The Average Interval Between Visits for Return Patients Rose 1.914-Fold from 11.6 Days in 2017 to 22.2 in 2020, but That Is the Year the Upper Limit on Counted Days Changed from 30 to 98 — Recounting the 2023 Distribution with the 30-Day Window Gives 11.77 Days (8.86–14.68 Between Bin Edges), Indistinguishable from 2017's 11.6 Days [M087]

Published 2023 ÷ 2017 = window part × movement within the window —— What separates them is whether the counting window changed or the interval itself lengthened

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Abstract

Using Table 6 (trend in the average interval between visits for return patients, 10 surveys from 1996 to 2023) and Table 65 (distribution of days since the previous visit, 2023) of the Ministry of Health, Labour and Welfare's Patient Survey, this paper looked at how the doubling of the average interval from 2017 to 2020 splits into a change in the counting window and a lengthening of the interval itself. No new mathematical theorem and no new law are claimed.

First, a note to Table 6 says that from 2020 the upper limit on days from the previous visit to the survey day was changed from 30 days (31 or more excluded) to 98 days (99 or more excluded). For all facilities the total went from 11.6 days in 2017 to 22.2 in 2020 (1.914-fold), larger than any other transition (at most 1.109-fold) (Sections 3 and 4).

Second, this is the core of the paper. **Averaging the 2023 distribution (7-day bins) at the middle day of each bin gives 23.67 days with the 98-day window (0.970 of the published 24.4) and 11.77 days with the 30-day window (8.86–14.68 between bin edges). The published 2017 value, 11.6 days, lies**

within this range, and 2023 ÷ 2017 with both at the 30-day window is 1.015. Of return visits in 2023, 0.319 had intervals of 31 days or more, which the old window did not count (Section 5).

Third, **in all 15 disease chapters, the 2017 value lies within the range of 2023 recounted with the 30-day window, and splitting the published 2023 ÷ 2017, the window part (1.561–2.934) is larger in every chapter than the movement within the window (0.883–1.196)** (Section 6).

Fourth, **the window part is largest for eye diseases (2.934) and smallest for injury and poisoning (1.561).** I first set "the size of 2023 ÷ 2017 is almost determined by the share at 31 days or more," but the measured rank correlation is 0.271, and the largest published 2023 ÷ 2017 is not eye diseases but genitourinary diseases (2.845) (Section 6).

Fifth, **while the 30-day window stayed the same (1996 to 2017), the all-facility total lengthened gradually from 9.1 to 11.6 days (1.275-fold).** Ear diseases lengthened most (1.614-fold), and genitourinary diseases shortened to 0.780-fold (Section 4).

Sixth, what separates them is **whether the counting window changed or the interval itself lengthened**. "The interval between visits has doubled" calls, in the tables, two things by one number: the part from bringing return visits of 31 days or more into the count, and the movement within the same window.

Scope note: **This paper claims no new mathematical theorem and no new law** — the average intervals and the distribution of interval days are in public tables, and this paper only recounted the distribution with the old window and split the published ratio into two. **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. It does not judge whether intervals between visits are long or short, prescription lengths or the health care system, or how often one should visit.** The recount is an approximation using the middle day of each 7-day bin; with the 98-day window it came out about 3% below the published value. The 30-day-window value is given with the range between bin edges. The distribution table exists only for 2023, so 2017 and 2020 cannot be recounted. The average interval is the average number of days since the previous visit among return patients who came on the survey day, which differs from the average interval at which one patient visits. What drives the movement within the window cannot be separated with these tables. Certain infectious and parasitic diseases and mental and behavioural disorders (fields this series holds back) and codes for special purposes are not shown chapter by chapter. **About the data**: the Patient Survey (Ministry of Health, Labour and Welfare) was taken from e-Stat and used under the Government of Japan Standard Terms of Use (Version 2.0); the recounts and ratios in this paper were processed from it. What this paper adds: **recounting the 2023 distribution of interval days with the old 30-day window and showing that the "doubling" in 2020 cannot be distinguished from the change in the counting window, and splitting the published 2023 ÷ 2017 into the window part and the movement within the window and showing that the window part is larger in all 15 chapters.**

1. Notation and question

- **Average interval between visits**: the average number of days from the previous visit to the survey day among return patients who came on the survey day (published value).
- **Window**: the upper limit on days included in the average. Up to 2017, 30 days (31 or more excluded); from 2020, 98 days (99 or more excluded).
- **Recount**: the estimated number of return outpatients in each bin of Table 65 multiplied by the middle day of the bin and averaged. When the window falls inside a bin, the bin's count is cut by the share of days. The same calculation with the lower and upper edges of each bin is given as a range.
- **Window part**: published 2023 ÷ 2023 recounted with the 30-day window (the same people in the same year, differing only in the window).
- **Movement within the window**: 2023 recounted with the 30-day window ÷ published 2017 (years compared at the same window).

Question: Did the average interval double from 2017 to 2020 because the interval itself lengthened, or because the counting window changed?

Observation 1.1: M009 showed that the "average length of stay" is the average of the people who are discharged, which differs from the average of the inpatients present on a given day. The average interval between visits is also a number fixed by whom it counts and over what range.

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2. Preview and design

Written honestly: the design was decided after looking at the tables.

	Content
Tables	Patient Survey 2023, national volume, Table 6 (trend in the average interval between visits for return patients, 1996–2023) and Table 65 (2023, days since the previous visit × major disease chapter × hospital/general clinic)
Noticed in the preview	Note (7) to Table 6 says that from 2020 the upper limit on counted days changed from 30 to 98. The bins of Table 65 are 7 days wide, and 30 days falls inside the 29–35-day bin. I also read the 2017 and 2020 listings and confirmed that the distribution of interval days exists only for 2023
Noticed in the preview (2)	I first set "the size of 2023 ÷ 2017 is almost determined by the share at 31 days or more (rank correlation above 0.9, largest for eye diseases)," and it failed. So the published ratio was split into the window part and the movement within the window
Comparison	Years, the 2023 distribution recounted with the 98-day and 30-day (and 28- and 35-day) windows, and the window part and movement within the window by chapter

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3. Data and checks

Calculation 3.1 The 2 retrieved files were fixed by SHA-256, and the following were checked.

- Table 6: columns for the 10 surveys, and blocks for all facilities, hospitals, general clinics, and dental clinics, each with a total row. Note (7) states that the limit was 30 days (31 or more excluded) up to 2017 and 98 days (99 or more excluded) from 2020.
- Table 65: October 2023, in thousands. Bins run from 1–7 days in 7-day steps to 274–280 days, then 281 days or more and unknown. The bins plus unknown minus the total are at most 0.6 thousand (rounding). The total block includes dental clinics (table note).

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4. Years

Calculation 4.1 Average interval between visits for return patients (all facilities, total, days)

Year	Average interval	Change from previous survey	Window
1996	9.1		30 days
2002	9.5	1.044	30 days
2008	10.0	1.053	30 days
2014	11.2	1.109	30 days
2017	11.6	1.036	30 days
2020	22.2	1.914	98 days
2023	24.4	1.099	98 days

Observation 4.2: **The 1.914-fold from 2017 to 2020 is larger than any other transition (at most 1.109-fold) and falls on the survey in which the window changed from 30 to 98 days.** Hospitals went from 12.4 to 27.7 days (2.234-fold) and general clinics from 11.8 to 21.7 days (1.839-fold). While the window stayed at 30 days (1996 to 2017), the total went from 9.1 to 11.6 days, 1.275-fold. By chapter, ear (1.614-fold), respiratory (1.444-fold), and musculoskeletal (1.439-fold) rose most, and neoplasms (0.983-fold) and genitourinary (0.780-fold) shortened.

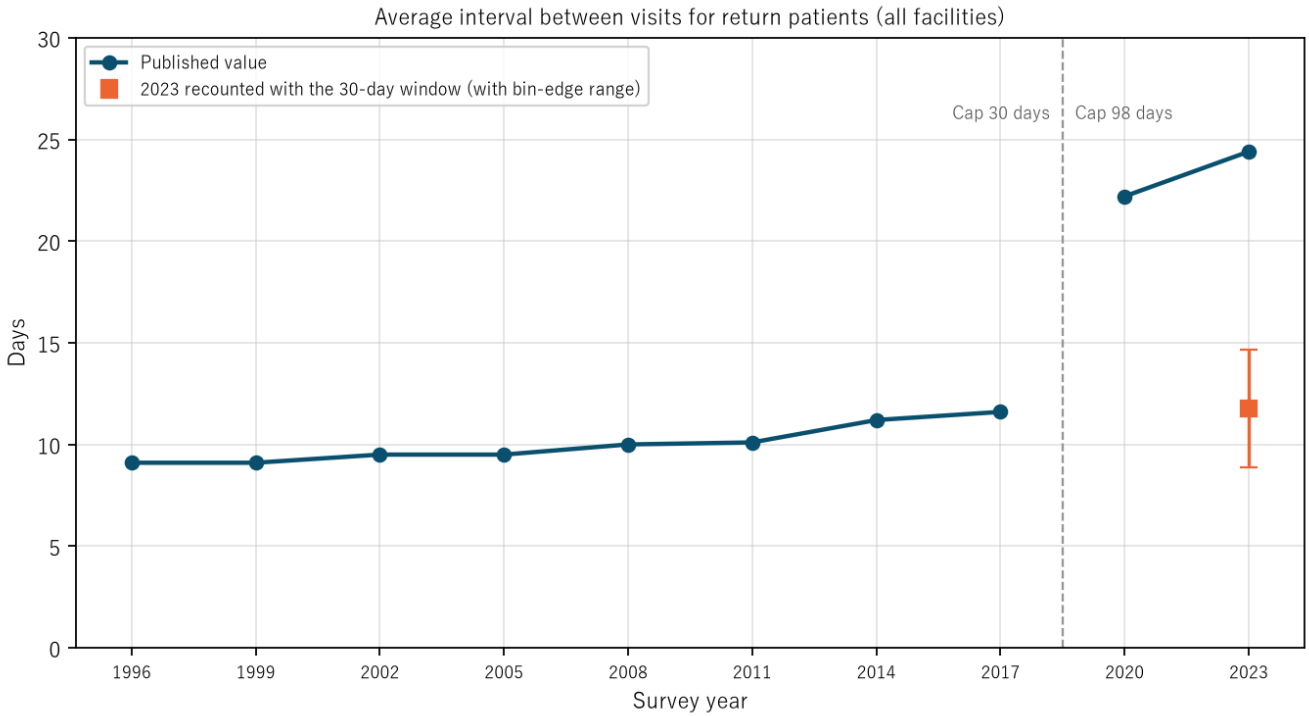


Figure 1: Average interval between visits for return patients (all facilities, total). Navy is the published value and orange is 2023 recounted with the 30-day window (the line is the range between bin edges). The dashed line marks the change of window.

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5. The core — recounting 2023 with the old window

Calculation 5.1 Recounting the 2023 distribution (days)

	98-day window (recount)	Published 2023	30-day window (recount)	Range between bin edges	Published 2017	Share at 31 days or more
Total	23.67	24.4	11.77	8.86–14.68	11.6	0.319
Hospitals	28.06	29.2	11.89	8.96–14.82	12.4	0.382
General clinics	22.95	23.5	12.06	9.17–14.95	11.8	0.315

Observation 5.2: **The 98-day-window average using the middle day of each bin is 0.961–0.977 of the published value and comes out slightly low (total 23.67 vs 24.4). With the same approximation, 2023 recounted with the 30-day window is 11.77 days, and 8.86–14.68 between bin edges. The published 2017 value, 11.6 days, lies within this range, and 2023 ÷ 2017 at the 30-day window is**

1.015. With a 28-day window it is 11.10 days and with a 35-day window 13.55 days; moving the window by 7 days moves the average too.

Observation 5.3: **Of return visits in 2023, 0.319 had intervals of 31 days or more, which the old window left out of the average. Even the new window leaves out the 0.054 at 99 days or more** (both shares exclude the 122.2 thousand unknown).

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6. Window part and movement within the window by chapter

Calculation 6.1 All facilities, the 15 chapters with 15 thousand or more return patients

Chapter	2017 (published)	2023 (published)	2023 (30-day window)	Window part	Movement within window	Share at 31 days or more
Eye	15.4	39.9	13.60	2.934	0.883	0.611
Neoplasms	11.6	26.8	11.21	2.390	0.966	0.357
Genitourinary	7.1	20.2	8.49	2.380	1.196	0.270
Skin	13.3	29.8	13.15	2.267	0.988	0.434
Digestive	10.9	23.9	11.30	2.115	1.037	0.297
Endocrine and metabolic	17.2	33.7	16.93	1.991	0.984	0.480
Circulatory	17.4	31.7	16.94	1.871	0.974	0.436
Musculoskeletal	8.2	15.4	8.44	1.825	1.029	0.161
Injury and poisoning	6.0	11.0	7.05	1.561	1.175	0.105

Observation 6.2: **In all 15 chapters shown, the 2017 value lies within the range of 2023 recounted with the 30-day window. Splitting the published 2023 ÷ 2017, the window part is 1.561–2.934 and the movement within the window 0.883–1.196; the smallest window part is larger than the movement within the window in every chapter.** The movement within the window is below 1 in 7 chapters and above 1 in 8, so its direction does not agree. The table shows 9 of the 15 chapters; the other 6 (blood and immune, nervous system, ear, respiratory, symptoms and signs, factors and health services) also lie within window parts of 1.713–2.345.

Observation 6.3: **The window part is largest for eye diseases (2.934; share at 31 days or more 0.611) and smallest for injury and poisoning (1.561; 0.105).** I first set "the size of 2023 ÷ 2017 is almost determined by the share at 31 days or more," and it failed — the rank correlation between the published 2023 ÷ 2017 and the share at 31 days or more is 0.271, and the largest 2023 ÷ 2017 is genitourinary diseases (2.845). Even for the window part alone, the rank correlation with the share at 31 days or more is 0.586. From the form of the average, the window part depends not only on the share at 31 days or more but also on where those intervals fall up to 98 days.

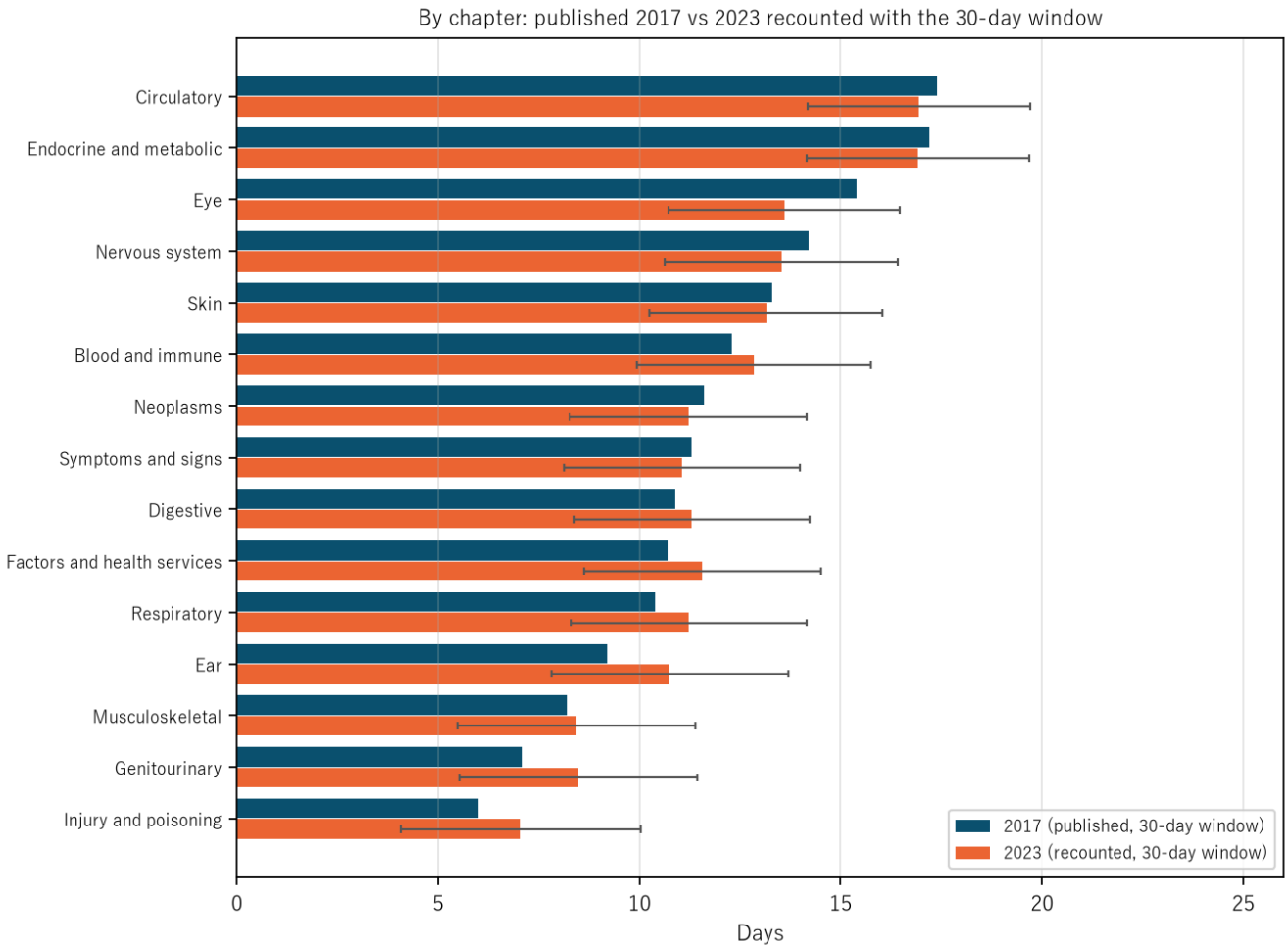


Figure 2: By chapter, the published 2017 value (navy) and 2023 recounted with the 30-day window (orange; the line is the range between bin edges).

7. Limitations

1. **The recount is an approximation using the middle day of each 7-day bin.** With the 98-day window it came out slightly low, at 0.961–0.977 of the published values. The 30-day-window value was read with the range between bin edges.
2. The distribution of interval days exists only for 2023, so 2017 and 2020 cannot be recounted. The movement within the window is the ratio of the 2023 recount to the published 2017 value.
3. The average interval is the average among return patients who came on the survey day, which differs from the average interval at which one patient visits. On the survey day, people who visit at shorter intervals appear more often.
4. What drives the movement within the window cannot be separated with these tables. ICD-10 applies from 1996, and 2011 excludes part of Miyagi Prefecture and Fukushima Prefecture (table notes).
5. The paper does not judge intervals between visits, prescriptions, or the system.

Conclusion

The average interval between visits for return patients rose 1.914-fold from 11.6 days in 2017 to 22.2 days in 2020, but that was the survey in which the upper limit on counted days changed from 30 to 98. Recounting the 2023 distribution with the old 30-day window gives 11.77 days (8.86–14.68), indistinguishable from 2017's 11.6 days. In all 15 chapters, the window part (1.561–2.934) was larger than the movement within the window (0.883–1.196).

What separates them is one thing — whether the counting window changed or the interval itself lengthened.

When you hear "the interval between visits has lengthened," **check together whether it is about counting with the same window or about a wider counting window.**

Data and reproduction

Data	Patient Survey 2023, national volume, Tables 6 and 65 (Ministry of Health, Labour and Welfare, e-Stat) (retrieved 26 September 2026)
Terms of use	e-Stat follows the Government of Japan Standard Terms of Use (Version 2.0). The recounts and ratios in this paper were processed from it and are not numbers produced by the government
Coverage	Japan, return outpatients, 10 surveys from 1996 to 2023 (distribution for October 2023)
Verification	`検算/M087.py` (`--zu` also draws the figures). Every number in the text is taken from `検算/M087_output.txt`
Raw data	`data/` holds the retrieved files and `SOURCES.md` (URLs, retrieval date, SHA-256, terms of use, definitions and how the calculations were set up)
Figures	`図/M087_zu1`, `図/M087_zu2` (png, svg, English versions)

References

- Ministry of Health, Labour and Welfare. Patient Survey 2023, national volume, Tables 6 and 65 (in Japanese). e-Stat (accessed 26 September 2026). https://www.e-stat.go.jp/
- Yamagishi, Y. (2026). "Average Length of Stay" Is the Average of the People Who Are Discharged [M009]. Zenodo. https://doi.org/10.5281/zenodo.22965052