The Share of PubMed Records with the Randomized Controlled Trial Publication Type Is 0.0164 in Both 1990 and 2025, but Divided Within Records Indexed for MEDLINE It Rises from 0.0174 to 0.0282 — 0.9997 of Those Labels Are in MEDLINE, and Only the Denominator's MEDLINE Share Fell from 0.944 to 0.580. Only 0.4511 of Case Report Labels Are in MEDLINE, and How Much the Share Falls Depends on the Denominator [M118]

Share = number of labels ÷ number of records ── What separates them is whether you count the numerator and the denominator over the same range

Yuuki YAMAGISHI (山岸 勇輝) ／ Independent Researcher
ORCID 0009-0006-8587-3450
September 2026 ／ CC BY 4.0

Abstract

Using counts from PubMed (U.S. National Library of Medicine) retrieved through E-utilities (27 September 2026), this paper counted the publication types randomized controlled trial, meta-analysis, systematic review, case reports, and observational study by publication year from 1990 to 2025, and lined up the share divided by all records and the share divided within records indexed for MEDLINE. Which study designs are good or bad is not discussed. No new mathematical theorem and no new law are claimed.

First, **the share of all records with the randomized controlled trial publication type was 0.0164 in 1990 and 0.0164 in 2025, unchanged. But divided within records indexed for MEDLINE, it rose from 0.0174 to 0.0282** (Section 4).

Second, and this is the core of this paper, **0.9997 of the randomized controlled trial labels in 2025 were in MEDLINE, and only the share of all records that are in MEDLINE fell, from 0.944 in 1990**

to 0.580 in 2025. Dividing by all records adds, only to the denominator, records outside MEDLINE that rarely carry the label (Section 4).

Third, **case reports take the opposite form: the share of case report labels in MEDLINE fell from 0.9998 in 1990 to 0.4511 in 2025. The share fell from 0.0960 to 0.0421 divided by all records and from 0.1017 to 0.0327 divided within MEDLINE, so how much it falls depends on the denominator** (Section 4).

Fourth, **systematic reviews differ depending on whether they are counted by the publication type alone or by the filter that adds a search strategy: the filter went from 1.037 times the publication type count (2008) to 1.331 times (2025), a difference of 14,472 in 2025** (Section 5).

Fifth, **the observational study publication type numbered under 100 per year through 2011 (68 in 2011), then 645 in 2012, 5,542 in 2013, and 11,465 in 2014. Low counts in earlier years do not show that observational studies were few** (Section 6).

Sixth, what separates them is **whether you count the numerator and the denominator over the same range**. When you hear that "the share of randomized controlled trials increased (or did not)," check whether the denominator is all records or the range in which the label is attached.

Scope note: **This paper claims no new mathematical theorem and no new law** — the counts are public in PubMed, and this paper only counted and divided them. **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. Which study designs are good or bad, and the quality or value of research, are not discussed. No specific paper, journal, publisher, author, or research institution is named.** Publication types are supplied by the publisher or assigned during MEDLINE indexing (User Guide). This paper did not check whether each label is correctly attached to each record. When each label began to be attached is not stated on the publication types page, and this paper describes only what the counts show. Recent years include records whose MEDLINE indexing is not yet complete, so values for 2024 and 2025 may change. The counts are as of retrieval and change daily. **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: **showing that the share of the same label changes direction depending on whether the denominator is all records or records within MEDLINE, and that the difference is determined by the share of labels that lie within MEDLINE**.

1. Notation and question

- **Publication type** ([pt]): a label attached to a record: randomized controlled trial, meta-analysis, systematic review, case reports, and observational study. The definitions are the original text of NLM's publication types page (for example, case reports: "Clinical presentations that may be followed by evaluative studies that eventually lead to a diagnosis.").
- **MEDLINE**: `medline[sb]` (records indexed for MEDLINE). The User Guide states that publication types are supplied by the publisher or assigned during MEDLINE indexing, so these

filters may exclude records not yet indexed.

- **Share of all records**: the number with the label in a year ÷ all records of that year. **Share within MEDLINE**: "label and MEDLINE" in a year ÷ MEDLINE records of that year. The numerator and the denominator cover the same range.
- **Systematic review filter**: `systematic[sb]`. The User Guide states that it uses a search strategy in addition to the publication type.

Question: Does the share of a study design change direction depending on whether the denominator is all records or records within MEDLINE?

---

2. Preview and design

Written honestly: the design was extended after seeing the main retrieval.

	Content
Data	PubMed E-utilities counts (main retrieval of 288 queries: 36 years 1990–2025 × 8 kinds; additional retrieval of 180 queries: 36 years × 5 kinds), the PubMed User Guide, and NLM's publication types page
Noticed in the main retrieval	The share of randomized controlled trials was the same in 1990 and 2025, while the share of records in MEDLINE fell from 0.944 to 0.580
Added	Queries counting each of the five publication types together with MEDLINE (so that the numerator and denominator cover the same range)
Noticed in the main retrieval (2)	The observational study publication type was almost absent through 2011
Compared	Share of all records, share within MEDLINE, share of labels within MEDLINE, systematic review filter ÷ publication type

---

3. Data and checks

Calculation 3.1 Six files — the two count JSON files, the two retrieval scripts, and the copies of the User Guide and the publication types page — were fixed by SHA-256, and the following were checked. The checker computes only from the saved JSON files and does not query PubMed.

- The 288 main queries (27 September 2026, 02:30:44–02:35:07) and 180 additional queries (02:35:41–02:38:27) are complete.
- The query translations contain the publication date range and, as intended, the publication types, MEDLINE ("medlinestatus medline"[All Fields]), and the systematic review filter ("systematic"[Filter]). **Written honestly**: the check was first written to match the translation as the literal medline[sb] and failed once.
- The only warnings were "No items found" for queries with a count of 0 (observational studies in early years); warnings indicating a misread query were 0.
- The copies of the User Guide and the publication types page contain the original text quoted.
- All subset relations hold (label and MEDLINE ≤ label and MEDLINE; MEDLINE ≤ all).

---

4. The core — counting the numerator and the denominator over the same range

Calculation 4.1 Shares for randomized controlled trials and case reports (selected years)

Publication year	Records	MEDLINE share	RCT: share of all	RCT: within MEDLINE	Case reports: share of all	Case reports: within MEDLINE
1990	410,999	0.944	0.0164	0.0174	0.0960	0.1017
2000	532,637	0.914	0.0210	0.0229	0.0799	0.0871
2005	700,540	0.930	0.0233	0.0251	0.0727	0.0781
2010	942,368	0.900	0.0238	0.0265	0.0707	0.0748
2013	1,150,127	0.868	0.0258	0.0297	0.0639	0.0675
2015	1,258,176	0.817	0.0235	0.0287	0.0586	0.0612
2020	1,641,213	0.727	0.0171	0.0235	0.0526	0.0500
2023	1,697,588	0.653	0.0151	0.0231	0.0431	0.0348
2025	1,881,905	0.580	0.0164	0.0282	0.0421	0.0327

Observation 4.2: **The share of randomized controlled trials was 0.0164 in 1990 and 0.0164 in 2025 divided by all records, unchanged, and rose from 0.0174 to 0.0282 divided within MEDLINE. Either way, the peak was 2013 (0.0258 and 0.0297).** Of randomized controlled trial labels, 0.9993 in 1990 and 0.9997 in 2025 were in MEDLINE.

Observation 4.3: **The share of all records that are in MEDLINE fell from 0.944 in 1990 to 0.580 in 2025. Dividing by all records adds, only to the denominator, records outside MEDLINE, which hardly ever carry the randomized controlled trial label. So the share divided by all records comes out lower than the share within MEDLINE, and the gap widens over the years.**

Observation 4.4: **Case reports took the opposite form. The share of case report labels within MEDLINE fell from 0.9998 in 1990 to 0.4511 in 2025, and records outside MEDLINE also carry the case report label. The share fell from 0.0960 to 0.0421 divided by all records and from 0.1017 to 0.0327 divided within MEDLINE, and from 2020 the share within MEDLINE was the lower of the two.** The share of labels that lie within the denominator's range decides how the two divisions differ.

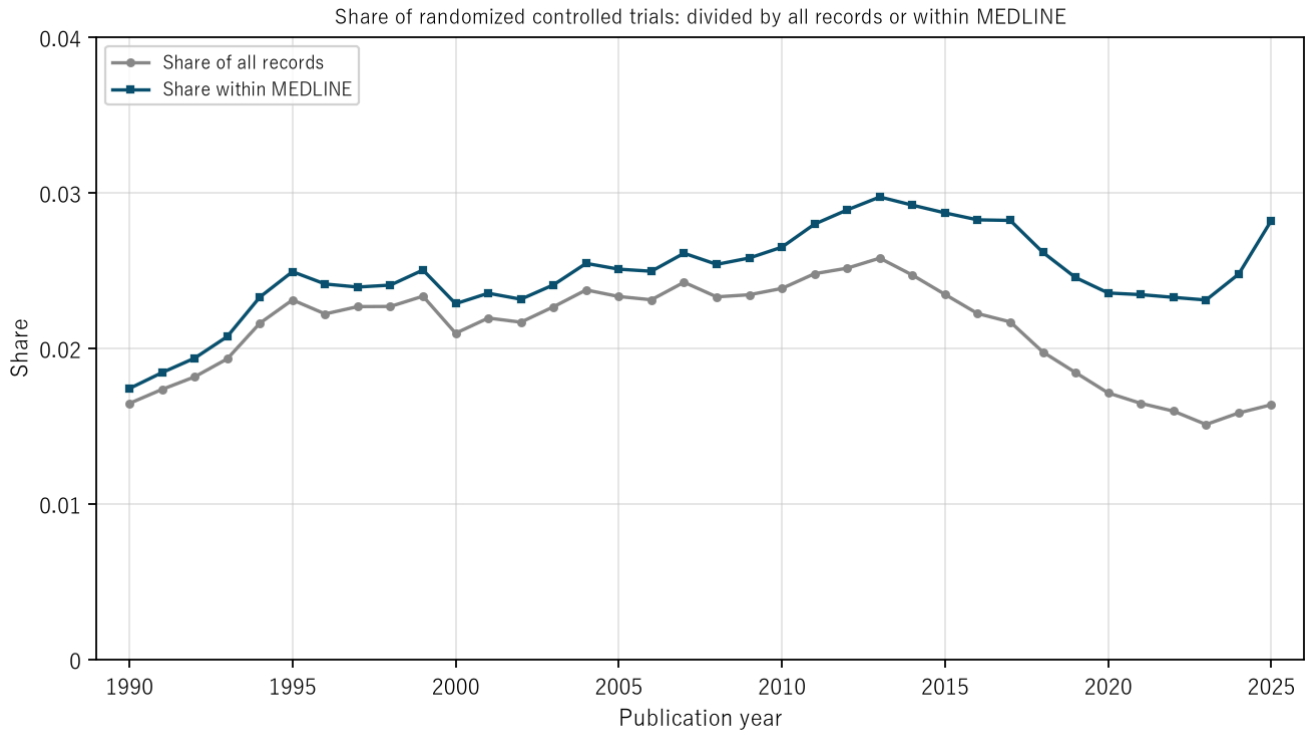


Figure 1: Share of the randomized controlled trial publication type: share of all records (gray) and share within MEDLINE (navy).

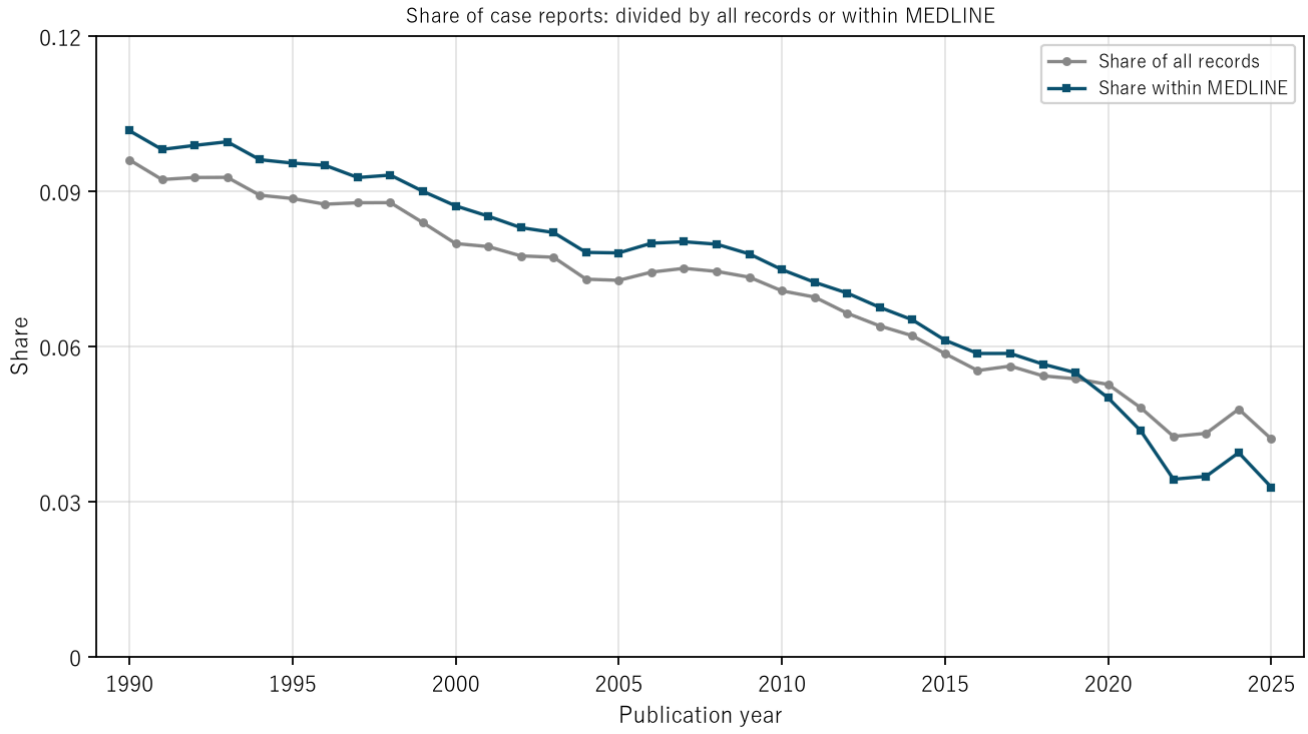


Figure 2: Share of the case reports publication type: share of all records (gray) and share within MEDLINE (navy).

5. Systematic reviews: publication type or filter

Observation 5.1: **The systematic review filter (with a search strategy added) went from 1.005 times the count by publication type alone (2000) and 1.037 times (2008) to 1.331 times (2025). The difference in 2025 was 14,472.** The share of systematic review publication type labels within MEDLINE was 0.9138 in 2025. The more recent the year, the more the count depends on which way it is counted.

6. The observational study label

Observation 6.1: **The observational study publication type numbered 1 in 2008, 27 in 2009, 33 in 2010, and 68 in 2011, under 100 per year, then 645 in 2012, 5,542 in 2013, and 11,465 in 2014.** Counts alone cannot separate whether this rise is a rise in observational studies themselves or the label beginning to be attached. But because the absence of the label alone would give the same numbers, the low counts in earlier years do not show that observational studies were few. When the label began to be attached was not checked in this paper.

7. Relation to earlier papers

M004 showed that the number of years in which papers double changes depending on what is counted in PubMed (all of PubMed or MEDLINE). This paper used the same two ranges as the denominator of a share and showed that the share changes direction depending on whether the numerator and denominator cover the same range. M117 showed an example in which counts by label and counts by record content diverge. The observational study label in this paper has the same form.

8. Limitations

1. **Which study designs are good or bad, and the quality or value of research, are not discussed.**
2. Whether each label is correctly attached to each record was not checked. When each label began to be attached was not checked either.
3. Recent years include records whose MEDLINE indexing is not complete, so the shares within MEDLINE for 2024 and 2025 may change.
4. Yearly counts may overlap because the same record can be counted in two years (M116).
5. The counts are as of 27 September 2026 and change daily.

Conclusion

The share of randomized controlled trials was the same in 1990 and 2025 divided by all records, but rose divided within MEDLINE. The labels are almost all in MEDLINE, while records outside MEDLINE were added to the denominator. Case reports spread outside MEDLINE and took the opposite form. Systematic reviews differ more by counting method in recent years, and the observational study label began to appear around 2012.

What separates them is one thing — whether you count the numerator and the denominator over the same range.

When you hear that "the share of randomized controlled trials increased (or did not)," **check whether the denominator is all records or the range in which the label is attached.** And **check how many of the labels lie within the denominator's range.**

Data and reproduction

Data	Counts and query translations retrieved from PubMed (U.S. National Library of Medicine) E-utilities (esearch), 27 September 2026, from 02:30:44. Courtesy of the U.S. National Library of Medicine. PubMed User Guide and NLM's publication types page
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	PubMed records of publication years 1990–2025: five publication types, the systematic review filter, and MEDLINE
Verification	`検算/M118.py` (`--zu` also draws the figures). Every number in the text is taken from `検算/M118_output.txt`
Raw data	`data/pubmed_m118_20260927.json` and `data/pubmed_m118_extra_20260927.json`, the retrieval scripts `data/fetch_pubmed.py` and `data/fetch_pubmed_extra.py`, `data/pubmed_userguide_20260927.html` and `data/nlm_pubtypes_20260927.html`, and `data/SOURCES.md` (terms of use, SHA-256, excerpts of the original text)
Figures	`図/M118_zu1` and `図/M118_zu2` (png, svg, English versions)

References

- U.S. National Library of Medicine. PubMed (E-utilities, esearch). Courtesy of the U.S. National Library of Medicine (retrieved 27 September 2026). https://eutils.ncbi.nlm.nih.gov/entrez/eutils/
- U.S. National Library of Medicine. PubMed User Guide (accessed 27 September 2026). https://pubmed.ncbi.nlm.nih.gov/help/
- U.S. National Library of Medicine. Publication Characteristics (Publication Types) with Scope Notes (accessed 27 September 2026). https://www.nlm.nih.gov/mesh/pubtypes.html
- Yamagishi, Y. (2026). "Medical Papers Double About Every 15 Years" Has a Different Answer Depending on What Is Counted [M004]. Zenodo. https://doi.org/10.5281/zenodo.22963542

- Yamagishi, Y. (2026). Counting Retracted Publications by the Original Paper's Publication Year, 2022 Has the Most (7,133), and 2025 Has 5.40 per 10,000 Records (0.135 Times 2022), So Recent Years Look Lower — Counting Retraction Notices by the Notice's Year, the Most Is 2023 (8,030), and the Middle Year of the Counts Is 2020 for Retracted Publications and 2023 for Notices. Adding Up the Yearly Counts Counts Some Records in Two Years and Gives 1.1069 Times [M116]. Zenodo (unpublished).
- Yamagishi, Y. (2026). The Share of Japanese-Language Papers Among All PubMed Records Fell from 0.0294 in 1989 to 0.0011 in 2025 — Japanese-Language Papers with the "English Abstract" Publication Type Fell from 2,557 in 2015 to 23 in 2018 and Returned to 1,806 in 2023, but Japanese-Language Papers with an Abstract Only Fell from 3,545 to 2,299 over the Same Years, and the Same Publication Type Fell, Regardless of Language, to 0.0680 Times Its 2015 Level in 2017 [M117]. Zenodo (unpublished).