Section 3).

Fourth, **the share in PMC for the recently published months of July and August 2026 (0.454 and 0.438) was lower than for February–December 2025 (0.501–0.542).** A single retrieval cannot separate whether this is the time before records enter PMC or a change (Section 5).

Fifth, **for pancreatic cancer papers (MeSH pancreatic neoplasms), the share with free full text was 0.107 for 1990 publications, 0.261 for 2008 publications (of 2,402), and 0.612 for 2025 publications** (Section 6).

Sixth, what separates them is **whether a record is in PMC or free outside PMC**. When you hear that "more papers can be read for free," check where they are free.

Scope note: **This paper claims no new mathematical theorem and no new law** — it only counted PubMed filter results and took shares. **This paper is a structural interpretation of the shape of numbers in public aggregate data; it is not medical advice, not a diagnosis, and not a treatment recommendation. The author is not a physician. Decisions about individual health should be discussed with a physician or a medical institution. This is a preprint that has not been peer reviewed. The quality or value of research and whether publication policies are good or bad are not discussed. No specific journal, publisher, author, or research institution is named.** The reasons records became free (publication policies, funding rules, and so on) cannot be separated with these counts and are not discussed. PubMed's "free full text" is a filter based on links registered in PubMed; whether each article can actually be read on the web was not checked one by one. The counts are as of retrieval and change daily. [dp] (publication date) matches both electronic and print dates, so one record can be counted in two years. **About the data**: Courtesy of the U.S. National Library of Medicine. The counts are as of 27 September 2026 and do not reflect the most current or accurate data from NLM. NLM does not endorse this paper. What this paper adds: **separating records with free full text into those in PMC and those free outside PMC, and showing that their composition switched by publication year**.

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1. Notation and question

- **All records**: PubMed records matching the publication year (or month) (`YYYY[dp]`).
- **Free full text**: `free full text[sb]` . In the PubMed User Guide, records with full text available for free on the web, including PubMed Central, Bookshelf, and publishers' websites.
- **In PMC**: `pubmed pmc[sb]` . Records with a free full-text article available in PMC.
- **Free outside PMC**: free full text − both (both = free full text and in PMC).
- All shares are divided by all records.

Question: How did the share of records with free full text move by publication year? Is its composition (in PMC or outside PMC) the same?

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2. Preview and design

Written honestly: the design was decided after looking at trial queries.

	Content
Data	Counts from PubMed E-utilities (esearch): publication years 1990–2025, publication months 2024/01–2026/08, and publication years for pancreatic cancer (MeSH)
Noticed in the preview	By year, no dip is visible in the most recent years (0.556 in 2020, 0.643 in 2025)
Noticed in the preview (2)	"Free full text" and "in PMC" are different filters; the difference is records free outside PMC, such as on publishers' websites
Noticed in the preview (3)	By publication month, January has about twice the records of other months
Comparison	Shares in PMC and free outside PMC by year, disagreement between the two filters, shares by month (excluding January), and shares for pancreatic cancer

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3. Data and checks

Calculation 3.1 The saved JSON file and the retrieval script were fixed by SHA-256, and the following were checked. The checker computes only from the saved JSON and does not query PubMed.

- The file has 36 years × 4 kinds (1990–2025), 32 months × 4 kinds (2024/01–2026/08), and 36 × 2 kinds for pancreatic cancer. Retrieved on 27 September 2026, 01:12–01:17.

- In PubMed's query translation, free full text appears as "loattrfree full text"[Filter] and pubmed pmc as "pubmed pmc"[Filter] (all 344 queries), with 0 warnings.
- In every year and month, both ≤ free full text and both ≤ in PMC.
- Records in PMC not included by the free full text filter numbered at most 162 per year (2025, 0.0001 of all records) and no more than 0.0005 of all records in any month.
- January had 1.811–1.993 times the average of the other months (2024–2026). The reason was not checked with these queries, so January was excluded from monthly comparisons.

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4. The core — the composition of free full text

Calculation 4.1 Share of all records (by publication year)

Publication year	Free full text	In PMC	Free outside PMC
1990	0.118	0.069	0.049
1995	0.148	0.075	0.072
2000	0.186	0.079	0.107
2004	0.212	0.088	0.124
2007	0.251	0.133	0.118
2010	0.340	0.238	0.102
2015	0.444	0.345	0.099
2020	0.556	0.469	0.087
2025	0.643	0.552	0.092

Observation 4.2: **The share with free full text rose from 0.118 for 1990 publications to 0.643 for 2025 publications, and the share in PMC from 0.069 to 0.552.**

Observation 4.3: **Records free outside PMC were more numerous only in the 11 years 1996–2006, peaking at 0.124 in 2004 (PMC 0.088 that year). From 2007 records in PMC were more numerous, 0.552 vs 0.092 in 2025.** The share free outside PMC declined gently after 2004 and stayed between 0.084 and 0.102 in 2010–2025. The increase was almost entirely in records in PMC.

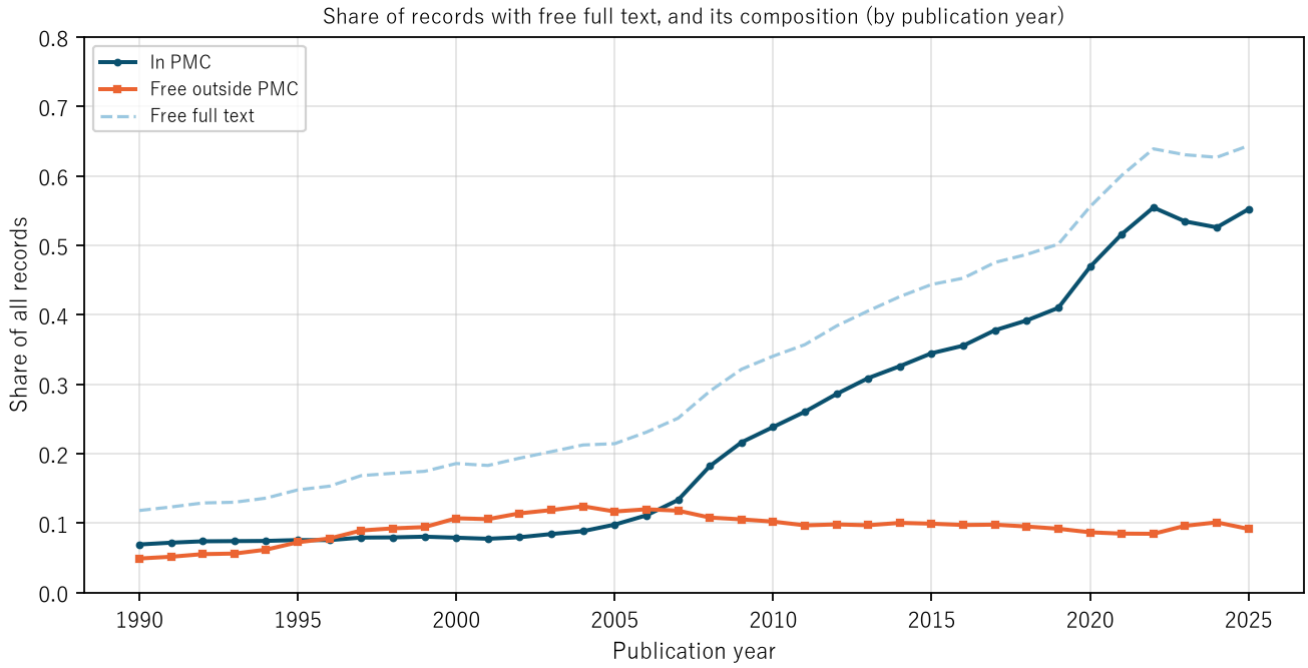


Figure 1: Share of all records (by publication year). Navy is records in PMC, orange records free outside PMC, and the light-blue dashed line free full text (the sum of the two).

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5. Recently published records

Calculation 5.1 Shares by publication month (January excluded)

Publication month	Free full text	In PMC
2025/02–12	0.597–0.635	0.501–0.542
2026/06	0.600	0.490
2026/07	0.592	0.454
2026/08	0.559	0.438

Observation 5.2: **The share in PMC for the recently published months of July and August 2026 (0.454 and 0.438) was lower than for February–December 2025 (0.501–0.542).** A single retrieval cannot separate whether this is the time before records enter PMC or a change in what was published. The yearly shares (0.556 in 2020 → 0.643 in 2025) showed no dip in the most recent years.

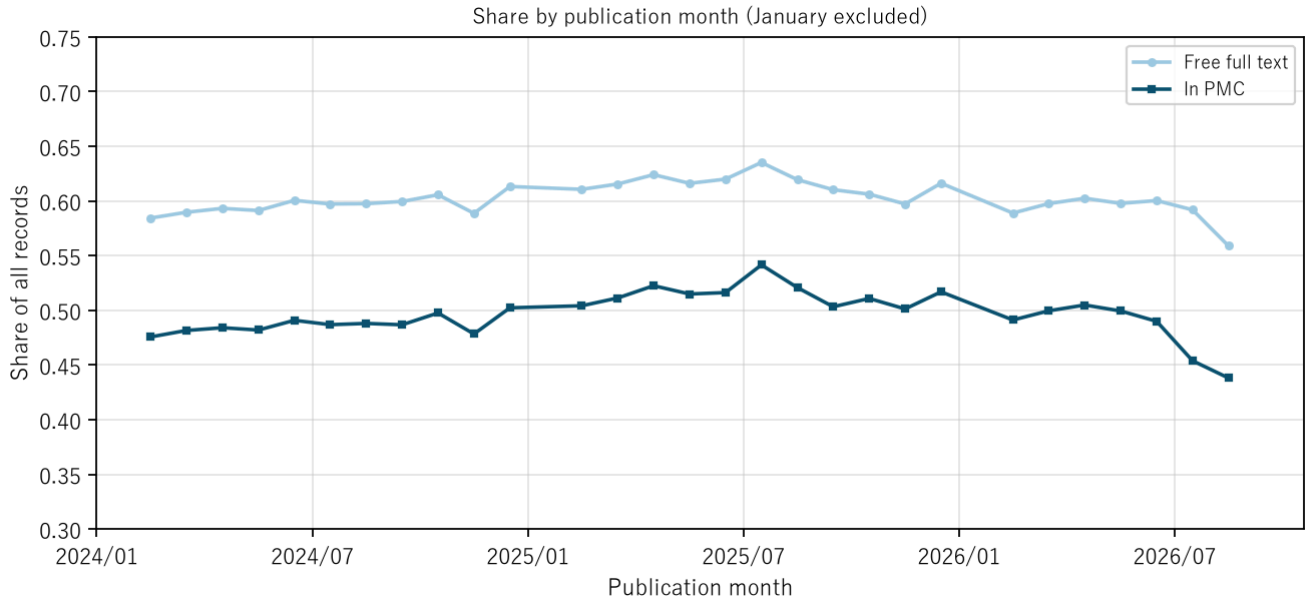


Figure 2: Shares by publication month (February 2024 to August 2026; January excluded). Light blue is free full text, navy in PMC.

6. Pancreatic cancer papers

Calculation 6.1 Pancreatic cancer (pancreatic neoplasms[mh]) papers

Publication year	Records	Free full text	Share	Share, all records
1990	982	105	0.107	0.118
2000	1,328	188	0.142	0.186
2008	2,402	627	0.261	0.290
2015	4,027	1,766	0.439	0.444
2020	5,039	2,450	0.486	0.556
2025	4,691	2,872	0.612	0.643

Observation 6.2: **For pancreatic cancer papers, the share with free full text was 0.107 for 1990 publications, 0.261 for 2008, and 0.612 for 2025, slightly below the share for all records in every year shown.** Of the 2,402 pancreatic cancer papers published in 2008, 627 can now be read free in full text.

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7. Relation to earlier papers

M004 showed that "how many years it takes papers to double" in PubMed changes with what is counted. M005 showed that the way a disease is named changes counts only when quotation marks are used. This paper counted the same PubMed from the reading side. All three share one shape: before counting, check what is being counted as "free" (or as "the paper").

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8. Limitations

1. **The quality or value of research and whether publication policies are good or bad are not discussed. No specific journal, publisher, author, or research institution is named. The reasons records became free are not separated.**
2. "Free full text" is a filter based on links registered in PubMed; whether each record can actually be read was not checked one by one.

3. The counts are as of 27 September 2026 and change daily. With a single retrieval, the time before records enter PMC could not be measured.
4. [dp] matches both electronic and print dates, so one record can fall in two years.
5. The reason January has about twice the records of other months was not checked, so January was excluded from monthly comparisons.

Conclusion

The share of papers whose full text can be read for free rose from 0.118 for 1990 publications to 0.643 for 2025 publications. Its composition was mostly outside PMC in 1996–2006 and mostly in PMC from 2007. The increase was almost entirely in records in PMC.

What separates them is one thing — whether a record is in PMC or free outside PMC.

When you hear that "more papers can be read for free," **check where they are free and what was counted as free.**

Data and reproduction

Data	Counts and query translations retrieved from PubMed (U.S. National Library of Medicine) E-utilities (esearch), 27 September 2026, 01:12–01:17. Courtesy of the U.S. National Library of Medicine
Terms of use	NLM Terms and Conditions (free of charge; credit the source; do not imply NLM endorsement; state that the data are not the most current)
Coverage	All PubMed records (publication years 1990–2025; publication months 2024/01–2026/08) and pancreatic cancer (MeSH)
Verification	`検算/M112.py` (`--zu` also draws the figures). Every number in the text is taken from `検算/M112_output.txt`
Raw data	`data/pubmed_m112_20260927.json` (query, URL, count, query translation, warnings, retrieval time), the retrieval script `data/fetch_pubmed.py`, and `data/SOURCES.md` (terms of use, SHA-256, original text of filter descriptions). The checker verifies SHA-256 every time it runs
Figures	`図/M112_zu1` and `図/M112_zu2` (png, svg, English versions)

References

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